



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE**  
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May 12, 2017

Mr. Edwin Reyes  
Administrator  
Guam Coastal Management Program  
Bureau of Statistics and Plans  
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Hagåtña, GU 96932

Dear Mr. Reyes:

The National Marine Fisheries Service (NMFS) will propose the 2017 annual catch limits (ACL) and accountability measures (AM) for Guam bottomfish, crustacean, and precious coral management unit species (MUS). Federal regulations implementing the Fishery Ecosystem Plan for the Mariana Archipelago at 50 CFR 665 require NMFS to specify ACLs and AMs annually, based on recommendations from the Western Pacific Fishery Management Council (Council).

The proposed 2017 ACL for Guam bottomfish, crustacean, and precious coral MUS are identical to those NMFS specified for the 2016 fishing year (see Table below). The proposed action considers the best available scientific, commercial, and other information about the fisheries, and supports the long-term sustainability of fishery resources. The proposed action would not create any new requirements, and fishing for Guam MUS will not be constrained during any fishing year. The action would not modify associated fishery-monitoring programs. NMFS and the Council do not expect the action to affect local enforcement activities because there is no in-season restriction (e.g., fishery closure) proposed to prevent a fishery from exceeding an ACL. After the 2017 fishing year, the Council and NMFS will determine whether any ACL was exceeded. If so, NMFS would as an AM, reduce the ACL in the subsequent year by the amount of the overage.

Proposed 2017 ACLs for Guam MUS

| <b>Fishery</b> | <b>Management Unit Species</b>               | <b>Proposed ACL Specification (lb)</b> |
|----------------|----------------------------------------------|----------------------------------------|
| Bottomfish     | Bottomfish multi-species stock complex       | 66,000                                 |
| Crustaceans    | Deepwater shrimp                             | 48,488                                 |
|                | Spiny lobster                                | 3,135                                  |
|                | Slipper lobster                              | 20                                     |
|                | Kona crab                                    | 1,900                                  |
| Precious Coral | Black coral                                  | 700                                    |
|                | Precious corals in the Guam Exploratory Area | 2,205                                  |



NMFS has determined that the proposed action is consistent to the maximum extent practicable with the enforceable policies and objectives of coastal zone management program of Guam. Enclosed with this letter are the documents that support this determination.

NMFS is planning to propose the 2017 ACL and AMs for Guam coral reef ecosystem MUS through a separate action and will inform you of our consistency determination for those ACLs through a subsequent correspondence.

If you have any questions or comments, please contact Matt Dunlap at 808-725-5177 or *matthew.dunlap@noaa.gov*.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Tosatto', with a stylized flourish at the end.

Michael D. Tosatto  
Regional Administrator

Encl.



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## **Environmental Assessment**

### **Specification of Annual Catch Limits and Accountability Measures for Pacific Islands Spiny Lobster Fisheries in Fishing Years 2015 through 2018**

(RIN 0648-XD558)

August 12, 2015

**Responsible Agency:** National Oceanic and Atmospheric Administration (NOAA)  
National Marine Fisheries Service (NMFS)  
Pacific Islands Regional Office (PIRO)

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#### **Abstract:**

The Western Pacific Fishery Management Council (Council) recommended that NMFS specify multi-year annual catch limits (ACL) and accountability measures (AM) effective in fishing years 2015-2018, the environmental effects of which are analyzed in this document. NMFS proposes to implement the specifications for fishing year 2015, 2016, 2017, and 2018 separately prior to each fishing year. The specifications pertain to ACL for spiny lobster fisheries in federal waters of the Exclusive Economic Zone (EEZ; generally 3-200 nautical miles or nm) around American Samoa, the Commonwealth of the Northern Mariana Islands (CNMI), Guam, and the main Hawaiian Islands (MHI), and a post-season accountability measure (AM) to correct the overage of an ACL if it occurs. For the American Samoa spiny lobster fishery, the proposed ACL is 4,845 lb and is associated with a probability of overfishing of less than 35 percent. For the CNMI spiny lobster fishery, the proposed ACL is 7,410 lb and is associated with a probability of overfishing of 30 percent. For the Guam spiny lobster fishery, the proposed ACL is 3,135 lb and is associated with a probability of overfishing of less than 35 percent. For the MHI spiny lobster fishery, the proposed ACL is 15,000 lb and is associated with a probability of



overfishing of 25 percent. The fishing year for spiny lobster fisheries in all island areas begins January 1 and ends December 31 annually. Unless modified by NMFS, the ACLs and AMs would be applicable in fishing years 2015, 2016, 2017, and 2018. Each fishing year, spiny lobster catches from both local state/territorial waters (generally from the shoreline to three miles offshore), and federal waters of the EEZ would be counted towards the specified ACL for each island area.

Historically, there has been little to no fishing for spiny lobster in federal waters around American Samoa, Guam, the CNMI and the MHI. This is because spiny lobsters are typically found on rocky substrate in well-protected nearshore areas in crevices and under rocks, and it is much easier and safer for fishers to harvest lobsters in local state/territorial waters, than offshore in the EEZ. Therefore, spiny lobster catch in 2015 through 2018 is expected to continue to come almost exclusively from nearshore state/territorial waters. Currently, catch data from spiny lobster fisheries in nearshore state/territorial waters are generally not available until at least six months after the end of the fishing year. Therefore, in-season monitoring of catch, and in-season AMs applied in federal waters to prevent the ACL from being exceeded (e.g. fishery closures) are not possible in any island area at this time. For this reason, only a post-season AM is possible. Specifically, after the end of each fishing year, if NMFS and the Council determines that the average catch from the most recent three year period exceeds the specified ACL, NMFS proposes to reduce the ACL in the subsequent fishing years by the amount of the overage. Prior to implementing a reduced ACL, NMFS would conduct additional environmental analyses, if necessary, and the public would have the opportunity to provide input and comment on the reduced ACL specification at that time. If an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

The proposed action is needed to comply with the Magnuson-Stevens Fishery Conservation and Management Act and is consistent with provisions of the fishery ecosystem plans for American Samoa, the Mariana Archipelago, and Hawaii, through which NMFS specifies ACLs and AMs for all federally managed species. The Council recommended the ACLs and AMs and developed its recommendations in accordance with the ACL process approved by NMFS, and in consideration of the best available scientific, commercial, and other information.

NMFS prepared this environmental assessment (EA) to evaluate the potential environmental impacts of the proposed ACL specifications and AMs in fishing years 2015 through 2018. The EA includes a description of the information and methods used by the Council to develop the proposed ACLs, and alternatives to the proposed ACL specifications. The analysis in the EA indicates that the proposed ACL specifications and post-season AMs would not result in large beneficial or adverse effects on target, non-target, or bycatch species, protected species, or on marine habitats. This is because the proposed federal action, regardless of which alternative is selected, would not actually limit or constrain spiny lobster catch in any island area, or change the conduct of any federal or state/territorial spiny lobster fisheries in any way. Therefore, impacts of the proposed action would be unchanged from the status quo.

Copies of this EA and final rule can be found by searching on RIN 0648-XD558 at [www.regulations.gov](http://www.regulations.gov), or by contacting the responsible official or Council at the above address.

#### **Environmental Assessment**

**Specification of Annual Catch Limits and Accountability Measures for Pacific Islands  
Spiny Lobster Fisheries in Fishing Years 2015 through 2018**

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## Acronyms and Abbreviations

ABC – Acceptable Biological Catch  
ACL – Annual Catch Limit  
ACT – Annual Catch Target  
AM – Accountability Measure  
APA – Administrative Procedure Act  
CFR – Code of Federal Regulations  
CMUS – Crustacean Management Unit Species  
CNMI – Commonwealth of the Northern Mariana Islands  
Council – Western Pacific Fishery Management Council  
CPUE – Catch per Unit of Effort  
DAWR – Guam Division of Aquatic and Wildlife Resources  
DAR – State of Hawaii Division of Aquatic Resources  
DMWR – American Samoa Department of Marine and Wildlife Resources  
DFW – Northern Mariana Islands Division of Fish and Wildlife  
EA – Environmental Assessment  
EC – Ecosystem Component  
ESA – Endangered Species Act  
EEZ – Exclusive Economic Zone  
FEP – Fishery Ecosystem Plan  
FMP – Fishery Management Plan  
FR – *Federal Register*  
HDAR – Hawaii Division of Aquatic Resources  
MHI – Main Hawaiian Islands  
Magnuson-Stevens Act – Magnuson-Stevens Fishery Conservation and Management Act  
MFMT – Maximum Fishing Mortality Threshold  
MMPA – Marine Mammal Protection Act  
MRFSS – Marine Recreational Fisheries Statistics Survey  
MSST – Minimum Stock Size Threshold  
MSY – Maximum Sustainable Yield  
MUS – Management Unit Species  
NEPA – National Environmental Policy Act  
nm – Nautical Miles  
NMFS – National Marine Fisheries Service  
NOAA – National Oceanic and Atmospheric Administration  
OFL – Overfishing Limit  
OY – Optimum Yield  
P\* - Risk of overfishing percentile  
PIFSC – NMFS Pacific Islands Fisheries Science Center  
PIRO – Pacific Islands Regional Office

SEEM – Social, Economic, and Ecological factors and Management Uncertainty  
SSC – Scientific and Statistical Committee  
WPacFIN – Western Pacific Fisheries Information Network  
WPFMC – Western Pacific Fishery Management Council

# **1 Background Information**

The National Marine Fisheries Service (NMFS) and the Western Pacific Fishery Management Council (Council) manage fishing for crustacean management unit species (MUS) including spiny lobsters, in the Exclusive Economic Zone (EEZ or federal waters; generally 3-200 nautical miles or nm) around the U.S. Pacific Islands through one of four fishery ecosystem plans (FEP) authorized in accordance with the provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).<sup>1</sup> Three of the FEPs are archipelagic-based and include the American Samoa Archipelago FEP, the Hawaiian Archipelago FEP, and the Mariana Archipelago FEP (which covers federal waters around Guam and the Commonwealth of Northern Mariana Islands or the CNMI). The fourth FEP covers federal waters of the U.S. Pacific remote island areas (PRIA) which include Palmyra Atoll, Kingman Reef, Jarvis Island, Baker Island, Howland Island, Johnston Atoll, and Wake Island.

Due to the lack of a developed spiny lobster fishery in EEZ waters around American Samoa, the CNMI, Guam, and the main Hawaiian Islands (MHI), there are few federal fishing regulations at this time. Currently, federal fishing regulations for western Pacific crustacean fisheries, including spiny lobster fisheries are found in 50 CFR 665 and are limited to federal permit and reporting requirements, vessel identification and observer requirements. In EEZ waters around Hawaii, fishing for spiny lobster is further restricted through seasonal closures, and size restrictions. Federal requirements also direct NMFS to specify an annual catch limit (ACL) and implement accountability measures (AM) for all stocks and stock complexes of MUS included in each FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. Additionally, other regulations implemented by other federal agencies and local state and territorial governments may also apply to spiny lobster fishing in the EEZ waters. Appendix A provides a list of spiny lobster MUS in each island area. Federal requirements also direct NMFS to specify an annual catch limit (ACL) and implement accountability measures (AM) for all stocks and stock complexes of MUS included in each FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex.

## **1.1 Overview of the ACL Specification Process**

Federal regulations at 50 CFR 665.4 (76 FR 37285, June 27, 2011) require NMFS to specify ACLs and AMs for each stock or stock complex of MUS identified in an FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. This section provides an overview of the ACL specification process.

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<sup>1</sup> Nearshore waters, generally within three nm of the shoreline around American Samoa, Guam, the Northern Mariana Islands and Hawaii are subject to the respective jurisdiction and management authority of the Territory of American Samoa, the Territory of Guam, the Commonwealth of the Northern Mariana Islands, and the State of Hawaii and are not part of the FEP management area.

In accordance with the Magnuson-Stevens Act and the FEPs, there are three required elements in the development of an ACL specification. The first requires the Council's Scientific and Statistical Committee (SSC) to calculate an acceptable biological catch (ABC) that is set at or below the stock or stock complex's overfishing limit (OFL). The OFL is an estimate of the catch level above which overfishing is occurring. ABC is the level of catch that accounts for the scientific uncertainty in the estimate of OFL and other scientific uncertainty. In determining the appropriate ABC, the SSC follows the ACL mechanism described in the FEPs, which includes a five-tiered system of "ABC control rules" that allows for different levels of scientific information to be considered (WPFMC and NMFS 2011). Tiers 1, 2 and 3 involve data-rich to data-moderate situations and include levels of scientific uncertainty derived from model-based stock assessments. Tiers 4 and 5 involve data-poor situations and include consideration of scientific uncertainty derived from ad-hoc procedures, including simulation models or expert opinion.

When calculating an ABC for a stock or stock complex<sup>2</sup>, the SSC must first evaluate the available information and assign the stock or stock complex into one of the five tiers. The SSC must then apply the control rule assigned to that tier to determine an ABC. For stocks like spiny lobsters that have an estimate of OFL, maximum sustainable yield (MSY) and other MSY-based reference points (Tier 1-3 quality data), the ABC is calculated by the SSC based on the Tier 1-3 ABC control rule, which accounts for scientific uncertainty in the estimate of the OFL, and the acceptable level of risk (as determined by the Council) that catch equal to the ABC would result in overfishing. In plain English, ABC is the maximum value for which the probability or risk of overfishing (P\*) is less than 50 percent. In accordance with National Standard 1 guidelines of the Magnuson-Stevens Act the probability of overfishing cannot exceed 50 percent and should be a lower value (74 FR 3178, January 9, 2011). The process described in the FEPs includes a qualitative analysis by which the P\* value may be reduced below 50 percent based on consideration of four dimensions of information, including assessment information, uncertainty characterization, stock status, and stock productivity and susceptibility to overfishing. The FEPs also allow the SSC to recommend an ABC that differs from the results of the ABC control rule calculation based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors determined relevant by the SSC. However, the SSC must explain its rationale.

The second step requires the Council to determine an ACL that may not exceed the SSC recommended ABC. The process includes methods by which the ACL may be reduced from the ABC based on social, economic, and ecological considerations, or management uncertainty (SEEM). An ACL set below the ABC further reduces the probability that actual catch will exceed the OFL, and result in overfishing.

The third and final step in the ACL process is the development of AMs. There are two categories of required AMs; in-season AMs, and post-season AMs, which make adjustments to an ACL if it is exceeded. In-season AMs prevent an ACL from being exceeded and may include, but are not

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<sup>2</sup> The Magnuson-Stevens Act defines the term "stock of fish" to mean a species, subspecies, geographic grouping, or other category of fish capable of management as a unit. Federal regulations at 50 CFR §660.310(c) defines "stock complex" to mean a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerability to the fishery such that the impact of management actions on the stock is similar.

limited to, closing the fishery, closing specific areas, changing bag limits, or other methods to reduce catch. An ACT is the management target of the fishery and accounts for management uncertainty in controlling the actual catch at or below the ACL.

If the Council determines that an ACL has been exceeded, the Council may recommend, as a post-season AM, that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage. Additionally, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system for setting ACLs, as necessary, to improve its performance and effectiveness.

Figure 1 illustrates the relationship among the OFL, ABC, and ACLs described in this section. For more details on the specific elements of the ACL specification mechanism and process, see Amendment 1 to the PRIA FEP, Amendment 2 to the American Samoa Archipelago FEP, Amendment 2 to the Mariana Archipelago FEP, Amendment 3 to the Hawaii Archipelago FEP (WPFMC and NMFS 2011), and the final implementing regulations at 50 CFR §665.4 (76 FR 37285, June 27, 2011).

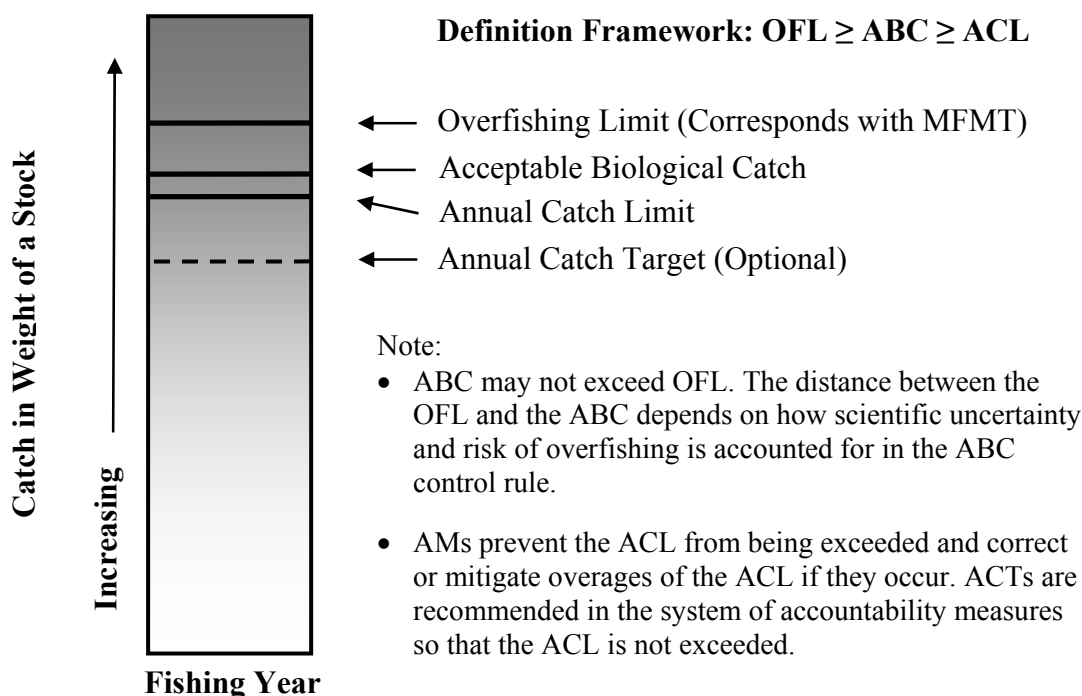


**Figure 1.** Relationship among OFL, ABC, ACL, ACT and AMs.

## 1.2 Purpose and Need

The purpose of this action is to use the best scientific information available to specify an ACL and AM for spiny lobster fisheries in federal waters around American Samoa, the CNMI, Guam and the MHI. ACLs are needed in order to comply with the Magnuson-Stevens Act and provisions of the FEPs for American Samoa, the Mariana Archipelago, and Hawaii which

require NMFS to specify ACL and AMs for all MUS identified in an FEP. The fishery management objective of this action is to specify an ACL for each spiny lobster fishery to prevent overfishing from occurring, and provide for long-term sustainability of the fishery resources while allowing fishery participants to continue to benefit from their utilization. Post-season AMs are intended to correct or mitigate overages of the ACL should they occur.

### **1.3 Proposed Action**

The Western Pacific Fishery Management Council recommended NMFS specify multi-year annual catch limits (ACL) and accountability measures (AM) effective in fishing years 2015-2018, the environmental effects of which are analyzed in this document. NMFS proposes to implement the specifications for fishing year 2015, 2016, 2017, and 2018 separately prior to each fishing year. The specifications pertain to ACLs for spiny lobster fisheries in the EEZ around American Samoa, the Commonwealth of the Northern Mariana Islands (CNMI), Guam, and Hawaii, and a post-season AM to correct the overage of an ACL if it occurs. For the American Samoa spiny lobster fishery, the proposed ACL is 4,845 lb and is associated with a probability of overfishing of less than 35 percent. For the CNMI spiny lobster fishery, the proposed ACL is 7,410 lb and is associated with a probability of overfishing of 30 percent. For the Guam spiny lobster fishery, the proposed ACL is 3,135 lb and is associated with a probability of overfishing of less than 35 percent. For the MHI spiny lobster fishery, the proposed ACL is 15,000 lb and is associated with a probability of overfishing of 25 percent. The fishing year for spiny lobster fisheries in all island areas begins January 1 and ends December 31 annually. Unless modified by NMFS, the ACLs and AMs would be applicable in fishing years 2015, 2016, 2017, and 2018.

Each fishing year, spiny lobster catches from both local state/territorial waters (generally from the shoreline to three mile offshore), and federal waters of the EEZ would be counted towards the specified ACL for each island area. Pursuant to federal regulations at 50 CFR 665.4, when an ACL is projected to be reached, based on best available information, NMFS must restrict fishing in federal waters around the applicable island area to prevent the ACL from being exceeded. The restriction may include, but is not limited to closure of the fishery, closure of specific areas, or restriction in effort (76 FR 37286, June 27, 2011). However, projecting the date when an ACL might be reached is not possible for any western Pacific spiny lobster fishery at this time because catch statistics from local state/territorial fisheries are generally not available until at least six months after the data have been collected (See Section 2.1 for more details on local state/territorial data collection programs).. For this reason, the post-season AMs being proposed for spiny lobster fisheries in all island areas is a downward adjustment to an ACL in the subsequent fishing year according to the procedures described below, should catches exceed the specified ACL.

As shown in Tables 2 (American Samoa), 6 (CNMI), 10 (Guam) and 14 (Hawaii), catches of spiny lobster from local state/territorial data collection programs appear to be highly variable from year to year, but below the current long-term estimates of MSY. The reason for this inter-annual variability is unknown, but may be due to changes in local data collection methodologies over time (see Section 2.1). To reduce the influence of inter-annual variability in evaluating fishery performance against the proposed ACLs, NMFS and the Council propose to apply a moving three-year average. Specifically, NMFS and the Council would use the average catch of

fishing years 2013, 2014 and 2015 to evaluate fishery performance against the 2015 ACL; the average catch of fishing years 2014, 2015, and 2016 to evaluate performance against the 2016 ACL; and so on. After the end of each fishing year, the Council and NMFS will determine final spiny lobster catches. If the three-year average catch for spiny lobster exceeded the specified ACL in any fishing year, NMFS would reduce the spiny lobster ACL in the subsequent fishing years by the amount of the overage. Prior to implementing a reduced ACL, NMFS would conduct additional environmental analyses, if necessary, and the public would have the opportunity to provide input and comment on the reduced ACL specification at that time. Additionally, if an ACL is exceeded more than once in a four-year period, National Standard 1 guidelines of the Magnuson-Stevens Act (74 FR 3178, January 9, 2011) require the Council re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

The proposed ACL specifications and AMs are based on the recommendations of the Council, and were developed in accordance with the approved ACL mechanism described in the FEPs and implementing federal regulations at 50 CFR §665.4, and in consideration of the best available scientific, commercial, and other information.

#### **1.4 Decision to be Made**

After considering public comments on the proposed action and alternatives considered, NMFS will specify ACLs and AMs for the spiny lobster fisheries in federal waters around American Samoa, CNMI, Guam and Hawaii. The ACLs and AMs would be applicable in fishing years 2015 through 2018 which begin on January 1 and end December 31, annually. The Regional Administrator of the NMFS Pacific Islands Regional Office (PIRO) will also use the information in this EA and consider public comments, to make a determination about whether the selected ACL specifications and AMs would be a major federal action with the potential to have a significant environmental impact that would require the preparation of an environmental impact statement.

#### **1.5 Public Involvement**

At its 160<sup>th</sup> meeting, the Council considered and discussed issues relevant to ACL and AM specifications for western Pacific crustacean fisheries including spiny lobster fisheries in American Samoa, the CNMI, Guam, and the MHI, including the ABC recommendations of the 116<sup>th</sup> SSC. The 116<sup>th</sup> SSC and the 160<sup>nd</sup> Council meetings were held June 17-19, 2014, and June 25-27, 2014, respectively. Both meetings were open to the public and advertised through notices in the *Federal register* (79 FR 31310, June 2, 2014), and on the Council's website. The public had an opportunity to comment at the meetings on the proposed ACL specifications and AMs and no public comment was provided at either meeting. The proposed action was also discussed at the 117<sup>th</sup> SSC meeting held October 14-16, 2014, and the 161<sup>st</sup> Council meeting, held October 21-23, 2014. Both meetings were open to the public and advertised in Hawaii media as well as the *Federal register* (79 FR 57887, September 26, 2014; 79 FR 59742, October 3, 2014), and on the Council's website. The public had an opportunity to comment at the meetings on the proposed ACL specifications and AMs and no public comment was provided at either meeting. Additionally, on July 21, 2015, NMFS published in the *Federal Register* the proposed

specification and solicited public comments on the action and on the draft EA (80 FR 4346). NMFS received one comment from a federal agency regarding ACLs at Wake Island. NMFS responded to this comment in the final rule.

## **2 Description of the Alternatives**

The alternatives considered in this document include a range of possible ACLs for spiny lobster fisheries in federal waters around American Samoa, Guam, CNMI and the MHI. Although the estimate of the OFL and calculation of the ABC are part of the ACL mechanism, the establishment of these reference points is not part of the proposed federal action. However, a summary of their development is described in this section for informational purposes.<sup>3</sup>

### **2.1 Description of Ongoing Fishery Data Collection Programs**

This section summarizes ongoing fishery data collection programs administered by the state/territorial governments of American Samoa, Guam, the CNMI and Hawaii, and by NMFS that were used to develop the ACLs and will be used to monitor catches in 2015-2018. None of the alternatives considered would change or modify any of these ongoing fishery data collection programs. For a detailed description of the data collection programs summarized here, visit <http://www.pifsc.noaa.gov/wpacfin/>.

#### **2.1.1 Overview of Ongoing Data Collection Methods in the U.S. Pacific Islands**

In American Samoa, Guam and the CNMI, local resource management agencies, with assistance from NMFS Pacific Islands Fisheries Science Center (PIFSC), Western Pacific Fisheries Information Network (WPacFIN), collect fisheries information through three primary fisheries monitoring programs. They include: 1) the boat-based creel survey program, (2) the shore-based creel survey program, and (3) the commercial purchase system or trip ticket invoice program.

##### **2.1.1.1 Boat-based creel survey program**

The boat-based creel survey program collects catch, effort, and participation data on offshore fishing activities conducted by commercial, recreational, subsistence and charter fishing vessels. Surveys are conducted at boat ports or ramps, and data collection consists of two main components - participation counts (trips) and fisher interviews. Survey days are randomly selected and the number of survey days range from 3-8 per month. Surveys are stratified by week-days, weekend-days and day- and night-time. Data expansion algorithms are applied by NMFS WPacFIN to estimate total boat-based catches, and are based on port, type of day (e.g., weekend/weekday), and fishing method (Impact Assessment, 2008). The boat-based creel surveys capture fishing activities by persons engaged in commercial, recreational, and subsistence fishing.

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<sup>3</sup> OFL is an estimate of the catch level above which overfishing is occurring, and was estimated by the Council using a Biomass Augmented MSY Model described in Sabater and Kleiber (2014). ABC accounts for scientific uncertainty in the estimate of OFL and was calculated at the 116<sup>th</sup> meeting of the Council's SSC. OFL and ABC are biologically-based reference points and are not part of the federal action.



### **2.1.1.2 Shore-based creel survey program**

The shore-based creel survey program was established to randomly sample inshore fishing trip information and consists of two components: participation counts and fishers interviews. Participation counts are based on a ‘bus route’ method, with predefined stopping points and time constraints. Survey days are randomly selected, and range from 2-4 times per week. Data expansion algorithms are applied by NMFS WPacFIN to estimate total shore-based catches, and are based on island region, type of day and fishing method (Impact Assessment, 2008). The shore-based creel surveys capture fishing activities by persons engaged in commercial, recreational, and subsistence fishing.

As previously noted the data from both boat-based and shore-based creel survey programs are then expanded using algorithms developed by WPacFIN to generate estimates of total catches from both commercial and non-commercial sectors.

### **2.1.1.3 Commercial purchase system**

The commercial purchase system or “trip ticket invoice” monitors fish sold locally and collects information submitted by vendors (fish dealers, hotels and restaurants) who purchase fish directly from fishers. Each invoice usually compiles daily trip landings. Only American Samoa has mandatory requirements for vendors to submit invoice reports; the other islands have voluntary programs (Impact Assessment, 2008).

## **2.1.2 Overview of Ongoing Fishery Data Collection Methods in Hawaii**

In Hawaii, the majority of fisheries information is collected from the commercial fishing sector through a mandatory license and monthly reporting system administered by the State of Hawaii Division of Aquatic Resources (HDAR). Under State law, anyone who takes marine life for commercial purposes is required to obtain a commercial marine license (CML) and submit a catch report (popularly known as a “C3” form) on a monthly basis. Required information collected includes day fished, area fished, fishing method used, hours fished per method, and species caught (number/pounds caught and released).

Recreational catch information for finfish are also opportunistically collected by HDAR through the Hawaii Marine Recreational Fishing Survey (HMRFS) and annual catch amounts are reported through NMFS Marine Fisheries Statistics Survey (MRFSS) at <http://www.st.nmfs.noaa.gov/st1/index.html>. As this survey only includes finfish, no information on spiny lobster is captured. A 2006 review of MRFSS by the National Resource Council (NRC) noted that the catch estimation method applied was not correctly matched with the catch sampling survey design, leading to potential bias in the estimates (National Resource Council 2006). In consideration of this finding, the Council in 2006 recommended that MRFSS catch estimates not be used as a basis for management or allocation decisions.

In 2008, NMFS established the National Saltwater Angler Registry Program as part of the Marine Recreational Information Program (MRIP) to improve recreational fisheries information (73 FR 79705, December 30, 2008). This national program requires all recreational anglers in

federal waters that are not otherwise permitted to fish under another federal or state/territorial fishing permit or license to register with NMFS. MRIP then collects information from registered recreational anglers about how often they fish and what they're catching using a system of surveys. Data from MRIP are integrated into MRFSS and are accessible from the MRFSS websites listed above. However, because lobsters are not harvested by angling, but by other fishing methods, spiny lobster data are not collected by MRIP or MRFSS.

### **2.1.3 Overview of Ongoing Federal Permit and Reporting Requirements**

In addition to the data collection programs administered by local resource management agencies, regulations implementing the FEPs also establish federal permit and reporting requirements. Specifically, any vessel used to fish for lobsters in EEZ waters around American Samoa, CNMI, Guam and Hawaii must obtain a federal permit and submit catch logbooks to NMFS within 72 hours of landing. Crustacean Permit Area 1 includes the EEZ around the Northwestern Hawaiian Islands, which is closed to fishing in accordance with regulations implementing the Papahānaumokuākea Marine National Monument (71 FR 51134, August 29, 2006). Crustacean Permit Area 2 includes the EEZ around the main Hawaiian Islands (MHI). Crustacean Permit Area 3 includes the EEZ around American Samoa. Crustacean Permit Area 4 includes the EEZ waters around the U.S. Pacific Remote Island Areas, which is a Marine National Monument where all fishing, including non-commercial fishing is prohibited within 12 nautical miles from the shoreline (78 FR 32996, June 3, 2013). Crustacean Permit Area 5 includes the EEZ around Guam and the CNMI. The affected permit areas for the proposed action where spiny lobster fishing is possible are Crustacean Permit Areas 2 (MHI), 3 (American Samoa), and 5 (Guam and CNMI).

Historically, there has been little to no fishing for spiny lobster in EEZ waters around American Samoa, Guam, the CNMI and the MHI. This is because lobsters are typically found on rocky substrate in well-protected nearshore areas in crevices and under rocks, and it is much easier and safer for fishers to harvest lobsters in local state/territorial waters, than far offshore in the EEZ. Therefore, data from federal logbooks are not available for any Crustacean Permit Area, and fishing in federal waters in the future is expected to be negligible.

Except for HMRFS and MRIP data, NMFS WPacFIN obtains all available spiny lobster fisheries information in the western Pacific, in accordance with cooperative agreements with the local resource management agencies in American Samoa, CNMI, Guam, and Hawaii and provides access to this data on their website <http://www.pifsc.noaa.gov/wpacfin>. Generally, complete data for catches during a calendar year are not available until at least 6 months after the year has ended.

### **2.1.4 Data Limitations**

While federal permit and catch reporting is required for spiny lobster fisheries in EEZ waters around American Samoa, the CNMI Guam, and the MHI, there have been few if any permitted vessels for these fisheries in the past 20 years. When permits were issued, no fishing was conducted and no catch reported. Therefore, catch data for spiny lobsters comes solely from fishery data collection programs administered by the respective local resource management

agencies, and NMFS expects this will continue to be the only data source for monitoring spiny lobster catches in 2015 through 2018. However, these agencies presently do not have the personnel or resources to process catch data in near-real time, and so fisheries statistics are generally not available until at least six months after the data has been collected. Significant resources would be required to support the establishment of near-real time in-season monitoring capabilities in American Samoa, the CNMI, Guam and Hawaii. Until resources are made available, it will not be possible to monitor and track spiny lobster catches towards the proposed ACL, and only AMs that consist of post-season management measures are possible at this time.

## **2.2 Development of the Alternatives**

The SSC and Council developed their respective spiny lobster ABC and ACL recommendations for 2015 through 2018 in accordance with the Magnuson-Stevens Act and Federal regulations at 50 CFR §665.4 that implement the ACL specification mechanism of the FEPs described in Section 1. This section summarizes the data, methods, and procedures the SSC and Council considered in their deliberations. Reports of all SSC and Council meetings cited in this EA can be obtained from the Council.

### **2.2.1 Estimation of MSY and OFL**

Estimates of MSY and OFL for spiny lobsters in American Samoa, the CNMI, Guam, and the MHI are based on a modeling approach that uses catch data from local resource management agencies as described above; together with a measure of population growth ( $r$ ), carrying capacity ( $k$ ), and biomass data from NMFS PIFSC underwater fish census surveys (Williams 2010). This model, termed the “Biomass Augmented Catch-MSY” model is described in detail in Sabater and Kleiber (2014). In summary, the model creates annual biomass projections from a set of  $r$  and  $k$  combinations that would not result in biomass that would exceed the carrying capacity or the stock being depleted. The assumption behind the biomass can be informed by augmenting the model with an independent source of biomass information.

The Biomass Augmented Catch-MSY model is based on the Catch-MSY model developed by Martell and Froese (2013), but differs in that it incorporates biomass data. Application of the model provides the very first model-based estimate of MSY for spiny lobster in each island area. In addition to estimates of MSY, the Biomass Augmented Catch-MSY model also generates a range of catches that if realized, would result in a probability of exceeding MSY ranging from five to 50 percent (See Appendix B for MSY estimates and probability of overfishing projection results from the Biomass Augmented Catch-MSY model).

Because of the large number of possible combinations of  $r$  and  $k$  values available to estimate MSY using the Biomass Augmented Catch-MSY model, the model explored two methods to define the most meaningful and most likely (most plausible) range of  $r$  and  $k$  combinations. Method A allows for only a very narrow range of starting  $r$  and  $k$  values, while method B allows for a broad range of starting  $r$  and  $k$  values, with each method providing different MSY estimates and associated probability of overfishing projections. In reviewing the two methods, the SSC at its 114<sup>th</sup> meeting held March 11-13, 2014, determined the resulting MSY estimates from method B be used for management decisions because this method provides a more complete range of

most likely r and k combinations compared to method A. The 114<sup>th</sup> SSC also found that method B also yielded r and k density plots that generally correspond better to the estimates of MSY than the method A approach.

Based on the method B approach, the Biomass Augmented Catch-MSY model estimates MSY for American Samoa spiny lobster to be 7,300 lb. However, catch projection results generated from the model estimate the level of catch associated with a 50 percent probability of exceeding MSY to be 7,100 lb. For CNMI spiny lobsters, the model estimates MSY to be 9,600 lb, with the level of catch associated with a 50 percent probability of exceeding MSY at 9,200 lb. For Guam spiny lobster, MSY is estimated to be 4,600 lb, level of catch associated with a 50 percent probability of exceeding MSY at 4,300 lb. For MHI spiny lobster, the model estimates MSY to be 20,400 lb and t level of catch associated with a 50 percent probability of exceeding MSY at 19,200 lb. Consistent with National Standard 1 guidelines (74 FR 3178, January 9, 2011), the Council at its 160<sup>th</sup> meeting, set OFL for each spiny lobster stock equal to the level of catch associated with a 50 percent probability of exceeding MSY. See Table 1 for a summary of MSY and OFL estimates and other reference points for each western Pacific spiny lobster fishery.

### **2.2.2 SSC's Calculation of ABC**

Under Tier 3 of the ABC control rule for western Pacific fisheries, the SSC must set ABC at a level of catch associated with no more than a 50 percent probability of overfishing, with the appropriate probability of overfishing percentile (P\*) established by the Council. The Council's P\* working group met in May, June, and December 2013 to review a draft of Sabater and Kleiber (2014), and to apply the qualitative P\* reduction analysis described in the FEPs WPFMC and NMFS 2011). The reduction analysis resulted in deductions ranging between 10 to 20 percent. Based on the P\* analysis and findings presented in the P\* working group's December 2013 report, the SSC at its 115<sup>th</sup> meeting held June 17-19, 2014, set western Pacific spiny lobster ABCs as follows:

For American Samoa and Guam spiny lobsters, the SSC set the ABCs, at 5,100 lb and 3,300 lb, respectively. These ABCs are each associated with a probability of overfishing of 40 percent. For CNMI spiny lobster, the SSC set the ABC at 7,800 lb, which is associated with a probability of overfishing of 35 percent. For MHI spiny lobster, the SSC set the ABC at 15,800 lb, which is associated with a probability of overfishing of 30 percent. See Appendix C of this document for the precise values from the qualitative P\* reduction analysis for each spiny lobster stock. See Table 1 for a summary of ABCs, the associated probability of overfishing values and other reference points for each western Pacific spiny lobster fishery.

### **2.2.3 Council's ACL and AM Recommendations**

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council recommended NMFS specify an ACL set at the level of catch that is five percent lower than the SSC's fishing level recommendation in order to account for social, economic, and ecological factors and management uncertainty (SEEM) See Appendix D of this document for the SEEM analysis. Specifically, the Council recommended American Samoa spiny lobster be set at 4,845 lb, CNMI spiny lobster ACL be set at 7,410 lb, Guam spiny lobster ACL be set at 3,135 lb and Hawaii spiny lobster ACL be set at

15,000 lb. See Table 1 for the a summary of ACLs, associated probability of overfishing values and other reference points for each western Pacific spiny lobster fishery.

Because near real-time monitoring of catches are not possible, the Council recommended at its 161<sup>st</sup> meeting, held October 21-23, 2014, a post-season AM that utilizes a moving three-year average to evaluate fishery performance against the recommended ACL. Specifically, after the end of each fishing year, the Council and NMFS will determine final spiny lobster catches in each island area. NMFS and the Council would use the average catch of fishing years 2013, 2014 and 2015 to evaluate fishery performance against the 2015 ACL; the average catch of fishing years 2014, 2015, and 2016 to evaluate performance against the 2016 ACL; and so on. If the average three-year catch exceeds the recommended ACL, the Council recommended as an AM that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage.

## 2.3 Description of the Alternatives Considered

This section describes the range of ACL alternatives for spiny lobsters in American Samoa, Guam, the CNMI and Hawaii as well as the associated probabilities of overfishing values for each western Pacific spiny lobster fishery in 2015-2018 based on the r and k method B risk projections from the Biomass Augmented Catch-MSY model (See Appendix B). Table 1 provides a summary of the ACL alternatives considered, the associated risks of overfishing (P\*), MSY and OFL estimates and the average catch for fishing years 2011-2013. Alternative 3 is the NMFS preferred alternative in each island area as recommended by the Council.

**Table 1.** Summary of ACL alternatives and associated risks of overfishing (P\*) percentages for spiny lobsters in American Samoa, CNMI, Guam, and MHI in 2015-2018, including MSY-based reference points and 2011-2013 average catch.

|                                                                  | <b>American Samoa<br/>Spiny Lobster</b>  |                                   | <b>CNMI<br/>Spiny Lobster</b>            |                                   | <b>Guam<br/>Spiny Lobster</b>            |                                   | <b>MHI<br/>Spiny Lobster</b>          |                                   |
|------------------------------------------------------------------|------------------------------------------|-----------------------------------|------------------------------------------|-----------------------------------|------------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|
|                                                                  | <b>MSY = 7,300 lb</b>                    |                                   | <b>MSY = 9,600 lb</b>                    |                                   | <b>MSY = 4,600 lb</b>                    |                                   | <b>MSY = 20,400 lb</b>                |                                   |
|                                                                  | <b>OFL Proxy = 7,100 lb<br/>(P*=50%)</b> |                                   | <b>OFL Proxy = 9,200 lb<br/>(P*=50%)</b> |                                   | <b>OFL Proxy = 4,300 lb<br/>(P*=50%)</b> |                                   | <b>OFL Proxy = 19,200 lb (P*=50%)</b> |                                   |
|                                                                  | <b>ABC = 5,100 lb</b>                    |                                   | <b>ABC = 7,800 lb</b>                    |                                   | <b>ABC = 3,300 lb</b>                    |                                   | <b>ABC = 15,800 lb</b>                |                                   |
|                                                                  | <b>ACL (lb)</b>                          | <b>Probability of overfishing</b> | <b>ACL (lb)</b>                          | <b>Probability of overfishing</b> | <b>ACL (lb)</b>                          | <b>Probability of overfishing</b> | <b>ACL (lb)</b>                       | <b>Probability of overfishing</b> |
| <b>Alternative 1<br/>(No Action)</b>                             | No ACL                                   | n.a.                              | No ACL                                   | n.a.                              | No ACL                                   | n.a.                              | No ACL                                | n.a.                              |
| <b>Alternative 2<br/>(Status Quo-2014 ACL and NEPA Baseline)</b> | 2,300                                    | <5%                               | 5,500                                    | <5%                               | 2,700                                    | 25%                               | 10,000                                | <5%                               |
| <b>Alternative 3</b>                                             | <b>4,845</b>                             | <b>&lt;35%</b>                    | <b>7,410</b>                             | <b>30%</b>                        | <b>3,135</b>                             | <b>&lt;35%</b>                    | <b>15,000</b>                         | <b>25%</b>                        |

|                                                | American Samoa<br>Spiny Lobster |     | CNMI<br>Spiny Lobster |     | Guam<br>Spiny Lobster |     | MHI<br>Spiny Lobster |     |
|------------------------------------------------|---------------------------------|-----|-----------------------|-----|-----------------------|-----|----------------------|-----|
| <i>(Preferred)</i>                             |                                 |     |                       |     |                       |     |                      |     |
| <b>Alternative 4</b><br>(Lower than Preferred) | 4,600                           | 30% | 7,100                 | 25% | 3,000                 | 30% | 14,300               | 20% |
|                                                | 4,100                           | 25% | 6,700                 | 20% | 2,700                 | 25% | 13,500               | 15% |
|                                                | 3,700                           | 20% | 6,400                 | 15% | 2,500                 | 20% | 12,600               | 10% |
|                                                | 3,300                           | 15% | 6,100                 | 10% | 2,200                 | 15% | 11,700               | 5%  |
| <b>Avg. 2011-2013 Catch</b>                    | <b>1,757</b>                    |     | <b>1,115</b>          |     | <b>1,167</b>          |     | <b>10,242</b>        |     |

Source: All values above were obtained from Sabater and Kleiber (2014) in Appendix B.

### 2.3.1 American Samoa Spiny Lobster ACL Alternatives

#### 2.3.1.1 Alternative 1: No ACL and AM Management (No Action)

Currently, NMFS has not specified an ACL and AM for the American Samoa spiny lobster fishery for fishing year 2015. Under this alternative, NMFS would not specify an ACL for American Samoa spiny lobsters and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act, or the provisions of the American Samoa FEP and implementing federal regulations which require NMFS to specify an ACL for all stocks and stock complexes.

#### Expected Fishery Outcome

Although the potential for catch is unlimited without an ACL and AMs, the lack of an ACL or AMs is not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort. This is because even without ACLs and AMs, the spiny lobster fishery in American Samoa is sustainable based on the best available commercial and scientific information. As shown in Table 2, the highest recorded catch of spiny lobster catch in American Samoa was 5,388 lb, which occurred in 2006. This level of catch is well below the OFL proxy of 7,100 lb and the MSY of 7,300 lb. Since then, spiny lobster harvest has fluctuated between 1,000 lb and 3,000 lb with the average annual catch for the most recent three year period 2011-2013 being 1,757 lb. During 2011-13, the fishery remained open year round. Under this alternative, American Samoa spiny lobster harvest in 2015 through 2018 is expected to be similar to that described under Alternative 2 and is not expected to exceed the OFL proxy of 7,100 lb.

#### 2.3.1.2 Alternative 2: Specify 2014 ACL of 2,300 lb (Status Quo/NEPA Baseline)

Under Alternative 2, NMFS would specify an ACL of 2,300 lb of spiny lobsters for fishing years 2015 through 2018. This is the same ACL specified by NMFS in 2012 (77 FR 6019, February 7, 2012), 2013 (78 FR 15885, March 13, 2013) and 2014 (79 FR 4276, January 27, 2014) and is the status quo alternative. This ACL was developed using a different method than is proposed under the preferred alternative (Alternative 3), and is equal to the 75<sup>th</sup> percentile of the long term catch history. For detailed information on the how this ACL was derived, please see the EA for the 2012 ACLs and AMs for crustacean and precious coral fisheries (NMFS 2011). Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an

ACL of 2,300 lb is associated with a less than 5 percent probability of overfishing should the entire ACL be caught (Table 1). This is the NEPA baseline to which all other alternatives are compared.

Under this alternative, if the Council determines the ACL is exceeded, the Council as an AM would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage, or other measures, as appropriate.

### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 2 would be the same as under Alternative 1 (No action), and is not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort. This is because annual catch in fishing years 2015-2018 is expected to be similar to the average annual catch of 1,757 lb from the most recent three-year period (2011-13), and remain below the ACL proposed under this alternative. Catch statistics are not available until at least six months after the data have been collected. Therefore, NMFS and the Council have no way to determine during any fishing year whether the ACL might be reached, and in-season AMs to prevent the ACL from being exceeded are not possible. However, six months after each fishing year, data would become available for NMFS and the Council to determine whether an ACL in the previous year was exceeded.

If NMFS and the Council determines the ACL was exceeded, the proposed post-season AM could trigger a reduced ACL in the subsequent fishing years. However, this post-season AM is also not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort due to the lack of in-season AMs. This is because spiny lobster catch in 2015 through 2018 is expected to continue to come exclusively from nearshore water where fishing is managed by the Territory of American Samoa, and not by NMFS. Therefore, even if NMFS were to set the ACL to zero in subsequent fishing years, fisher could still continue to fish for spiny lobster in nearshore waters throughout each fishing year in the same manner as under Alternative 1, and as recently occurred in 2011-2013. However, based on historical catches shown in Table 2, the American Samoa lobster fishery is not expected to exceed the OFL proxy of 7,100 lb in any fishing year between 2015-2018.

#### **2.3.1.3 Alternative 3: Specify Council recommended ACL of 4,845 (Preferred)**

Under Alternative 3 (the Council's and NMFS' Preferred Alternative), NMFS would specify an ACL at 4,845 lb of spiny lobster for fishing years 2015 through 2018. This is five percent lower than the ABC of 5,100 lb. Based on the Biomass Augmented Catch-MSY model developed by Sabater and Kleiber (2014), an ACL of 4,845 lb is associated with less than a 35 percent probability of overfishing should the entire ACL be caught (Table 1).

Under this alternative, if the Council determines the most recent three-year average catch for spiny lobster exceeded the specified ACL in any fishing year, NMFS would reduce the ACL by the amount of the overage in the subsequent years. See Section 1.3- Proposed Action for detailed information on how this AM would be triggered.

### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 3 would be the same as the expected fishery outcome under Alternative 2 (Status Quo) for the same reasons explained under Alternative 2.

#### **2.3.1.4 Alternative 4: Specify ACL between 3,300 lb and 4,600 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL that is lower than the preferred alternative (Alternative 3) for fishing years 2015 through 2018. NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward overage adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs could range from 4,600 lb (probability of overfishing of 30 percent should the entire ACL be caught) down to 3,300 lb (probability of overfishing of 15 percent should the entire ACL be caught) (Table 1).

### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 4 would be the same as the expected fishery outcome under Alternative 2 (Status Quo) for the same reasons explained under Alternative 2.

#### **2.3.2 CNMI Spiny Lobster ACL Alternatives**

##### **2.3.2.1 Alternative 1: No ACL and AM Management (No Action)**

Currently, NMFS has not specified an ACL and AM for the CNMI spiny lobster fishery for fishing year 2015. Under this alternative, NMFS would not specify an ACL for the CNMI spiny lobster stock and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act, or the provisions of the Mariana Archipelago FEP and implementing federal regulations which require NMFS to specify an ACL for all stocks and stock complexes..

### **Expected Fishery Outcome**

Although the potential for catch is unlimited without an ACL and AMs, the lack of an ACL or AMs is not expected to result in changes in the conduct of the fishery including gear types used, areas fished, level of catch or effort. This is because even without ACLs and AMs, the spiny lobster fishery in the CNMI is sustainable, based on the best available commercial and scientific information. As shown in Table 6, the highest recorded catch of spiny lobster in the CNMI was 5,610 lb, which occurred in 2005. This level of catch is well below the OFL proxy of 9,200 lb and the MSY of 9,600 lb. Since then, spiny lobster harvest has fluctuated between 600 lb and 4,400 lb, with the average annual catch for the most recent three year period 2011-2013 being 1,115lb. During 2011-13, the fishery remained open year round. Under this alternative, CNMI spiny lobster harvest in 2015 through 2018 is expected to be similar to that described in Alternative 2 and is not expected to exceed the OFL proxy of 9,200 lb.



### **2.3.2.2 Alternative 2: Specify 2014 ACL of 5,500 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would set an ACL of 5,500 lb of spiny lobster for fishing years 2015 through 2018. This is the same ACL specified by NMFS in 2012 (77 FR 6019, February 7, 2012), 2013 (78 FR 15885, March 13, 2013) and 2014 (79 FR 4276, January 27, 2014) and is the status quo alternative. This ACL was developed using a different method than proposed under the preferred alternative (Alternative 3), and is equal to the 75<sup>th</sup> percentile of the long term catch history. For detailed information on the how this ACL was derived, please see the EA for the 2012 ACLs and AMs for crustacean and precious coral fisheries (NMFS 2011). Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 5,500 lb is associated with less than a 5 percent probability of overfishing should the entire ACL be caught (Table 1). This is the NEPA baseline to which all other alternatives are compared.

Under this alternative, if the Council determines the ACL is exceeded, the Council as an AM would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage, or other measures, as appropriate.

#### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 2 would be the same as under Alternative 1 (No action), and is not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort. This is because annual catch in fishing years 2015-2018 is expected to be similar to the average annual catch of 1,115 lb from the most recent three-year period (2011-13), and remain below the ACL proposed under this alternative. Catch statistics are not available until at least six months after the data have been collected. Therefore, NMFS and the Council have no way to determine during any fishing year whether the ACL might be reached, and in-season AMs to prevent the ACL from being exceeded are not possible. However, six months after each fishing year, data would become available for NMFS and the Council to determine whether an ACL in the previous year was exceeded.

If NMFS and the Council determines the ACL was exceeded, the proposed post-season AM could trigger a reduced ACL in the subsequent fishing years. However, this post-season AM is also not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort due to the lack of in-season AMs. This is because spiny lobster catch in 2015 through 2018 is expected to continue to come exclusively from nearshore water where fishing is managed by the Commonwealth of the Northern Mariana Islands, and not by NMFS. Therefore, even if NMFS were to set the ACL to zero in subsequent fishing years, fisher could still continue to fish for spiny lobster in nearshore waters throughout each fishing year in the same manner as under Alternative 1, and as recently occurred in 2011-2013. However, based on historical catches shown in Table 6, the CNMI lobster fishery is not expected to exceed the OFL proxy of 9,200 lb in any fishing year between 2015-2018.

### **2.3.2.3 Alternative 3: Specify Council recommended ACL of 7,410 lb (Preferred)**

Under Alternative 3 (the Council and NMFS Preferred), NMFS would specify an ACL of 7,410 lb of spiny lobster for fishing years 2015 through 2018. This ACL is five percent lower than the ABC of 7,800 lb. Based on the Biomass Augmented Catch-MSY model developed by Sabater and Kleiber (2014), an ACL of 7,410 lb is associated with less than a 30 percent probability of overfishing should the entire ACL be caught (Table 1).

Under this alternative, if the Council determines the most recent three-year average catch for spiny lobster exceeded the specified ACL in any fishing year, NMFS would reduce the ACL by the amount of the overage in the subsequent years. See Section 1.3 - Proposed Action for detailed information on how this AM would be triggered.

#### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 3 would be the same as the expected fishery outcome under Alternative 2 (Status Quo) for the same reasons explained under Alternative 2.

### **2.3.2.4 Alternative 4: Specify ACL between 6,100 lb and 7,100 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL lower than the preferred alternative (Alternative 3) for fishing for fishing years 2015 through 2018. NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward overage adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs could range from 7,100 lb (probability of overfishing of 25% should the entire ACL be caught) down to 6,100 lb (probability of overfishing of 10% should the entire ACL be caught) (Table 1).

#### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 4 would be the same as the expected fishery outcome under Alternative 2 (Status Quo) for the same reasons explained under Alternative 2.

## **2.3.3 Guam Spiny Lobster ACL Alternatives**

### **2.3.3.1 Alternative 1: No ACL and AM Management (No Action)**

Currently, NMFS has not specified an ACL for the Guam spiny lobster fishery for fishing year 2015. Under this alternative, NMFS would not specify an ACL for the Guam spiny lobster stock and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act, or the provisions of the Mariana Archipelago FEP and implementing federal regulations which require NMFS to specify an ACL for all stocks and stock complexes.

### **Expected Fishery Outcome**

Although the potential for catch is unlimited without an ACL and AMs, the lack of an ACL or AMs is not expected to result in changes in the conduct of the fishery including gear types used, areas fished, level of catch or effort. This is because even without ACLs and AMs, the spiny lobster fishery in Guam is currently sustainable, based on the best available commercial and scientific information. As shown in Table 10, spiny lobster catch in Guam exceeded the current MSY estimate of 4,600 lb in 2006 and again in 2007, when respectively, 5,089 lb and 4,725 lb were caught. Since then, spiny lobster harvest has fluctuated between 900 lb and 2,000 lb with the average annual catch for the most recent three year period 2011-2013 being 1,167 lb. During 2011-13, the fishery remained open year round. Under this alternative, Guam spiny lobster harvest in 2015 through 2018 is expected to be similar to that described in Alternative 2 and is not expected to exceed the OFL proxy of 4,300 lb.

#### **2.3.3.2 Alternative 2: Specify 2014 ACL of 2,700 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would set an ACL of 2,700 lb of spiny lobster for fishing years 2015 through 2018. This is the same ACL specified by NMFS in 2012 (77 FR 6019, February 7, 2012), 2013 (78 FR 15885, March 13, 2013) and 2014 (79 FR 4276, January 27, 2014) and is the status quo alternative. This ACL was developed using a different method than proposed under the preferred alternative (Alternative 3) and is equal to the 75<sup>th</sup> percentile of the long term catch history. For detailed information on the how this ACL was derived, please see the EA for the 2012 ACLs and AMs for crustacean and precious coral fisheries (NMFS 2011). Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 2,700 lb is associated with a 25 percent probability of overfishing should the entire ACL be caught (Table 1). This is the NEPA baseline to which all other alternatives are compared.

Under this alternative, if the Council determines the ACL is exceeded, the Council as an AM would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage, or other measures, as appropriate.

### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 2 would be the same as under Alternative 1 (No action), and is not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort. This is because annual catch in fishing years 2015-2018 is expected to be similar to the average annual catch of 1,167 lb from the most recent three-year period (2011-13), and remain below the ACL proposed under this alternative. Catch statistics are not available until at least six months after the data have been collected. Therefore, NMFS and the Council have no way to determine during any fishing year whether the ACL might be reached, and in-season AMs to prevent the ACL from being exceeded are not possible. However, six months after each fishing year, data would become available for NMFS and the Council to determine whether an ACL in the previous year was exceeded.

If NMFS and the Council determines the ACL was exceeded, the proposed post-season AM could trigger a reduced ACL in the subsequent fishing years. However, this post-season AM is also not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort due to the lack of in-season AMs. This is because spiny lobster catch in 2015 through 2018 is expected to continue to come exclusively from nearshore water where fishing is managed by the Territory of Guam, and not by NMFS. Therefore, even if NMFS were to set the ACL to zero in subsequent fishing years, fisher could still continue to fish for spiny lobster in nearshore waters throughout each fishing year in the same manner as under Alternative 1, and as recently occurred in 2011-13. However, based on historical catches shown in Table 10, the American Samoa lobster fishery is not expected to exceed the OFL proxy of 4,300 lb in any fishing year between 2015-2018.

#### **2.3.3.3 Alternative 3: Specify Council recommended ACL of 3,135 lb (Preferred)**

Under Alternative 3 (the Council and NMFS Preferred), NMFS would specify an ACL of 3,135 lb of spiny lobster for fishing years 2015 through 2018. This ACL is 5 percent lower than the ABC of 3,300 lb. Based on the Biomass Augmented Catch-MSY model developed by Sabater and Kleiber (2014), an ACL of 3,135 lb is associated with less than a 35 percent probability of overfishing should the entire ACL be caught (Table 1).

Under this alternative, if the Council determines the most recent three-year average catch for spiny lobster exceeded the specified ACL in any fishing year, NMFS would reduce the ACL by the amount of the overage in the subsequent years. See Section 1.3 - Proposed Action for detailed information on how this AM would be triggered.

#### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 3 would be the same as the expected fishery outcome under Alternative 2 (Status Quo) for the same reasons explained under Alternative 2.

#### **2.3.3.4 Alternative 4: Specify ACL between 2,200 lb and 3,000 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL lower than the preferred alternative (Alternative 3) for fishing for fishing years 2015 through 2018. NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward overage adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs could range from 2,200 lb (probability of overfishing of 15% should the entire ACL be caught) to 3,000 lb (probability of overfishing of 30% should the entire ACL be caught) (Table 1).

#### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 4 would be the same as the expected fishery outcome under Alternative 2 (Status Quo) for the same reasons explained under Alternative 2.

### **2.3.4 Hawaii Spiny Lobster ACL Alternatives**

#### **2.3.4.1 Alternative 1: No ACL and AM Management (No Action)**

Currently, NMFS has not specified an ACL and AM for the MHI spiny lobster fishery for fishing year 2015. Under this alternative, NMFS would not specify an ACL for the MHI spiny lobster stock and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act, or the provisions of the Hawaii Archipelago FEP and implementing federal regulations which require NMFS to specify an ACL for all stocks and stock complexes. This is the no action baseline.

#### **Expected Fishery Outcome**

Although the potential for catch is unlimited without an ACL and AMs, the lack of an ACL or AMs is not expected to result in changes in the conduct of the fishery including gear types used, areas fished, level of catch or effort. This is because even without ACLs and AMs, the spiny lobster fishery in the MHI is sustainable, based on the best available commercial and scientific information. As shown in Table 14, the highest recorded catch of spiny lobster in Hawaii was 14,437 lb, which occurred in 2009. This level of catch is well below the OFL proxy of 19,200 lb and the MSY of 20,400 lb. Since that time, spiny lobster harvest has fluctuated between 9,700 and 12,300 lb with the average annual catch for the most recent three year period 2011-2013 being 10,242 lb. During 2011-13, the fishery remained open year round. Under this alternative, MHI spiny lobster harvest in 2015 through 2018 is expected to be similar to that described under Alternative 2 and is not expected to exceed the OFL proxy of 19,200 lb.

#### **2.3.4.2 Alternative 2: Specify 2014 ACL of 10,000 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would set an ACL of 10,000 lb of spiny lobster for fishing years 2015 through 2018. This is the same ACL specified by NMFS in 2012 (77 FR 6019, February 7, 2012), 2013 (78 FR 15885, March 13, 2013) and 2014 (79 FR 4276, January 27, 2014) and is the status quo alternative. This ACL was developed using a different method than proposed under the preferred alternative (Alternative 3) and is equal to the 75<sup>th</sup> percentile of the long term catch history. For detailed information on the how this ACL was derived, please see the EA for the 2012 ACLs and AMs for crustacean and precious coral fisheries (NMFS 2011). Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 10,000 lb is associated with less than a 5 percent probability of overfishing should the entire ACL be caught (Table 1). This is the NEPA baseline to which all other alternatives are compared.

Under this alternative, if the Council determines the ACL is exceeded, the Council as an AM would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage, or other measures, as appropriate.

### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 2 would be the same as under Alternative 1 (No action), and is not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort. This is because annual catch in fishing years 2015-2018 is expected to be similar to the average annual catch of 10,242 lb from the most recent three-year period (2011-13), and remain below the ACL proposed under this alternative. Catch statistics are not available until at least six months after the data have been collected. Therefore, NMFS and the Council have no way to determine during any fishing year whether the ACL might be reached, and in-season AMs to prevent the ACL from being exceeded are not possible. However, six months after each fishing year, data would become available for NMFS and the Council to determine whether an ACL in the previous year was exceeded.

If NMFS and the Council determines the ACL was exceeded, the proposed post-season AM could trigger a reduced ACL in the subsequent fishing years. However, this post-season AM is also not expected to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch or effort due to the lack of in-season AMs. This is because spiny lobster catch in 2015 through 2018 is expected to continue to come exclusively from nearshore water where fishing is managed by the State of Hawaii, and not by NMFS. Therefore, even if NMFS were set the ACL to zero in subsequent fishing years, fisher could still continue to fish for spiny lobster in nearshore waters throughout each fishing year in the same manner as under Alternative 1, and as recently occurred in 2011-2013. However, based on historical catches shown in Table 2, the American Samoa lobster fishery is not expected to exceed the OFL proxy of 19,200 lb in any fishing year between 2015-2018.

#### **2.3.4.3 Alternative 3: Specify Council recommended ACL of 15,000 lb (Preferred)**

Under Alternative 3 (the Council and NMFS Preferred), NMFS would specify an ACL of 15,000 lb of spiny lobster for fishing years 2015 through 2018. This ACL is 5 percent lower than the ABC of 15,800 lb. Based on the Biomass Augmented Catch-MSY model developed by Sabater and Kleiber (2014), an ACL of 15,000 lb is associated with less than 25 percent probability of overfishing should the entire ACL be caught (Table 1).

Under this alternative, if the Council determines the most recent three-year average catch for spiny lobster exceeded the specified ACL in any fishing year, NMFS would reduce the ACL by the amount of the overage in the subsequent years. See Section 1.3 - Proposed Action for detailed information on how this AM would be triggered.

### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 3 would be the same as the expected fishery outcome under Alternative 2 (Status Quo) for the same reasons explained under Alternative 2.

#### **2.3.4.4 Alternative 4: Specify ACL between 11,700 lb and 14,300 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL lower than the preferred alternative (Alternative 3) for fishing for fishing years 2015 through 2018. NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward overage adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs could range from 14,300 lb (probability of overfishing of 20% should the entire ACL be caught) down to 11,700 lb (probability of overfishing of 5% should the entire ACL be caught) to (Table 1).

#### **Expected Fishery Outcome**

The expected fishery outcome under Alternative 4 would be the same as the expected fishery outcome under Alternative 2 (Status Quo) for the same reasons explained under Alternative 2.

### **2.4 Alternatives Not Considered in Detail**

Although required by the Pacific Remote Island Areas (PRIA) FEP, the Council did not recommend and NMFS does not propose to specify an ACL for spiny lobsters in EEZ waters around the PRIA. This is because current federal regulations (78 FR 32996, June 3, 2013) prohibit all fishing, including non-commercial fishing within 12 nm around each of the seven islands and atolls that comprise the PRIA, and there is no lobster habitat seaward of the 12 nm prohibited fishing area. Therefore, there continues to be a functional equivalent of an ACL of zero for spiny lobsters in the PRIA.

## **3 Affected Environment**

This section describes the affected spiny lobster fisheries and fishery resources, and other biological and physical resources that could be affected by the spiny lobster fisheries in American Samoa, CNMI, Guam, and the MHI. Fishing communities are described as are protected marine areas and fishery administration and enforcement.

### **3.1 American Samoa**

#### **3.1.1 Target and Non-Target Stocks**

The spiny lobster (*Panulirus penicillatus*) is the main lobster species harvested in American Samoa and is primarily speared at night or taken by hand from the outer reef slope by free divers diving for fish exclusively within territorial waters (Coutoures 2003). Because hand harvest and spearfishing are highly selective techniques, there is no bycatch of non-target stocks in this fishery. American Samoa spiny lobsters are not harvested with nets or traps.

Due to the lack of a developed spiny lobster fishery in federal waters, the Council at its 151<sup>st</sup>, 154<sup>th</sup> and 157<sup>th</sup> meetings directed Council staff to conduct analyses to identify coral reef associated species, including spiny lobsters that may meet the criteria for an “ecosystem

component species” designation in accordance with National Standard 1 guidelines of the Magnuson Stevens Act (76 FR 37285, June 27, 2011). Ecosystem component species are species that are generally not harvested or retained in the EEZ and do not require the specification of reference points such as an ACL, but should be monitored and actively managed in the EEZ if necessary. This initiative is not yet completed, so ACLs are required to be specified for American Samoa spiny lobsters despite the lack of a fishery in federal waters.

### 3.1.1.1 Summary of American Samoa Spiny Lobster Catch

Very little is known about American Samoa’s spiny lobster fishery. The total annual catch of spiny lobsters in American Samoa is unknown. However, annual commercial spiny lobster catch and sales over the past 13 years has ranged between 500 lb to 5,388 lb generating an estimated annual revenue between \$2,050 and \$22,791. Since the peak of 5,388 lb in 2006, spiny lobster catches have declined with the average annual catch for the most recent three year period 2011-2013 being 1,757 lb. During 2011-13, the fishery remained open year round. It is unknown if the decline in catches is a result in a decline in stock abundance, or other factors such as changes in fishery data collection methodologies. However, based on the recent MSY estimate of 7,300 lb by Sabater and Kleiber (2014), it does not appear that the decline in catches is a result of over exploitation.

Table 2 provides the estimated commercial catch of spiny lobsters from local data collection programs administered by American Samoa Department of Marine Wildlife Resources as described in Section 2.1.1 and reported in Appendix 3 in Sabater and Kleiber (2014). These values are identical to the estimated commercial catches reported by NMFS WPacFIN [http://www.pifsc.noaa.gov/wpacfin/as/Data/ECL\\_Charts/ae2cmain.htm](http://www.pifsc.noaa.gov/wpacfin/as/Data/ECL_Charts/ae2cmain.htm), accessed 11/3/2014, except where noted.

**Table 2.** Annual estimated commercial catch of spiny lobsters in American Samoa (2000-2013).

| <b>Year</b>           | <b>Estimated Catch<sup>1</sup> (lb)</b> | <b>Estimated Price/lb<sup>2</sup></b> | <b>Estimated Revenue</b> |
|-----------------------|-----------------------------------------|---------------------------------------|--------------------------|
| 2000                  | 1,564                                   | \$3.17                                | \$4,957.88               |
| 2001                  | 1,622                                   | \$3.37                                | \$5,466.14               |
| 2002                  | 943                                     | \$3.42                                | \$3,225.06               |
| 2003                  | 1,221                                   | \$3.60                                | \$4,395.60               |
| 2004                  | 500                                     | \$4.10                                | \$2,050.00               |
| 2005                  | 3,238                                   | \$4.32                                | \$13,988.16              |
| 2006                  | 5,388                                   | \$4.23                                | \$22,791.24              |
| 2007                  | 2,118                                   | \$4.55                                | \$9,636.90               |
| 2008                  | 1,885                                   | \$4.95                                | \$9,330.75               |
| 2009                  | 2,401                                   | \$4.69                                | \$11,260.69              |
| 2010                  | 3,905                                   | \$3.88                                | \$15,151.40              |
| 2011                  | 2,242                                   | \$4.07                                | \$9,124.94               |
| 2012                  | 1,056                                   | \$4.58                                | \$4,836.48               |
| 2013                  | 1,973                                   | \$3.89                                | \$7,674.97               |
| <b>Avg. 2011-2013</b> | <b>1,757</b>                            |                                       |                          |



<sup>1</sup> Source: Appendix 3 in Sabater and Kleiber (2014); Appendix 3 in Sabater and Kleiber (2014) does not include catch data for 2012 and 2013. Therefore, the source of this information is the 2012 and 2013 ACL monitoring report presented at the 160<sup>th</sup> Council meeting in June 2014 (WPFMC 2014).

<sup>2</sup> Source: Estimated prices are from [http://www.pifsc.noaa.gov/wpacfin/as/Pages/as\\_data\\_8.php](http://www.pifsc.noaa.gov/wpacfin/as/Pages/as_data_8.php), accessed 11/12/2014.

### **3.1.2 Fishery Participants and Fishing Communities**

#### **3.1.2.1 Fishing Participants**

Currently, lobster harvest in American Samoa occurs exclusively within territorial waters. However, aside from commercial landing data, there is no information available on American Samoa's territorial lobster fishery in terms of number of participants or level of fishing effort.

#### **3.1.2.2 Fishing Communities**

The Magnuson-Stevens Act defines a fishing community as "...a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities" (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is "...a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops)". National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic impacts on such communities. In 1999, the Council identified American Samoa as a fishing community. The Secretary of Commerce approved this definition on April 19, 2009 (64 FR 19067). Sustainable management of the American Samoa lobster fishery will allow continued harvest of a resource that is important to fishermen, their families, community networks, markets, and visitors for personal consumption (sustenance), supplemental income, and customary exchange.

### **3.1.3 Fishery Administration and Enforcement**

#### **3.1.3.1 Federal Fishery Management Provisions**

Because of the lack of a developed spiny lobster fishery in EEZ waters around American Samoa, there are few fishing regulations at this time. Currently, regulations require any vessel used to fish for lobster to have a federal permit, and fishermen must report all catch. Federal regulations also require fishing vessels to carry federal fishery observers on fishing trips if required to do so by NMFS. Additionally, all fishing, including non-commercial fishing is prohibited within 12 nautical miles from the shoreline Rose Atoll, which is marine national monument (78 FR 32996,

June 3, 2013). Enforcement of federal fishing regulations is conducted by NOAA's Office of Law Enforcement and the U.S. Coast Guard.

In addition to fishing regulations, Federal law also requires the Council-appointed American Samoa FEP plan team to prepare an annual report on the performance of all federal fisheries, including the American Samoa spiny lobster fishery by June 30 of each year. The report must contain, among other things, recommendations for Council action and an assessment of the urgency and effects of such actions. Federal regulations also require NMFS to specify ACLs and AMs for each stock or stock complex of MUS identified in an FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. Monitoring of catch against a specified ACL and implementation of AMs is conducted by NMFS and the Council.

### 3.1.3.2 American Samoa Fishery Management Provisions

In local territorial waters, local laws prohibit harvest of and sale of egg-bearing lobsters, and lobsters that measure less than three and one eighth inches in carapace length. American Samoa has established 14 marine protected areas (MPA) where fishing is strictly regulated or prohibited. These include special management areas, national parks, and community-based MPAs (Wushinich-Mendez and Trappe 2007). Fishing is also regulated within territorial waters designated as the American Samoa National Marine Sanctuary (77 FR 43942, July 26, 2012). Together, these measures help to manage and conserve spiny lobster resources in local territorial waters.

### 3.1.4 Protected Resources

#### 3.1.4.1 Species Protected under the Endangered Species Act (ESA)

A number of protected species are known or believed to occur in the waters around American Samoa. Table 3 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around American Samoa, which may have the potential to interact with the spiny lobster fishery. They include five whales, five sea turtles, a shark, seven species of shallow reef-building corals, and a seabird. There is no critical habitat designated for ESA-listed marine species around American Samoa.

**Table 3.** Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters round the American Samoa Archipelago.

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the American Samoa Archipelago |                       |                                      |                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------|---------------------------------------------------------------------------|
| Common name                                                                                                                                          | Scientific Name       | ESA listing status in American Samoa | Occurrence in American Samoa                                              |
| <b>Listed Sea Turtles</b>                                                                                                                            |                       |                                      |                                                                           |
| Green sea turtle (laumei enaena and fonu)                                                                                                            | <i>Chelonia mydas</i> | Threatened                           | Frequently seen. Nest at Rose Atoll. Known to migrate to feeding grounds. |

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the American Samoa Archipelago</b> |                               |                                             |                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Common name</b>                                                                                                                                          | <b>Scientific Name</b>        | <b>ESA listing status in American Samoa</b> | <b>Occurrence in American Samoa</b>                                                             |
| Hawksbill sea turtle (laumei uga)                                                                                                                           | <i>Eretmochelys imbricata</i> | Endangered                                  | Frequently seen. Nest at Rose Atoll and Swain's Island.                                         |
| Leatherback sea turtle                                                                                                                                      | <i>Dermochelys coriacea</i>   | Endangered                                  | Very rare in American Samoa. One recovered dead in experimental longline fishing.               |
| Olive ridley sea turtle                                                                                                                                     | <i>Lepidochelys olivacea</i>  | Threatened                                  | Uncommon in American Samoa. Three sightings.                                                    |
| South Pacific Loggerhead sea turtle distinct population segment (DPS)                                                                                       | <i>Caretta caretta</i>        | Endangered                                  | Not known to occur in American Samoa.                                                           |
| <b>Listed Marine Mammals</b>                                                                                                                                |                               |                                             |                                                                                                 |
| Blue whale                                                                                                                                                  | <i>Balaenoptera musculus</i>  | Endangered                                  | No known sightings.                                                                             |
| Fin whale                                                                                                                                                   | <i>Balaenoptera physalus</i>  | Endangered                                  | No known sightings.                                                                             |
| Humpback whale (tafola or i'a manu)                                                                                                                         | <i>Megaptera novaeangliae</i> | Endangered                                  | Most common during Sept. and October. Southern humpback whales mate and calve from June – Sept. |
| Sei whale                                                                                                                                                   | <i>Balaenoptera borealis</i>  | Endangered                                  | No known sightings.                                                                             |
| Sperm whale                                                                                                                                                 | <i>Physeter macrocephalus</i> | Endangered                                  | Occurs in all months except. Feb. and March.                                                    |
| <b>Listed Sharks</b>                                                                                                                                        |                               |                                             |                                                                                                 |
| Scalloped hammerhead shark (Indo-West Pacific DPS)                                                                                                          | <i>Sphyrna lewini</i>         | Threatened                                  | Known to occur.                                                                                 |
| <b>Listed Shallow Reef-building Corals</b>                                                                                                                  |                               |                                             |                                                                                                 |
| None                                                                                                                                                        | <i>Acropora globiceps</i>     | Threatened                                  | Depth range is 0 to 8 meters (m).                                                               |
| None                                                                                                                                                        | <i>A. jacquelineae</i>        | Threatened                                  | Depth range is 10 to 35 m.                                                                      |
| None                                                                                                                                                        | <i>A. retusa</i>              | Threatened                                  | Depth range is 1 to 5 m.                                                                        |
| None                                                                                                                                                        | <i>A. speciosa</i>            | Threatened                                  | Depth range is 12 to 40 m, and may occur in mesophotic habitat (<50 m depth).                   |
| None                                                                                                                                                        | <i>Euphyllia paradivisa</i>   | Threatened                                  | Depth range is two to 25 m.                                                                     |

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the American Samoa Archipelago</b> |                                     |                                             |                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------|------------------------------------------------------------------------------|
| <b>Common name</b>                                                                                                                                          | <b>Scientific Name</b>              | <b>ESA listing status in American Samoa</b> | <b>Occurrence in American Samoa</b>                                          |
| None                                                                                                                                                        | <i>Isopora crateriformis</i>        | Threatened                                  | Depth range is 0 to 12 m, and may occur in mesophotic habitat (<50 m depth). |
| None                                                                                                                                                        | <i>Seriatopora aculeata</i>         | Threatened                                  | Depth range is three to 40m.                                                 |
| <b>Listed Sea Birds</b>                                                                                                                                     |                                     |                                             |                                                                              |
| Newell's Shearwater                                                                                                                                         | <i>Puffinus auricularis newelli</i> | Threatened                                  | Uncommon visitor.                                                            |

Source: <http://www.nmfs.noaa.gov/pr/species/esa/listed.htm>, accessed October 31, 2014.

### **Applicable ESA Consultations – American Samoa Crustacean Fisheries**

NMFS has evaluated the potential impact of American Samoa FEP crustacean fisheries on ESA listed species under NMFS jurisdiction and has determined that spiny lobster fisheries that operate in accordance with regulations implementing the American Samoa FEP are not likely to adversely affect ESA-listed species or their habitats. NMFS documented these determinations in letters of concurrence dated September 28, 2007, and April 9, 2015. The basis for this determination is generally due to the rare occurrence of ESA-listed species in EEA waters where federal spiny lobster fisheries are authorized to operate, combined with the low level of crustacean fishing occurring in the EEZ, which makes interactions unlikely to occur.

Newell's shearwater (*Puffinus auricularis newelli*) is listed as threatened under the ESA. Generally known with other shearwaters and petrels as ta'i'o in Samoan, this species breeds only in the main Hawaiian Islands, primarily in burrows on steep forested mountain slopes at medium elevation. Newell's shearwater has been sighted once in American Samoa, and is considered an uncommon visitor to the archipelago (Grant et al 1993). Because its presence in American Samoa is rare, and lobster fishermen do not interact with seabirds, the fishery has no effect on this seabird.

#### **3.1.4.2 Species Protected under the Marine Mammal Protection Act (MMPA)**

Several non-ESA listed whales, dolphins and porpoises occur in waters around American Samoa and are protected under the MMPA. Table 4 provides a list of non-ESA listed marine mammals known to occur or reasonably expected to occur in waters around American Samoa that have the potential to interact with the American Samoa lobster fishery.

**Table 4.** Non ESA-listed marine mammals known to occur or reasonably expected to occur in waters around American Samoa.

| <b>Non ESA-listed marine mammals known to occur or reasonably expected to occur in waters around American Samoa</b> |                                   |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                                  | <b>Scientific Name</b>            |
| Blainville's beaked whale                                                                                           | <i>Mesoplodon densirostris</i>    |
| Bottlenose dolphin                                                                                                  | <i>Tursiops truncatus</i>         |
| Bryde's whale                                                                                                       | <i>Balaenoptera edeni</i>         |
| Common dolphin                                                                                                      | <i>Delphinus delphis</i>          |
| Cuvier's beaked whale                                                                                               | <i>Ziphius cavirostris</i>        |
| Dwarf sperm whale                                                                                                   | <i>Kogia sima</i>                 |
| False killer whale                                                                                                  | <i>Pseudorca crassidens</i>       |
| Fraser's dolphin                                                                                                    | <i>Lagenodelphis hosei</i>        |
| Killer whale                                                                                                        | <i>Orcinus orca</i>               |
| Melon-headed whale                                                                                                  | <i>Peponocephala electra</i>      |
| Minke whale                                                                                                         | <i>Balaenoptera acutorostrata</i> |
| Pygmy killer whale                                                                                                  | <i>Feresa attenuata</i>           |
| Pygmy sperm whale                                                                                                   | <i>Kogia breviceps</i>            |
| Risso's dolphin                                                                                                     | <i>Grampus griseus</i>            |
| Rough-toothed dolphin                                                                                               | <i>Steno bredanensis</i>          |
| Short-finned pilot whale                                                                                            | <i>Globicephala macrorhynchus</i> |
| Spinner dolphin                                                                                                     | <i>Stenella longirostris</i>      |
| Spotted dolphin<br>(Pantropical spotted dolphin)                                                                    | <i>Stenella attenuata</i>         |
| Striped dolphin                                                                                                     | <i>Stenella coeruleoalba</i>      |
| Longman's beaked whale                                                                                              | <i>Indopacetus pacificus</i>      |

Sources: NMFS PIRO and PIFSC unpublished data; Council website: <http://www.wpcouncil.org>

#### **Applicable MMPA Coordination – American Samoa Spiny Lobster Fisheries**

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that classifies U.S. commercial fisheries into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. A Category 1 fishery is one with frequent incidental mortality and serious injury of marine mammals. A Category 2 fishery is one with occasional incidental mortality and serious injury of marine mammals. A Category 3 fishery is one with a remote likelihood or no known incidental mortality and serious injury of marine mammals.

On December 29, 2014, (79 FR 77919), NMFS published the final LOF for 2014 which classified Hawaii spearfishing, Hawaii lobster diving, and Hawaii lobster trap fishery as a Category 3 fishery under Section 118 of the MMPA. To date, NMFS has not included any spiny lobster fishery of American Samoa in the annual LOF. There is no information available

regarding marine mammal interactions in the spiny lobster fishery of American Samoa as no interactions have been reported or observed. However, because spiny lobsters in American Samoa are harvested by spear or by hand, it is reasonable to assume that the American Samoa lobster fishery would be comparable to the Hawaii spearfishing and Hawaii lobster diving fisheries and would have a remote likelihood of incidental mortality and serious injury of marine mammals. Participants in Category 3 fisheries are not required to register in the Marine Mammal Authorization Program prior to engaging in commercial fishing.

### 3.1.4.3 Seabirds of American Samoa

Seabirds found on and around American Samoa that could potentially interact with fisheries are listed in Table 5. However, because lobsters are harvested by hand or by spear, there have been no known interactions between the American Samoa lobster fishery and seabirds.

**Table 5.** Seabirds occurring in American Samoa.

| <b>Resident seabirds in American Samoa</b> |                                |                                                              |
|--------------------------------------------|--------------------------------|--------------------------------------------------------------|
| <b>Samoa name</b>                          | <b>Common name</b>             | <b>Scientific name</b>                                       |
| ta'i'o                                     | Wedge-tailed shearwater        | <i>Puffinus pacificus</i>                                    |
| ta'i'o                                     | Audubon's shearwater           | <i>Puffinus lherminieri</i>                                  |
| ta'i'o                                     | Christmas shearwater           | <i>Puffinus nativitatis</i>                                  |
| ta'i'o                                     | Tahiti petrel                  | <i>Pterodroma rostrata</i>                                   |
| ta'i'o                                     | Herald petrel                  | <i>Pterodroma heraldica</i>                                  |
| ta'i'o                                     | Collared petrel                | <i>Pterodroma brevipes</i>                                   |
| fua'o                                      | Red-footed booby               | <i>Sula sula</i>                                             |
| fua'o                                      | Brown booby                    | <i>Sula leucogaster</i>                                      |
| fua'o                                      | Masked booby                   | <i>Sula dactylatra</i>                                       |
| tava'esina                                 | White-tailed tropicbird        | <i>Phaethon lepturus</i>                                     |
| tava'e'ula                                 | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>                                   |
| atafa                                      | Great frigatebird              | <i>Fregata minor</i>                                         |
| atafa                                      | Lesser frigatebird             | <i>Fregata ariel</i>                                         |
| gogouli                                    | Sooty tern                     | <i>Onychoprion fuscatus</i> ; formerly <i>Sterna fuscata</i> |
| gogo                                       | Brown noddy                    | <i>Anous stolidus</i>                                        |
| gogo                                       | Black noddy                    | <i>Anous minutus</i>                                         |
| laia                                       | Blue-gray noddy                | <i>Procelsterna cerulea</i>                                  |
| manu sina                                  | White tern / Common fairy-tern | <i>Gygis alba</i>                                            |

Note: The ta'i'o, or Newell's shearwater is an uncommon visitor in American Samoa.

Source: WPFMC 2009a; and <http://www.birdlife.org/datazone/species/factsheet/22694740>: retrieved 12/8/14.

## **3.2 CNMI**

### **3.2.1 Target and Non-Target Stock**

The CNMI lobster fishery primarily targets spiny lobsters by hand, with scuba or by free diving. This fishery occurs exclusively within three nautical miles of the inhabited southern islands of Saipan, Tinian, and Rota although, anecdotal information indicates that on the reef surrounding Farallon de Medinilla, bottomfish fishermen have dove for lobsters in the past (WPFMC 2011; NMFS and WPFMC 2009b). Because hand harvest is a highly selective technique, there is no bycatch of non-target stocks in this fishery. CNMI spiny lobsters are not harvested with nets or traps.

A low level of non-commercial harvest of spiny lobsters could occur in EEZ waters surrounding the three northernmost islands of the archipelago within the Islands Unit of the Marianas Trench Marine National Monument. Federal regulations require fishers to obtain a Monument permit and report all catch within the Islands Unit. However, no fishing has occurred since regulations were implemented in 2013.

Due to the lack of a developed spiny lobster fishery in federal waters, the Council at its 151<sup>st</sup>, 154<sup>th</sup> and 157<sup>th</sup> meetings directed Council staff to conduct analyses to identify coral reef associated species, including spiny lobsters that may meet the criteria for an “ecosystem component species” designation in accordance with National Standard 1 guidelines of the Magnuson Stevens Act (76 FR 37285, June 27, 2011). Ecosystem component species are species that are generally not harvested or retained in the EEZ and do not require the specification of reference points such as an ACL, but should be monitored and actively managed in the EEZ if necessary. This initiative is not yet completed, so ACLs are required to be specified for CNMI spiny lobsters despite the lack of a fishery in federal waters.

#### **3.2.1.1 Summary of CNMI Spiny Lobster Catch**

Very little is known about CNMI’s crustacean fisheries. The annual total catch of spiny lobsters in the CNMI is unknown. However, annual commercial spiny lobster catch and sales over the past 13 years has ranged between 728 lb and 5,610 lb generating an estimated annual revenue between \$4,572 and \$28,106. Since the peak of 5,610 lb in 2005, spiny lobster catches have declined with the average catch for the most recent three year period 2011-2013 being 1,115 lb. During 2011-13, the fishery remained open year round. It is unknown if the decline in catches is a result in a decline in stock abundance or other factors such as changes in fishery data collection methodologies. However, based on the recent MSY estimate of 9,600 lb by Sabater and Kleiber (2014), it does not appear that the decline in catches is a result of overexploitation. Table 6 provides the estimated commercial catch of CNMI spiny lobsters from local data collection programs administered by the CNMI Division of Fish and Wildlife as reported by NMFS WPacFIN.

**Table 6.** Annual estimated commercial catch of spiny lobsters in the CNMI (2000-2013).

| <b>Year</b>           | <b>Estimated Catch<sup>1</sup> (lb)</b> | <b>Estimated Price/lb<sup>2</sup></b> | <b>Estimated Revenue</b> |
|-----------------------|-----------------------------------------|---------------------------------------|--------------------------|
| 2000                  | 3,967                                   | \$5.70                                | \$22,611.90              |
| 2001                  | 4,732                                   | \$5.76                                | \$27,256.32              |
| 2002                  | 4,350                                   | \$5.71                                | \$24,838.50              |
| 2003                  | 728                                     | \$6.28                                | \$4,571.84               |
| 2004                  | 2,947                                   | \$6.58                                | \$19,391.26              |
| 2005                  | 5,610                                   | \$5.01                                | \$28,106.10              |
| 2006                  | 4,391                                   | \$4.90                                | \$21,515.90              |
| 2007                  | 3,008                                   | \$5.31                                | \$15,972.48              |
| 2008                  | 2,259                                   | \$5.26                                | \$11,882.34              |
| 2009                  | 881                                     | \$4.98                                | \$4,387.38               |
| 2010                  | 658                                     | \$4.87                                | \$3,204.46               |
| 2011                  | 810                                     | \$6.49                                | \$5,256.90               |
| 2012                  | 0                                       | No data                               | No data                  |
| 2013                  | 1,420                                   | No data                               | No data                  |
| <b>Avg. 2011-2013</b> | <b>1,115</b>                            |                                       |                          |

<sup>1</sup> Source: [http://www.pifsc.noaa.gov/wpacfin/cnmi/Data/Landings\\_Charts/ce3g.htm](http://www.pifsc.noaa.gov/wpacfin/cnmi/Data/Landings_Charts/ce3g.htm), accessed 11/3/2014; NMFS WPacFIN website reports a catch of zero spiny lobster for 2012 and 2013 indicating either no spiny lobster catch for that year, no catches were intercepted or reported from local fishery data collection programs, or the data are not available. Therefore, the source of data for 2012 and 2013 is from the ACL monitoring report presented at the 160<sup>th</sup> Council meeting in June 2014 (WPFMC 2014).

<sup>2</sup> [http://www.pifsc.noaa.gov/wpacfin/cnmi/Pages/cnmi\\_data\\_2.php](http://www.pifsc.noaa.gov/wpacfin/cnmi/Pages/cnmi_data_2.php), accessed 11/12/2014.

### **3.2.2 Fishery Participants and Fishing Communities**

#### **3.2.2.1 Fishery Participants**

Currently, lobster harvest in the CNMI occurs exclusively within territorial waters. However aside from catch data, there is no information available on CNMI's territorial lobster fishery in terms of number of participants or level of fishing effort. NMFS has not issued any permits authorizing non-commercial fishing in federal waters of the Islands Unit of the Mariana Trench Marine National Monument.

#### **3.2.2.2 Fishing Communities**

The Magnuson-Stevens Act defines a fishing community as "...a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities" (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is "...a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and



industries (for example, boatyards, ice suppliers, tackle shops)”. National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic impacts on such communities. In 1999, the Council identified the CNMI as a fishing community. The Secretary of Commerce approved this definition on April 19, 2009 (64 FR 19067). Sustainable management of the CNMI lobster fishery will allow continued harvest of a resource that is important to fishermen, their families, community networks, markets, and visitors for personal consumption (sustenance), supplemental income, and customary exchange.

### **3.2.3 Fishery Administration and Enforcement**

#### **3.2.3.1 Federal Fishery Management Provisions**

Because of the lack of a developed spiny lobster fishery in EEZ waters around the CNMI, there are few fishing regulations at this time. Currently, regulations require any vessel used to fish for lobster to have a federal permit, and fishermen must report all catch. As noted above, federal regulations also require fishers to obtain a Monument permit and report all catch within the Islands Unit of the Mariana Trench Marine National Monument. Federal regulations also require fishing vessels to carry federal fishery observers on fishing trips if required to do so by NMFS. Enforcement of federal fishing regulations is conducted by NOAA’s Office of Law Enforcement and the U.S. Coast Guard.

In addition to fishing regulations, Federal law also requires the Council-appointed Mariana FEP plan team to prepare an annual report on the performance of all federal fisheries, including the CNMI spiny lobster fishery by June 30 of each year. The report must contain, among other things, recommendations for Council action and an assessment of the urgency and effects of such actions. Federal regulations also require NMFS to specify ACLs and AMs for each stock or stock complex of MUS identified in an FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. Monitoring of catch against a specified ACL and implementation of AMs is conducted by NMFS and the Council.

#### **3.2.3.2 CMMI Fishery Management Provisions**

In local territorial waters, local laws allow lobster harvest by hand only and prohibit harvest of eggbearing lobsters, and lobsters that measure less than three inches in carapace length. In addition, fishing is prohibited in several no-take marine protected areas including Managaha Marine Conservation Area on Saipan, Bird Island and Forbidden Island Sanctuaries on Saipan, and Sasanhaya Bay Fish Reserve on Rota (Wushinich-Mendez and Trappe 2007). Together, these measures help to manage and conserve spiny lobster resources in local territorial waters.

### 3.2.4 Protected Resources

#### 3.2.4.1 Species Protected under the Endangered Species Act (ESA)

A number of protected species are reported from the waters around the Mariana Islands. Table 7 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around the Mariana Archipelago, including the CNMI, which may have the potential to interact with fisheries. Listed species include five whales, five sea turtles, a shark, three species of shallow reef-building corals and a seabird. There is no critical habitat designated for ESA-listed marine species around the CNMI.

**Table 7.** Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI).

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                               |                                       |                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Common name</b>                                                                                                                                          | <b>Scientific Name</b>        | <b>ESA listing status in the CNMI</b> | <b>Occurrence in the CNMI</b>                                                                                             |
| <b>Listed Sea Turtles</b>                                                                                                                                   |                               |                                       |                                                                                                                           |
| Green sea turtle                                                                                                                                            | <i>Chelonia mydas</i>         | Threatened                            | Most common turtle in the Mariana Archipelago. Foraging and minor nesting confirmed on Guam, Rota, Tinian and Saipan.     |
| Hawksbill sea turtle                                                                                                                                        | <i>Eretmochelys imbricata</i> | Endangered                            | Small population foraging around Guam and suspected low level around southern islands of CNMI. Low level nesting on Guam. |
| Leatherback sea turtle                                                                                                                                      | <i>Dermochelys coriacea</i>   | Endangered                            | Occasional sightings around Guam. Not known to what extent they are present around Guam and CNMI                          |
| Olive ridley sea turtle                                                                                                                                     | <i>Lepidochelys olivacea</i>  | Threatened                            | Range across Pacific: not confirmed in the Mariana Archipelago                                                            |
| North Pacific loggerhead sea turtle DPS                                                                                                                     | <i>Caretta caretta</i>        | Endangered                            | No known reports of loggerhead turtles in waters around the Mariana Archipelago                                           |
| <b>Listed Marine Mammals</b>                                                                                                                                |                               |                                       |                                                                                                                           |
| Blue whale                                                                                                                                                  | <i>Balaenoptera musculus</i>  | Endangered                            | Extremely rare                                                                                                            |
| Fin whale                                                                                                                                                   | <i>Balaenoptera physalus</i>  | Endangered                            | Infrequent sightings.                                                                                                     |
| Humpback whale                                                                                                                                              | <i>Megaptera novaeangliae</i> | Endangered                            | Infrequent sightings. Winter in the CNMI.                                                                                 |

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                                     |                                       |                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------|-----------------------------------------------------------------|
| <b>Common name</b>                                                                                                                                          | <b>Scientific Name</b>              | <b>ESA listing status in the CNMI</b> | <b>Occurrence in the CNMI</b>                                   |
| Sei whale                                                                                                                                                   | <i>Balaenoptera borealis</i>        | Endangered                            | Infrequent sightings.                                           |
| Sperm whale                                                                                                                                                 | <i>Physeter macrocephalus</i>       | Endangered                            | Regularly sighted; most abundant large cetaceans in the region. |
| <b>Listed Sharks</b>                                                                                                                                        |                                     |                                       |                                                                 |
| Scalloped hammerhead shark (Indo-West Pacific DPS)                                                                                                          | <i>Sphyrna lewini</i>               | Threatened                            | Known to occur.                                                 |
| <b>Listed Shallow Reef-building Corals</b>                                                                                                                  |                                     |                                       |                                                                 |
| None                                                                                                                                                        | <i>Acropora globiceps</i>           | Threatened                            | Depths range is 0 to 8 m                                        |
| None                                                                                                                                                        | <i>A. retusa</i>                    | Threatened                            | Depth range is one to five meters                               |
| None                                                                                                                                                        | <i>Seriatopora aculeata</i>         | Threatened                            | Depth range is three to 40 meters                               |
| <b>Listed Sea Birds</b>                                                                                                                                     |                                     |                                       |                                                                 |
| Newell's Shearwater                                                                                                                                         | <i>Puffinus auricularis newelli</i> | Threatened                            | Rare visitor                                                    |

Source: <http://www.nmfs.noaa.gov/pr/species/esa/listed.htm>, accessed October 31, 2014.

### **Applicable ESA Consultations – CNMI Crustacean Fisheries**

NMFS has evaluated the potential impact of Mariana FEP crustacean fisheries on ESA listed species and has determined that spiny lobster fisheries that operate in accordance with regulations implementing the Mariana FEP are not likely to adversely affect ESA-listed species or their habitats. NMFS documented these determinations in letters of concurrence dated September 28, 2007 and April 29, 2015. The basis for this determination is generally due to the rare occurrence of ESA-listed species in EEA waters where federal spiny lobster fisheries are authorized to operate, combined with the low level of crustacean fishing occurring in the EEZ, which makes interactions unlikely to occur.

Newell's shearwater (*Puffinus auricularis newelli*) is listed as threatened under the ESA. This species breeds only in the main Hawaiian Islands, primarily in burrows on steep forested mountain slopes at medium elevation. Newell's shearwater has been sighted in the Marianas, but is considered an uncommon visitor to the archipelago (Drahos 1977; Jouanin 1956). Because its presence in the Mariana Archipelago is rare, and lobster fishermen do not interact with seabirds, the fishery has no effect on this seabird.

### 3.2.4.2 Species Protected under the Marine Mammal Protection Act (MMPA)

Several non ESA listed whales, dolphins, and porpoises occur in waters around the CNMI and are protected under the MMPA. Table 8 provides a list of non-ESA listed marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago that have the potential to interact with the CNMI crustacean fishery.

**Table 8.** Non ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI).

| <b>Non ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                                   |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                                                  | <b>Scientific Name</b>            |
| Blainville's beaked whale                                                                                                           | <i>Mesoplodon densirostris</i>    |
| Bottlenose dolphin                                                                                                                  | <i>Tursiops truncatus</i>         |
| Bryde's whale                                                                                                                       | <i>Balaenoptera edeni</i>         |
| Common dolphin                                                                                                                      | <i>Delphinus delphis</i>          |
| Cuvier's beaked whale                                                                                                               | <i>Ziphius cavirostris</i>        |
| Dwarf sperm whale                                                                                                                   | <i>Kogia sima</i>                 |
| False killer whale                                                                                                                  | <i>Pseudorca crassidens</i>       |
| Fraser's dolphin                                                                                                                    | <i>Lagenodelphis hosei</i>        |
| Killer whale                                                                                                                        | <i>Orcinus orca</i>               |
| Longman's beaked whale                                                                                                              | <i>Indopacetus pacificus</i>      |
| Melon-headed whale                                                                                                                  | <i>Peponocephala electra</i>      |
| Minke whale                                                                                                                         | <i>Balaenoptera acutorostrata</i> |
| Northern elephant Seal                                                                                                              | <i>Mirounga angustirostris</i>    |
| Pilot whale                                                                                                                         | <i>Globicephala malaena</i>       |
| Pygmy killer whale                                                                                                                  | <i>Feresa attenuata</i>           |
| Pygmy sperm whale                                                                                                                   | <i>Kogia breviceps</i>            |
| Risso's dolphin                                                                                                                     | <i>Grampus griseus</i>            |
| Rough-toothed dolphin                                                                                                               | <i>Steno bredanensis</i>          |
| Short-finned pilot whale                                                                                                            | <i>Globicephala macrorhynchus</i> |
| Spinner dolphin                                                                                                                     | <i>Stenella longirostris</i>      |
| Spotted dolphin                                                                                                                     | <i>Stenella attenuata</i>         |
| Striped dolphin                                                                                                                     | <i>Stenella coeruleoalba</i>      |

Source: Eldredge 2003; Randall et al. 1975; Council website: <http://www.wpcouncil.org>

### **Applicable MMPA Coordination – CNMI Spiny Lobster Fisheries**

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that classifies U.S. commercial fisheries into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. A Category 1

fishery is one with frequent incidental mortality and serious injury of marine mammals. A Category 2 fishery is one with occasional incidental mortality and serious injury of marine mammals. A Category 3 fishery is one with a remote likelihood or no known incidental mortality and serious injury of marine mammals.

On December 29, 2014, (79 FR 77919), NMFS published the final LOF for 2014 which classified Hawaii spearfishing, Hawaii lobster diving, and Hawaii lobster trap fishery as a Category 3 fishery under Section 118 of the MMPA. To date, NMFS has not included any spiny lobster fishery of the CNMI in the annual LOF. There is no information available regarding marine mammal interactions in the spiny lobster fishery of the CNMI as no interactions have been reported or observed. However, because spiny lobsters in the CNMI are harvest by hand, it is reasonable to assume that the CNMI lobster fishery would be comparable to the Hawaii lobster diving fishery and would have a remote likelihood of incidental mortality and serious injury of marine mammals. Participants in Category 3 fisheries are not required to register in the Marine Mammal Authorization Program prior to engaging in commercial fishing.

### 3.2.4.3 Seabirds of the Mariana Archipelago

The following seabirds in Table 9 are considered residents of Mariana Archipelago: wedge-tailed shearwater (*Puffinus pacificus*), white-tailed tropicbird (*Phaethon lepturus*), red-tailed tropicbird (*Phaethon rubricauda*), masked booby (*Sula dactylatra*), brown booby (*Sula leucogaster*), red-footed booby (*Sula sula*), white tern (*Gygis alba*), sooty tern (*Onychoprion fuscatus*; formerly *Sterna fuscata*), brown noddy (*Anous stolidus*), black noddy (*Anous minutus*), and the great frigatebird (*Fregata minor*).

The following seabirds in Table 9 have been sighted and are considered visitors (some more common than others) to the Mariana Archipelago: short-tailed shearwater (*Puffinus tenuirostris* - common visitor), Newell's shearwater (*Puffinus auricularis*- rare visitor), Audubon's shearwater (*Puffinus iherminieri*), Leach's storm-petrel (*Oceanodroma leucorhoa*), and the Matsudaira's storm-petrel (*Oceanodroma matsudairae*). Of these, only the Newell's shearwater is listed (as threatened) under the ESA. There have been no sightings of the endangered short-tailed albatross (*Phoebastria albatrus*) in the CNMI although CNMI is within the range of the species' largest breeding colony at Torishima, Japan (WPFMC 2009b). Because lobsters are harvested by hand, with scuba or by free diving, there are no known interactions between seabirds and Mariana Archipelago lobster fisheries (WPFMC 2009b).

**Table 9.** Seabirds occurring in the Mariana Archipelago (CNMI).

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                         |                                                                   |
|-------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------|
|                                                                                                             | Common name             | Scientific name                                                   |
| Vr                                                                                                          | Newell's shearwater     | <i>Puffinus auricularis newelli</i> (ESA:Threatened) rare visitor |
| R                                                                                                           | Wedge-tailed shearwater | <i>Puffinus pacificus</i>                                         |
| V                                                                                                           | Audubon's shearwater    | <i>Puffinus iherminieri</i>                                       |
| Vc                                                                                                          | Short-tailed shearwater | <i>Puffinus tenuirostris</i> (common visitor)                     |

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                                |                                                              |
|-------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------|
|                                                                                                             | Common name                    | Scientific name                                              |
| V                                                                                                           | Leach's storm-petrel           | <i>Oceanodroma leucorhoa</i>                                 |
| V                                                                                                           | Matsudaira's storm-petrel      | <i>Oceanodroma matsudairae</i>                               |
| R                                                                                                           | Red-footed booby               | <i>Sula sula</i>                                             |
| R                                                                                                           | Brown booby                    | <i>Sula leucogaster</i>                                      |
| R                                                                                                           | Masked booby                   | <i>Sula dactylatra</i>                                       |
| R                                                                                                           | White-tailed tropicbird        | <i>Phaethon lepturus</i>                                     |
| R                                                                                                           | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>                                   |
| R                                                                                                           | Great frigatebird              | <i>Fregata minor</i>                                         |
| R                                                                                                           | Sooty tern                     | <i>Onychoprion fuscatus</i> ; formerly <i>Sterna fuscata</i> |
| R                                                                                                           | Brown noddy                    | <i>Anous stolidus</i>                                        |
| R                                                                                                           | Black noddy                    | <i>Anous minutus</i>                                         |
| R                                                                                                           | White tern / Common fairy-tern | <i>Gygis alba</i>                                            |

Source: WPFMC 2009b.

### 3.3 Guam

#### 3.3.1 Target and Non-Target Stock

Fishing for lobsters around Guam occurs by hand exclusively in locally-managed territorial waters, usually in a subsistence or recreational context. Because hand harvest is a highly selective technique, there is no bycatch of non-target stocks in this fishery. Guam spiny lobsters are not harvested with nets or traps.

Due to the lack of a developed spiny lobster fishery in federal waters, the Council at its 151<sup>st</sup>, 154<sup>th</sup> and 157<sup>th</sup> meetings directed Council staff to conduct analyses to identify coral reef associated species, including spiny lobsters that may meet the criteria for an “ecosystem component species” designation in accordance with National Standard 1 guidelines of the Magnuson Stevens Act (76 FR 37285, June 27, 2011). Ecosystem component species are species that are generally not harvested or retained in the EEZ and do not require the specification of reference points such as an ACL, but should be monitored and actively managed in the EEZ if necessary. This initiative is not yet completed, so ACLs are required to be specified for Guam spiny lobsters despite the lack of a fishery in federal waters.

##### 3.3.1.1 Summary of Guam Spiny Lobster Catch

Very little is known about Guam's crustacean fisheries. The annual total catch of spiny lobsters in Guam is unknown. However, annual commercial catch and sales over the past 13 years has ranged between 611 lb to 5,089 lb generating an estimated annual revenue between \$2,794 and \$18,829. The current MSY estimate for Guam spiny lobster is 4,600 lb. This level of catch was exceeded twice in between 2000 and 2013; once in 2006 and again in 2007 when 5,089 lb and 4,725 lb were respectively caught. Since then, spiny lobster catches have declined with the average annual catch for the most recent three year period 2011-2013 being 1,167 lb. During

2011-13, the fishery remained open year round. It is unknown if the decline in catches is a result in a decline in stock abundance or other factors such as changes in fishery data collection methodologies. Whatever the cause, catches since 2007 are below the recent MSY estimate of 4,600 lb by Sabater and Kleiber (2014), and indicate the fishery is currently sustainable.

Table 10 provides the estimated commercial catch of Guam spiny lobsters from local data collection programs administered by the Guam Division of Aquatic and Wildlife Resources as described in Section 2.1.1 and reported in Appendix 3 in Sabater and Kleiber (2014). These values are identical to the estimated commercial catches reported by NMFS WPacFIN [http://www.pifsc.noaa.gov/wpacfin/guam/dawr/Pages/gdawr\\_data\\_3.php](http://www.pifsc.noaa.gov/wpacfin/guam/dawr/Pages/gdawr_data_3.php), accessed 11/3/2014, except where noted.

**Table 10.** Annual estimated commercial catch of spiny lobsters in Guam (2000-2013).

| <b>Year</b>           | <b>Estimated Catch<sup>1</sup> (lb)</b> | <b>Estimated Price/lb<sup>2</sup></b> | <b>Estimated Revenue</b> |
|-----------------------|-----------------------------------------|---------------------------------------|--------------------------|
| 2000                  | 3,371                                   | \$3.87                                | \$13,045.77              |
| 2001                  | 1,296                                   | \$3.83                                | \$4,963.68               |
| 2002                  | 1,527                                   | \$3.63                                | \$5,543.01               |
| 2003                  | 2,276                                   | \$3.28                                | \$7,465.28               |
| 2004                  | 2,013                                   | \$3.68                                | \$7,407.84               |
| 2005                  | 2,873                                   | \$3.40                                | \$9,768.20               |
| 2006                  | 5,089                                   | \$3.70                                | \$18,829.30              |
| 2007                  | 4,725                                   | \$3.57                                | \$16,868.25              |
| 2008                  | 1,168                                   | \$3.71                                | \$4,333.28               |
| 2009                  | 1,144                                   | \$3.70                                | \$4,232.80               |
| 2010                  | 1,093                                   | \$3.67                                | \$4,011.31               |
| 2011                  | 1,980                                   | \$3.72                                | \$7,365.60               |
| 2012                  | 911                                     | \$3.70                                | \$3,710.70               |
| 2013                  | 611                                     | \$3.73                                | \$2,794.03               |
| <b>Avg. 2011-2013</b> | <b>1,167</b>                            |                                       |                          |

<sup>1</sup>Source: Appendix 3 in Sabater and Kleiber (2014); Appendix 3 in Sabater and Kleiber (2014) does not include catch data for 2012 and 2013. Therefore, the source of this information is the 2012 and 2013 ACL monitoring report presented at the 160<sup>th</sup> Council meeting in June 2014 (WPFMC 2014).

<sup>2</sup> [http://www.pifsc.noaa.gov/wpacfin/guam/dawr/Pages/gdawr\\_data\\_3.php](http://www.pifsc.noaa.gov/wpacfin/guam/dawr/Pages/gdawr_data_3.php), accessed 11/12/2014.

### 3.3.2 Fishery Participants and Fishing Communities

#### 3.3.2.1 Fishery Participants

Currently, lobster harvest in Guam occurs exclusively within territorial waters. However, aside from catch data, there is no information available on Guam's territorial lobster fishery in terms of number of participants or level of fishing effort.

### **3.3.2.2 Fishing Communities**

The Magnuson-Stevens Act defines a fishing community as “...a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities” (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is “...a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops).” National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic impacts on such communities. In 1999, the Council identified Guam as a fishing community. The Secretary of Commerce approved this definition on April 19, 2009 (64 FR 19067). Sustainable management of the Guam lobster fishery will allow continued harvest of a resource that is important to fishermen, their families, community networks, markets, and visitors for personal consumption (sustenance), supplemental income, and customary exchange.

### **3.3.3 Fishery Administration and Enforcement**

#### **3.3.3.1 Federal Fishery Management Provisions**

Because of the lack of a developed spiny lobster fishery in EEZ waters around Guam, there are few fishing regulations at this time. Currently, regulations require any vessel used to fish for lobster to have a federal permit, and fishermen must report all catch. Federal regulations also require fishing vessels to carry federal fishery observers on fishing trips if required to do so by NMFS. Enforcement of federal fishing regulations is conducted by NOAA’s Office of Law Enforcement and the U.S. Coast Guard.

In addition to fishing regulations, Federal law also requires the Council-appointed Mariana FEP plan team to prepare an annual report on the performance of all federal fisheries, including the Guam spiny lobster fishery by June 30 of each year. The report must contain, among other things, recommendations for Council action and an assessment of the urgency and effects of such actions. Federal regulations also require NMFS to specify ACLs and AMs for each stock or stock complex of MUS identified in an FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. Monitoring of catch against a specified ACL and implementation of AMs is conducted by NMFS and the Council.

#### **3.3.3.2 Guam Fishery Management Provisions**

In local territorial waters, it is illegal to spear, puncture or impale spiny lobsters and local laws prohibit harvest of egg-bearing lobsters, and lobsters that measure less than three and one half



inches in carapace length. In addition, fishing is prohibited in five no-take marine preserves including the Pati Point Preserve, Tumon Bay Preserve, Sasa Bay Preserve, and the Achang Reef Flat Preserve (Wushinich-Mendez and Trappe 2007). Together, these measures help to manage and conserve spiny lobster resources in local territorial waters.

### 3.3.4 Protected Resources

#### 3.3.4.1 Species Protected under the Endangered Species Act (ESA)

A number of protected species are reported from the waters around the Guam. Table 11 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around the Mariana Archipelago, including Guam, which may have the potential to interact with fisheries. Listed species include five whales, five sea turtles, a shark, several species of shallow reef-building corals and a seabird. There is no critical habitat designated for ESA-listed marine species around Guam.

**Table 11.** Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam).

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam) |                               |                            |                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Common name                                                                                                                                          | Scientific Name               | ESA listing status in Guam | Occurrence in Guam                                                                                                        |
| <b>Listed Sea Turtles</b>                                                                                                                            |                               |                            |                                                                                                                           |
| Green sea turtle<br>Haggan Betde                                                                                                                     | <i>Chelonia mydas</i>         | Threatened                 | Most common turtle in the Mariana Archipelago. Foraging and minor nesting confirmed on Guam, Rota, Tinian and Saipan.     |
| Hawksbill sea turtle<br>Haggan Karai                                                                                                                 | <i>Eretmochelys imbricata</i> | Endangered                 | Small population foraging around Guam and suspected low level around southern islands of CNMI. Low level nesting on Guam. |
| Leatherback sea turtle                                                                                                                               | <i>Dermochelys coriacea</i>   | Endangered                 | Occasional sightings around Guam. Not known to what extent they are present around Guam and CNMI                          |
| Olive ridley sea turtle                                                                                                                              | <i>Lepidochelys olivacea</i>  | Threatened                 | Range across Pacific: not confirmed in the Mariana Archipelago                                                            |
| North Pacific Loggerhead sea turtle DPS                                                                                                              | <i>Caretta caretta</i>        | Endangered                 | No known reports of loggerhead turtles in waters around the Mariana Archipelago.                                          |

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam) |                                     |                            |                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------|-------------------------------------------|
| Common name                                                                                                                                          | Scientific Name                     | ESA listing status in Guam | Occurrence in Guam                        |
| <b>Listed Marine Mammals</b>                                                                                                                         |                                     |                            |                                           |
| Blue whale                                                                                                                                           | <i>Balaenoptera musculus</i>        | Endangered                 | Extremely rare                            |
| Fin whale                                                                                                                                            | <i>Balaenoptera physalus</i>        | Endangered                 | Infrequent sightings.                     |
| Humpback whale                                                                                                                                       | <i>Megaptera novaeangliae</i>       | Endangered                 | Infrequent sightings. Winter in the CNMI. |
| Sei whale                                                                                                                                            | <i>Balaenoptera borealis</i>        | Endangered                 | Infrequent sightings.                     |
| Sperm whale                                                                                                                                          | <i>Physeter macrocephalus</i>       | Endangered                 | Regularly sighted                         |
| <b>Listed Sharks</b>                                                                                                                                 |                                     |                            |                                           |
| Scalloped hammerhead shark (Indo-West Pacific DPS)                                                                                                   | <i>Sphyrna lewini</i>               | Threatened                 | Known to occur.                           |
| <b>Listed Shallow Reef-building Corals</b>                                                                                                           |                                     |                            |                                           |
| None                                                                                                                                                 | <i>Acropora globiceps</i>           | Threatened                 | Depths range is 0 to 8 m                  |
| None                                                                                                                                                 | <i>A. retusa</i>                    | Threatened                 | Depth range is one to five meters         |
| None                                                                                                                                                 | <i>Seriatopora aculeata</i>         | Threatened                 | Depth range is three to 40 meters         |
| <b>Listed Sea Birds</b>                                                                                                                              |                                     |                            |                                           |
| Newell's Shearwater                                                                                                                                  | <i>Puffinus auricularis newelli</i> | Threatened                 | Rare visitor                              |

Source: <http://www.nmfs.noaa.gov/pr/species/esa/listed.htm>, accessed October 31, 2014.

### **Applicable ESA Consultations – Guam Crustacean Fisheries**

NMFS has evaluated the potential impact of Mariana FEP crustacean fisheries on ESA listed species and has determined that spiny lobster fisheries that operate in accordance with regulations implementing the Mariana FEP are not likely to adversely affect ESA-listed species or their habitats. NMFS documented these determinations in letters of concurrence dated September 28, 2007 and April 29, 2015. The basis for this determination is generally due to the rare occurrence of ESA-listed species in EEA waters where federal spiny lobster fisheries are authorized to operate, combined with the low level of crustacean fishing occurring in the EEZ, which makes interactions unlikely to occur.

Newell's shearwater (*Puffinus auricularis newelli*) is listed as threatened under the ESA. This species breeds only in the main Hawaiian Islands, primarily in burrows on steep forested mountain slopes at medium elevation. Newell's shearwater has been sighted in the Marianas, but is considered an uncommon visitor to the archipelago (Drahos 1977; Jouanin 1956). Because its presence in the Mariana Archipelago is rare, and lobster fishermen do not interact with seabirds, the fishery has no effect on this seabird.

### 3.3.4.2 Species Protected under the Marine Mammal Protection Act (MMPA)

Several non-ESA listed whales, dolphins and porpoises occur in waters around Guam and are protected under the MMPA. Table 12 provides a list of non-ESA marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago that have the potential to interact with the Guam lobster fishery. A single dugong, listed as endangered, was observed in Cocos Lagoon, Guam in 1975 (Randall et al. 1975). Several sightings were reported in 1985 on the southeastern side of Guam (Eldredge 2003). Since that time, however no reports of dugong sightings have been made.

**Table 12.** Non ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam).

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)</b> |                                   |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>            |
| Blainville's beaked whale                                                                                            | <i>Mesoplodon densirostris</i>    |
| Bottlenose dolphin                                                                                                   | <i>Tursiops truncatus</i>         |
| Bryde's whale                                                                                                        | <i>Balaenoptera edeni</i>         |
| Common dolphin                                                                                                       | <i>Delphinus delphis</i>          |
| Cuvier's beaked whale                                                                                                | <i>Ziphius cavirostris</i>        |
| Dwarf sperm whale                                                                                                    | <i>Kogia sima</i>                 |
| Dugong*                                                                                                              | <i>Dugong dugong</i>              |
| False killer whale                                                                                                   | <i>Pseudorca crassidens</i>       |
| Fraser's dolphin                                                                                                     | <i>Lagenodelphis hosei</i>        |
| Killer whale                                                                                                         | <i>Orcinus orca</i>               |
| Longman's beaked whale                                                                                               | <i>Indopacetus pacificus</i>      |
| Melon-headed whale                                                                                                   | <i>Peponocephala electra</i>      |
| Minke whale                                                                                                          | <i>Balaenoptera acutorostrata</i> |
| Pygmy killer whale                                                                                                   | <i>Feresa attenuata</i>           |
| Pygmy sperm whale                                                                                                    | <i>Kogia breviceps</i>            |
| Risso's dolphin                                                                                                      | <i>Grampus griseus</i>            |
| Rough-toothed dolphin                                                                                                | <i>Steno bredanensis</i>          |
| Short-finned pilot whale                                                                                             | <i>Globicephala macrorhynchus</i> |
| Sperm whale                                                                                                          | <i>Physeter macrocephalus</i>     |
| Spinner dolphin                                                                                                      | <i>Stenella longirostris</i>      |
| Spotted dolphin                                                                                                      | <i>Stenella attenuata</i>         |

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)</b> |                              |
|----------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>       |
| Striped dolphin                                                                                                      | <i>Stenella coeruleoalba</i> |

Source: Eldredge 2003, Randall et al. 1975, (Guam DAWR 2009), Council website:

<http://www.wpcouncil.org>

### **Applicable MMPA Coordination – Guam Spiny Lobster Fisheries**

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that classifies U.S. commercial fisheries into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. A Category 1 fishery is one with frequent incidental mortality and serious injury of marine mammals. A Category 2 fishery is one with occasional incidental mortality and serious injury of marine mammals. A Category 3 fishery is one with a remote likelihood or no known incidental mortality and serious injury of marine mammals.

On December 29, 2014, (79 FR 77919), NMFS published the final LOF for 2014 which classified Hawaii spearfishing, Hawaii lobster diving, and Hawaii lobster trap fishery as a Category 3 fishery under Section 118 of the MMPA. To date, NMFS has not included any spiny lobster fishery of Guam in the annual LOF. There is no information available regarding marine mammal interactions in the spiny lobster fishery of Guam as no interactions have been reported or observed. However, because spiny lobsters in Guam are harvest by hand, it is reasonable to assume that the Guam lobster fishery would be comparable to the Hawaii lobster diving fishery and would have a remote likelihood of incidental mortality and serious injury of marine mammals. Participants in Category 3 fisheries are not required to register in the Marine Mammal Authorization Program prior to engaging in commercial fishing.

### **3.3.4.3 Seabirds of the Mariana Archipelago**

The following seabirds are considered residents of Mariana Archipelago: wedge-tailed shearwater (*Puffinus pacificus*), white-tailed tropicbird (*Phaethon lepturus*), red-tailed tropicbird (*Phaethon rubricauda*), masked booby (*Sula dactylatra*), brown booby (*Sula leucogaster*), red-footed booby (*Sula sula*), white tern (*Gygis alba*), sooty tern (*Onychoprion fuscatus*; formerly *Sterna fuscata*), brown noddy (*Anous stolidus*), black noddy (*Anous minutus*), and the great frigatebird (*Fregata minor*). However, According to Wiles (2003), the only resident seabirds on Guam are the brown noddy and the white tern.

The following seabirds in Table 13 have been sighted and are considered visitors (some more common than others) to the Mariana Archipelago; short-tailed shearwater (*Puffinus tenuirostris*; common visitor), Newell's shearwater (*Puffinus auricularis*; rare visitor), Audubon's shearwater (*Puffinus iherminieri*), Leach's storm-petrel (*Oceanodroma leucorhoa*), and the Matsudaira's storm-petrel (*Oceanodroma matsudairae*). Of these, only the Newell's shearwater is listed as threatened under the ESA. There have been no sightings of the endangered short-tailed albatross

(*Phoebastria albatrus*) in Guam although Guam is within the range of the largest breeding colony at Torishima, Japan (WPFMC 2009b). Because lobsters are harvested by hand, there are no known interactions between seabirds and Mariana Archipelago lobster fisheries (WPFMC 2009b).

**Table 13.** Seabirds occurring in the Mariana Archipelago (Guam).

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                                |                                                              |
|-------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------|
|                                                                                                             | Common name                    | Scientific name                                              |
| Vr                                                                                                          | Newell's shearwater            | <i>Puffinus auricularis newelli</i> (ESA:Threatened)         |
| Vr                                                                                                          | Wedge-tailed shearwater        | <i>Puffinus pacificus</i>                                    |
| V                                                                                                           | Audubon's shearwater           | <i>Puffinus lherminieri</i>                                  |
| Vc                                                                                                          | Short-tailed shearwater        | <i>Puffinus tenuirostris</i> (common visitor)                |
| V                                                                                                           | Leach's storm-petrel           | <i>Oceanodroma leucorhoa</i>                                 |
| Vr                                                                                                          | Matsudaira's storm-petrel      | <i>Oceanodroma matsudairae</i>                               |
| Vr                                                                                                          | Red-footed booby               | <i>Sula sula</i>                                             |
| Vr                                                                                                          | Brown booby                    | <i>Sula leucogaster</i>                                      |
| V                                                                                                           | Masked booby                   | <i>Sula dactylatra</i>                                       |
| Vr                                                                                                          | White-tailed tropicbird        | <i>Phaethon lepturus</i>                                     |
| Vr                                                                                                          | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>                                   |
| Vr                                                                                                          | Great frigatebird              | <i>Fregata minor</i>                                         |
| Vr                                                                                                          | Sooty tern                     | <i>Onychoprion fuscatus</i> ; formerly <i>Sterna fuscata</i> |
| R                                                                                                           | Brown noddy                    | <i>Anous stolidus</i>                                        |
| V                                                                                                           | Black noddy                    | <i>Anous minutus</i>                                         |
| R                                                                                                           | White tern / Common fairy-tern | <i>Gygis alba</i>                                            |

Source: WPFMC 2009b

### 3.4 Hawaii

#### 3.4.1 Target and Non-Target Stock

In Hawaii, fisheries for lobsters target the two species of spiny lobster (*Panulirus marginatus* and *Panulirus penicillatus*) around the main Hawaiian Islands (MHI). Prior to 1999, the majority of spiny lobster production was attributed to the Northwestern Hawaiian Island lobster trap fishery. However, since the closure of the NWHI fishery in 1999, fishing is now confined to the MHI and with more than 97 percent of the total catch coming from state waters, with lobsters taken primarily by hand (WPFMC 2011). Between 1994 and 2004, hand harvest accounted for nearly 80 percent of reported spiny lobster landings in the MHI (Kelly and Messer 2005). Based on commercial catch data collected by the State of Hawaii, only about two percent of the spiny lobster landings from the MHI are estimated to have come from EEZ waters 3 to 200 nm from the shoreline (WPFMC 2011).

Due to the lack of a developed spiny lobster fishery in federal waters, the Council at its 151<sup>st</sup>, 154<sup>th</sup> and 157<sup>th</sup> meeting directed Council staff to conduct analyses to identify coral reef

associated species, including spiny lobsters that may meet the criteria for an “ecosystem component species” designation in accordance with National Standard 1 guidelines of the Magnuson Stevens Act (76 FR 37285, June 27, 2011). Ecosystem component species are species that are generally not harvested or retained in the EEZ and do not require the specification of reference points such as an ACL, but should be monitored and actively managed in the EEZ if necessary. This initiative is not yet completed, so ACLs are required to be specified for MHI spiny lobsters despite the lack of a fishery in federal waters.

### 3.4.1.1 Summary of MHI Spiny Lobster Catch

The annual total catch of spiny lobsters in the MHI is unknown. However, annual commercial catch and sales over the past 13 years has ranged between 7,416 lb to 14,437 lb generating an estimated annual revenue between \$96,962 and \$176,998. Throughout this period, spiny lobster catches have remained relatively stable with peak catch of 14,437 occurring in 2009. Since that time, spiny lobster catches have declined slightly with the average catch for the most recent three year period 2011-2013 being 10,242 lb. During 2011-13, the fishery remained open year round.

In 2012, 2013 and 2014, NMFS specified a MHI spiny lobster ACL of 10,000 lb, which is based on the 75<sup>th</sup> percentile of historical catch. See Section 2.3.4.2 for how this limit was established. In 2012, catch was below the ACL, while in 2013, the fishery exceeded the ACL by 429 lb. Data for 2014 is not yet available. Because the Council has revised its system of establishing ACLs for this fishery base on the Biomass Augmented Catch-MSY method, the Council did not recommend a reduced ACL for the 2014 fishing year. Based on the recent MSY estimate of 20,400 lb by Sabater and Kleiber (2014), the Hawaii spiny lobster fishery appears to be sustainable.

Table 14 provides the estimated commercial catch of spiny lobsters in the MHI from local data collection programs administered by the Hawaii Division of Aquatic Resources as described in Section 2.1.2 and reported in Appendix 3 in Sabater and Kleiber (2014), except where noted. In general, these values are greater than the estimated commercial catches reported by NMFS WPacFIN ([http://www.pifsc.noaa.gov/wpacfin/hi/Data/Landings\\_Charts/hr3j.htm](http://www.pifsc.noaa.gov/wpacfin/hi/Data/Landings_Charts/hr3j.htm), accessed 11/3/2014), as not every lobster caught is sold.

**Table 14.** Annual reported commercial landings of spiny lobsters in the MHI (2000-2013).

| Year | Estimated Catch (lb) <sup>1</sup> | Estimated Price/lb <sup>2</sup> | Estimated Revenue |
|------|-----------------------------------|---------------------------------|-------------------|
| 2000 | 7,932                             | \$12.19                         | \$96,691.08       |
| 2001 | 7,665                             | \$12.65                         | \$96,962.25       |
| 2002 | 9,579                             | \$12.69                         | \$121,557.51      |
| 2003 | 7,416                             | \$11.90                         | \$88,250.40       |
| 2004 | 8,249                             | \$11.08                         | \$91,398.92       |
| 2005 | 11,949                            | \$10.99                         | \$131,319.51      |
| 2006 | 7,890                             | \$9.66                          | \$76,217.40       |
| 2007 | 8,158                             | \$11.84                         | \$96,590.72       |
| 2008 | 11,846                            | \$12.14                         | \$143,810.44      |
| 2009 | 14,437                            | \$12.26                         | \$176,997.62      |

| <b>Year</b>           | <b>Estimated Catch (lb)<sup>1</sup></b> | <b>Estimated Price/lb<sup>2</sup></b> | <b>Estimated Revenue</b> |
|-----------------------|-----------------------------------------|---------------------------------------|--------------------------|
| 2010                  | 12,222                                  | \$12.45                               | \$152,163.90             |
| 2011                  | 10,569                                  | \$9.23                                | \$97,551.87              |
| 2012                  | 9,727                                   | \$11.86                               | \$115,362.22             |
| 2013                  | 10,429                                  | \$10.73                               | \$111,903.17             |
| <b>Avg. 2011-2013</b> | <b>10,242</b>                           |                                       |                          |

<sup>1</sup>Source: Appendix 3 in Sabater and Kleiber (2014); Appendix 3 in Sabater and Kleiber (2014) does not include catch data for 2012 and 2013. Therefore, the source of catch data for 2012 and 2013 is from the ACL monitoring report presented at the 160<sup>th</sup> Council meeting in June 2014 (WPFMC 2014).

<sup>2</sup> [http://www.pifsc.noaa.gov/wpacfin/hi/dar/Pages/hi\\_data\\_3.php](http://www.pifsc.noaa.gov/wpacfin/hi/dar/Pages/hi_data_3.php), accessed 11/3/2014

### **3.4.2 Fishery Participants and Fishing Communities**

#### **3.4.2.1 Fishery Participants**

Since 2007, NMFS has issued no more than three permits authorizing lobster fishing in federal waters around the MHI any fishing year. However, no fishing or catches have been reported in association with these permits. Moreover, even if catch are reported, this data cannot be made publically available as fishery data with less than three different/unique entities is confidential. There is no information available on the number of State of Hawaii commercial marine license holders participating in the MHI spiny lobster fishery within state waters.

#### **3.4.2.2 Fishing Communities**

The Magnuson-Stevens Act defines a fishing community as “...a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities” (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is “...a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops)”. National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic impacts on such communities.

In 2002, the Council identified each of the islands of Kauai, Niihau, Oahu, Maui, Molokai, Lanai and Hawaii as a fishing community for the purposes of assessing the effects of fishery conservation and management measures on fishing communities, providing for the sustained participation of such communities, minimizing adverse economic impacts on such communities, and for other purposes under the Magnuson-Stevens Act. The Secretary of Commerce subsequently approved these definitions on August 5, 2003 (68 FR 46112). Sustainable

management of the Hawaii's lobster fishery will allow continued harvest of a resource that is important to fishermen, their families, community networks, markets, and visitors for personal consumption (sustenance), and supplemental income.

### **3.4.3 Fishery Administration and Enforcement**

#### **3.4.3.1 Federal Fishery Management Provisions**

In the MHI, federal regulations require any vessel used to fish for lobster to have a federal permit, and fishermen must report all catch. Federal regulations also require fishing vessels to carry a federal fishery observers on fishing trips if required to do so by NMFS. It is illegal to fish for lobsters by any method other than lobster trap or by hand or during the months of May June, July and August. Federal law also prohibits fishing for or retaining any lobster with a carapace length of less than 8.26 cm (three and one quarter inches), a female lobster carrying eggs or a lobster with a punctured or mutilated body or a separated carapace and tail. Enforcement of federal fishing regulations is conducted by NOAA's Office of Law Enforcement and the U.S. Coast Guard.

In addition to fishing regulations, Federal law also requires the Council-appointed Hawaii FEP plan team to prepare an annual report on the performance of all federal fisheries, including the MHI spiny lobster fishery by June 30 of each year. The report must contain, among other things, recommendations for Council action and an assessment of the urgency and effects of such actions. Federal regulations also require NMFS to specify ACLs and AMs for each stock or stock complex of MUS identified in an FEP, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. Monitoring of catch against a specified ACL and implementation of AMs is conducted by NMFS and the Council.

#### **3.4.3.2 State of Hawaii Fishery Management Provisions**

In local state waters, Hawaii laws prohibits the fishing for lobster during the months of May, June, July and August, or harvest of lobsters by spear. Additionally state law prohibits taking of lobsters with a carapace length of less than three and one quarter inches and prohibits taking of female lobsters. Additionally, fishing for lobsters is prohibited in numerous locations throughout the state, including marine life conservation districts, fish replenishment areas, natural area reserves (Wushinich-Mendez and Trappe 2007). Together, these measures help to manage and conserve spiny lobster resources in local state waters.

### **3.4.4 Protected Resources**

#### **3.4.4.1 Species Protected under the Endangered Species Act (ESA)**

A number of protected species are documented as occurring in the waters around the Hawaiian Islands. Table 15 lists endangered or threatened species occurring in the waters around Hawaii. They include five whales, the Hawaiian monk seal, five listed sea turtles, and three seabirds. Although there is currently no critical habitat designated for ESA-listed marine species around



the main Hawaiian Islands, NMFS has proposed to revise designated critical habitat for endangered Hawaiian monk seals to include areas in the MHI (76 FR 32026, June 2, 2011). However, NMFS has not yet made a determination on whether to designate critical habitat in the MHI.

**Table 15.** Endangered and threatened marine species and seabirds occurring in the waters of the MHI.

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters of the Hawaiian Archipelago</b> |                                  |                                     |                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Common name</b>                                                                                                                                | <b>Scientific Name</b>           | <b>ESA listing status in Hawaii</b> | <b>Occurrence in Hawaii</b>                                                                                                            |
| <b>Listed Sea Turtles</b>                                                                                                                         |                                  |                                     |                                                                                                                                        |
| Green sea turtle                                                                                                                                  | <i>Chelonia mydas</i>            | Threatened                          | Most common turtle in the Hawaiian Islands. Most nesting occurs in the northwestern Hawaiian Islands. Foraging and haulout in the MHI. |
| Hawksbill sea turtle                                                                                                                              | <i>Eretmochelys imbricata</i>    | Endangered                          | Small population foraging around Hawaii and low level nesting on Maui and Hawaii Islands.                                              |
| Leatherback sea turtle                                                                                                                            | <i>Dermochelys coriacea</i>      | Endangered                          | Not common in Hawaii.                                                                                                                  |
| Olive ridley sea turtle                                                                                                                           | <i>Lepidochelys olivacea</i>     | Threatened                          | Range across Pacific:                                                                                                                  |
| North Pacific loggerhead sea turtle DPS                                                                                                           | <i>Caretta caretta</i>           | Endangered                          | Not common in Hawaii.                                                                                                                  |
| <b>Listed Marine Mammals</b>                                                                                                                      |                                  |                                     |                                                                                                                                        |
| Hawaiian Monk seal                                                                                                                                | <i>Neomonachus schauinslandi</i> | Endangered                          | Endemic tropical seal. Occurs throughout the archipelago. Overall population in decline; MHI population increasing                     |
| Blue whale                                                                                                                                        | <i>Balaenoptera musculus</i>     | Endangered                          | No sightings or strandings reported in Hawaii but acoustically recorded off of Oahu and Midway Atoll.                                  |
| Fin whale                                                                                                                                         | <i>Balaenoptera physalus</i>     | Endangered                          | Infrequent sightings in Hawaii waters.                                                                                                 |
| Humpback whale                                                                                                                                    | <i>Megaptera novaeangliae</i>    | Endangered                          | Migrate through the archipelago and breed during the winter. Est. 6,000-10,000 individuals.                                            |

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters of the Hawaiian Archipelago |                                     |                              |                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Common name                                                                                                                                | Scientific Name                     | ESA listing status in Hawaii | Occurrence in Hawaii                                                                                                  |
| Sei whale                                                                                                                                  | <i>Balaenoptera borealis</i>        | Endangered                   | Worldwide distribution. Primarily found in cold temperate to subpolar latitudes. Rare in Hawaii.                      |
| Sperm whale                                                                                                                                | <i>Physeter macrocephalus</i>       | Endangered                   | Found in tropical to polar waters worldwide, most abundant cetaceans in the region. Sighted off the NWHI and the MHI. |
| MHI insular false killer whale DPS                                                                                                         | <i>Pseudorca crassidens</i>         | Endangered                   | Found in waters within 140 km (60 nm) of the MHI.                                                                     |
| <b>Listed Sea Birds</b>                                                                                                                    |                                     |                              |                                                                                                                       |
| Newell's Shearwater                                                                                                                        | <i>Puffinus auricularis newelli</i> | Threatened                   | Rare. Breeds only in colonies on the MHI where it is threatened by predators and urban development.                   |
| Hawaiian petrel                                                                                                                            | <i>Pterodroma phaeopygia</i>        | Endangered                   | Rare.                                                                                                                 |
| Short-tailed Albatross                                                                                                                     | <i>Phoebastria albatrus</i>         | Endangered                   | Nest in small numbers on Midway in the NWHI.                                                                          |

Source: <http://www.nmfs.noaa.gov/pr/species/esa/listed.htm>, accessed October 31, 2014.

### **Applicable ESA Consultations – Hawaii crustacean fisheries**

NMFS has evaluated the potential impact of Hawaii FEP crustacean fisheries on ESA listed species and has determined that spiny lobster fisheries that operate in accordance with regulations implementing the Hawaii FEP are not likely to adversely affect ESA-listed species or their habitats. NMFS documented these determinations in letters of concurrence dated April 4, 2008, December 5, 2013. The basis for this determination is generally due to the rare occurrence of ESA-listed species in EEA waters where federal spiny lobster fisheries are authorized to operate, combined with the low level of crustacean fishing occurring in the EEZ, which makes interactions unlikely to occur.

On June 2, 2011 (76 FR 32026), published a proposed rule to designate areas in the main Hawaiian Islands (MHI) as monk seal critical habitat. Specific areas proposed include terrestrial and marine habitats from 5 m inland from the shoreline extending seaward to the 500 m depth contour around Kaula Island, Niihau, Kauai, Oahu, Maui Nui (including Kahoolawe, Lanai, Maui and Molokai) and Hawaii Island. The final determinations on whether to designate monk seal critical habitat in the MHI have not been made. Should NMFS designate critical habitat for this species, or any other ESA-listed species in the future, NMFS will initiate consultation in accordance with Section 7 of the ESA to ensure that Hawaii FEP fisheries, including the spiny lobster fishery, would not result in the destruction or adverse modification of critical habitat.

### 3.4.4.2 Species Protected under the Marine Mammal Protection Act (MMPA)

Several non-ESA listed whales, dolphins and porpoises, occur in waters around Hawaii and are protected under the MMPA. Table 16, provides a list of non-ESA listed marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago that have the potential to interact with the Hawaii crustacean fisheries.

**Table 16.** Non-ESA-listed marine mammals occurring in the MHI.

| <b>Non-ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the MHI</b> |                                   |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                           | <b>Scientific Name</b>            |
| Blainville's beaked whale                                                                                    | <i>Mesoplodon densirostris</i>    |
| Bottlenose dolphin                                                                                           | <i>Tursiops truncatus</i>         |
| Bryde's whale                                                                                                | <i>Balaenoptera edeni</i>         |
| Common dolphin                                                                                               | <i>Delphinus delphis</i>          |
| Cuvier's beaked whale                                                                                        | <i>Ziphius cavirostris</i>        |
| Dall's porpoise                                                                                              | <i>Phocoenoides dalli</i>         |
| Dwarf sperm whale                                                                                            | <i>Kogia sima</i>                 |
| False killer whale                                                                                           | <i>Pseudorca crassidens</i>       |
| Fraser's dolphin                                                                                             | <i>Lagenodelphis hosei</i>        |
| Killer whale                                                                                                 | <i>Orcinus orca</i>               |
| Longman's beaked whale                                                                                       | <i>Indopacetus pacificus</i>      |
| Melon-headed whale                                                                                           | <i>Peponocephala electra</i>      |
| Minke whale                                                                                                  | <i>Balaenoptera acutorostrata</i> |
| Pantropical spotted dolphin                                                                                  | <i>Stenella attenuata</i>         |
| Pygmy killer whale                                                                                           | <i>Feresa attenuata</i>           |
| Pygmy sperm whale                                                                                            | <i>Kogia breviceps</i>            |
| Risso's dolphin                                                                                              | <i>Grampus griseus</i>            |
| Rough-toothed dolphin                                                                                        | <i>Steno bredanensis</i>          |
| Short-finned pilot whale                                                                                     | <i>Globicephala macrorhynchus</i> |
| Spinner dolphin                                                                                              | <i>Stenella longirostris</i>      |
| Spotted dolphin                                                                                              | <i>Stenella attenuata</i>         |
| Striped dolphin                                                                                              | <i>Stenella coeruleoalba</i>      |

Source: Council website: <http://www.wpcouncil.org>

#### **Applicable MMPA Coordination – Hawaii Crustacean Fisheries**

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that classifies U.S. commercial fisheries into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. A Category 1

fishery is one with frequent incidental mortality and serious injury of marine mammals. A Category 2 fishery is one with occasional incidental mortality and serious injury of marine mammals. A Category 3 fishery is one with a remote likelihood or no known incidental mortality and serious injury of marine mammals. On December 29, 2014, (79 FR 77919), NMFS published the final LOF for 2014 which classified Hawaii spearfishing, Hawaii lobster diving, and Hawaii lobster trap fishery as a Category 3 fishery under Section 118 of the MMPA. Participants in Category 3 fisheries are not required to register in the Marine Mammal Authorization Program prior to engaging in commercial fishing. The proposed action does not change the conduct of the fishery in any way and therefore will not introduce impacts not previously considered in prior MMPA determinations.

### 3.4.4.3 Seabirds of the Hawaiian Archipelago

Seabirds found on and around Hawaii that could potentially interact with fisheries are listed in Table 17. The short-tailed albatross, which is listed as endangered under the ESA, is a migratory seabird that has nested in the NWHI and could be present in the waters of the Hawaii Archipelago. Other listed seabirds found in the region are the endangered Hawaiian petrel (*Pterodroma phaeopygia*) and the threatened Newell's shearwater (*Puffinus auricularis newelli*). Non-listed seabirds known to be present in Hawaii include the black-footed albatross (*Phoebastria nigripes*); Laysan albatross (*P. immutabilis*); wedge-tailed (*Puffinus pacificus*), Audubon's (*P. griseus*), short-tailed (*P. tenuirostris*) and Christmas (*P. nativitatis*) shearwaters, as well as the masked (*Sula dactylatra*), brown (*S. leucogaster*), and red-footed (*S. sula*) boobies (or gannets), and a number of petrels and terns, frigate birds, and tropicbirds). Seabirds forage in both State and federal waters, but are not known to and are unlikely to interact with the Hawaii spiny lobster fisheries. There have been no reports of adverse interactions between the Hawaii spiny lobster fisheries and migratory seabirds.

**Table 17.** Seabirds occurring in the MHI.

| Seabirds of the Hawaiian Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                           |                                                      |
|--------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------|
|                                                                                                              | Common name               | Scientific name                                      |
| R                                                                                                            | Hawaiian petrel           | <i>Pterodroma phaeopygia</i> (ESA: Endangered)       |
| R                                                                                                            | Newell's shearwater       | <i>Puffinus auricularis newelli</i> (ESA:Threatened) |
| R                                                                                                            | Short-tailed albatross    | <i>Phoebastria albatrus</i> (ESA: Endangered)        |
| R                                                                                                            | Black-footed albatross    | <i>Phoebastria nigripes</i>                          |
| R                                                                                                            | Laysan albatross          | <i>Phoebastria immutabilis</i>                       |
| R                                                                                                            | Wedge-tailed shearwater   | <i>Puffinus pacificus</i>                            |
| V                                                                                                            | Audubon's shearwater      | <i>Puffinus lherminieri</i>                          |
| Vc                                                                                                           | Short-tailed shearwater   | <i>Puffinus tenuirostris</i> (common visitor)        |
| R                                                                                                            | Christmas shearwater      | <i>Puffinus nativitatis</i>                          |
| V                                                                                                            | Leach's storm-petrel      | <i>Oceanodroma leucorhoa</i>                         |
| V                                                                                                            | Matsudaira's storm-petrel | <i>Oceanodroma matsudairae</i>                       |
| R                                                                                                            | Red-footed booby          | <i>Sula sula</i>                                     |
| R                                                                                                            | Brown booby               | <i>Sula leucogaster</i>                              |
| R                                                                                                            | Masked booby              | <i>Sula dactylatra</i>                               |

| Seabirds of the Hawaiian Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                                |                                                              |
|--------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------|
|                                                                                                              | <b>Common name</b>             | <b>Scientific name</b>                                       |
| R                                                                                                            | White-tailed tropicbird        | <i>Phaethon lepturus</i>                                     |
| R                                                                                                            | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>                                   |
| R                                                                                                            | Great frigatebird              | <i>Fregata minor</i>                                         |
| R                                                                                                            | Sooty tern                     | <i>Onychoprion fuscatus</i> ; formerly <i>Sterna fuscata</i> |
| R                                                                                                            | Brown noddy                    | <i>Anous stolidus</i>                                        |
| R                                                                                                            | Black noddy                    | <i>Anous minutus</i>                                         |
| R                                                                                                            | White tern / Common fairy-tern | <i>Gygis alba</i>                                            |

Source: WPFMC 2009c

## 4 Potential Impacts of the Alternatives

This section describes the potential impacts of the proposed ACL and AM specifications on the elements of the affected environment described in Section 3.

### 4.1 American Samoa

#### 4.1.1 Potential Impacts to Target and Non-Target Stock

##### 4.1.1.1 Alternative 1: No ACL and AM Management (No Action)

Currently, NMFS has not specified an ACL and AM for the American Samoa spiny lobster fishery for fishing year 2015. Under the no-action alternative, an ACL would not be specified for the American Samoa spiny lobster fishery and AMs would not be necessary. However, NMFS and the Council would continue to monitor catches of spiny lobster in all island areas based on all available sources of information. Under this alternative, the lack of an ACL or AMs in fishing year 2015 through 2018 is not likely to result in overfishing of spiny lobsters in any year. As shown in Table 2, the highest recorded catch of spiny lobster in American Samoa was 5,388 lb, which occurred in 2006 when there were no ACL and AM mandate in place. This level of catch is well below the OFL proxy of 7,100 lb and MSY estimate of 7,300 lb. Since 2006, American Samoa spiny lobster harvest has fluctuated between 1,000 lb and 3,000 lb with the average annual catch for the most recent three year period 2011-2013 being 1,757 lb. During 2011-13, the fishery remained open year round. Under this alternative, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, and would be sustainable. Because spiny lobsters in American Samoa are harvested by hand or by spear, there is no bycatch of non-target stocks in this fishery. For these reasons, even without ACL or AM management, the expected impacts to target and non-target stocks would be similar to the impacts described in Alternatives 2 and 3.

##### 4.1.1.2 Alternative 2: Specify 2014 ACL of 2,300 lb (Status Quo/NEPA Baseline)

Under Alternative 2, NMFS would specify an ACL of 2,300 lb of American Samoa spiny lobsters for fishing years 2015 through 2018. Based on risk projections from method B of the

Biomass Augmented Catch-MSY model (Appendix B), an ACL of 2,300 lb is associated with less than a 5 percent probability of overfishing should the entire ACL be caught (Table 1). Under this alternative, NMFS and the Council would continue to monitor catches of spiny lobster based on all available sources of information. However, because catch statistics are not available until at least six months after the data have been collected, NMFS and the Council have no way to determine during the fishing year whether the ACL might be reached, and cannot prevent the ACL from being exceeded. Therefore, fishers would be able to fish throughout the fishing year in the same manner as under Alternative 1, and as recently occurred in 2011-2013.

Based on past fishery performance shown in Table 2, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, or 1,757 lb. This level of catch is well below the OFL proxy of 7,100 lb and the MSY of 7,300 lb, and would not result in overfishing. Because spiny lobsters in American Samoa are harvested by hand or by spear, there is no bycatch of non-target stocks in this fishery.

Under this alternative, if the Council determines the ACL is exceeded, the Council as an AM would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage, or other measures, as appropriate. However, it is unlikely the Council would recommend a reduced ACL if the fishery exceeds 2,300 lb, unless catch exceeds the OFL proxy of 7,100 lb in 2015-2018. If the Council does recommend a reduced ACL, any ACL less than 2,300 lb would have less than a 5 percent probability of overfishing. However, because in-season AMs to prevent the ACL from being exceeded is not possible, compared to Alternative 1, Alternative 2 is not likely to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch, or have large beneficial or adverse effects on target or non-target stocks.

#### **4.1.1.3 Alternative 3: Specify Council Recommended ACL of 4,845 lb (Preferred)**

Under Alternative 3 (the Council's and NMFS' Preferred Alternative), NMFS would specify an ACL at 4,845 lb of American Samoa spiny lobster for fishing years 2015 through 2018. This is five percent lower than the ABC of 5,100 lb. Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 4,845 lb is associated with less than a 35 percent probability of overfishing should the entire ACL be caught (Table 1). Under this alternative, NMFS and the Council would continue to monitor catches of spiny lobster based on all available sources of information. However, because catch statistics are not available until at least six months after the data have been collected, NMFS and the Council have no way to determine during the fishing year whether the ACL might be reached, and cannot prevent the ACL from being exceeded. Therefore, fishers would be able to fish throughout the fishing year in the same manner as under Alternative 1 and Alternative 2.

Based on past fishery performance shown in Table 2, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, or 1,757 lb. This level of catch is well below the OFL proxy of 7,100 lb and the MSY of 7,300 lb, would not result in overfishing. Because spiny lobsters in American Samoa are harvested by hand or by spear, there is no bycatch of non-target stocks in this fishery. Therefore, under Alternative 3, impacts to target and

non-target stocks would be identical to the impacts under Alternative 2, which is identical to the impacts under Alternative 1.

Under this alternative, if the Council determines the three-year average catch for spiny lobster exceeded the proposed ACL in any fishing year, NMFS would reduce the ACL by the amount of the overage in the subsequent years (See Section 1.3- Proposed Action for detailed information on how this AM is triggered). The impacts of a reduced ACL to target and non-target stocks are described in Alternative 4 below.

#### **4.1.1.4 Alternative 4: Specify ACL between 3,300 lb and 4,600 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL that is lower than the preferred alternative (Alternative 3) for fishing years 2015 through 2018, but higher than the ACL of 2,300 lb described in Alternative 2 (Status Quo). NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the American Samoa spiny lobster ACL could range from 4,600 lb (probability of overfishing of 30 percent) down to 3,300 lb (probability of overfishing of 15 percent) (Table 1). Because the OFL proxy for American Samoa spiny lobsters is 7,100 lb, any level of catch below the OFL proxy would not result in overfishing. Therefore, the expected impacts target and non-target stocks as a result of selecting Alternative 4 are expected to be the same as the impacts under Alternatives 2 and 3.

However, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system for setting ACLs, as necessary, to improve its performance and effectiveness. Additionally, if NMFS determines overfishing is occurring, NMFS would immediately notify the Council to take action to end overfishing in the fishery.

#### **4.1.2 Potential Impacts to Fishery Participants and Fishing Communities**

In fishing year 2013, the commercial price per pound for American Samoa spiny lobster was \$3.89 (Table 2). Based on an average reported commercial landing of 1,757 lb for fishing years 2011-2013, the average annual estimated commercial value for the American Samoa spiny lobster fishery for this three year period was approximately \$6,835. The number of participants in this fishery is unknown.

##### **4.1.2.1 Alternative 1: No ACL and AM Management (No Action)**

Currently, NMFS has not specified an ACL and AM for the American Samoa spiny lobster fishery for fishing year 2015. Under the no-action alternative, an ACL would not be specified for the American Samoa lobster fishery and AMs would not be necessary. Therefore, fishing would continue throughout the entire fishing year. As shown in Table 2, the highest recorded catch occurred in 2006 when 5,388 lb of spiny lobsters were caught. If there was no ACL, catches could reach or surpass 2006 levels. Using the 2013 price per pound of \$3.89, the potential annual fleet-wide revenue during 2015-2018 under Alternative 1 could be at least \$20,959 if the record

high of 5,388 lb of spiny lobsters was caught. However, under this alternative, American Samoa spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, which is 1,757 lb. Using the 2013 price per pound \$3.89, the expected annual fleet-wide revenue during 2015-2018 under Alternative 1 would be \$6,835.

The American Samoa lobster fishery provides fresh lobster for sustenance, customary exchange and other gifts, and allows some lobsters to enter local markets. This provides positive social and economic benefits to fishermen, buyers and the American Samoa fishing community.

#### **4.1.2.2 Alternative 2: Specify 2014 ACL of 2,300 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would specify an ACL of 2,300 lb of American Samoa spiny lobsters for fishing years 2015 through 2018. Using the 2013 price per pound of \$3.89, the annual fleet-wide revenue during 2015-2018 under Alternative 2 would be \$8,947 if this level of catch is reached in any fishing year. However, under this alternative, American Samoa spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, which is 1,757 lb and is expected to produce an annual fleet-wide revenue of \$6,835. Therefore, under Alternative 2, the impacts to fishery participants and the American Samoa fishing community would be identical to the impacts under Alternative 1.

#### **4.1.2.3 Alternative 3: Specify Council Recommended ACL of 4,845 lb (Preferred)**

Under Alternative 3 (the Council and NMFS' Preferred Alternative), NMFS would specify an ACL at 4,845 lb of spiny lobster for fishing years 2015 through 2018. Using the 2013 price per pound of \$3.89, the potential annual fleet-wide revenue during 2015-2018 under Alternative 3 would be \$18,847 if this level of catch is reached in any fishing year. However, under this alternative, American Samoa spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, which is 1,757 lb and is expected to produce an annual fleet-wide revenue of \$6,835. Therefore, under Alternative 3, the impacts to fishery participants and the American Samoa fishing community would be identical to the impacts under Alternative 2, which is identical to the impacts under Alternative 1.

#### **4.1.2.4 Alternative 4: Specify ACL between 3,300 lb and 4,600 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL for American Samoa spiny lobsters that is lower than the preferred alternative (Alternative 3) for fishing years 2015 through 2018, but higher than the ACL of 2,300 lb described in Alternative 2 (Status Quo). NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs would range from 4,600 lb down to 3,300 lb.

Using the 2013 price per pound of \$3.89, the potential annual fleet-wide revenue during 2015-2018 under Alternative 4 would be range from \$17,894 down to \$12,837. However, American Samoa spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, which is 1,757 lb and is expected to produce an annual fleet-wide revenue of



\$6,835. In other words, the impacts to fishery participants and the American Samoa fishing community under Alternative 4 would be identical to the impacts under Alternatives 2 and 3 , which are identical to the impacts under Alternative 1 (.

Because none of the alternatives considered would result in changes in the conduct of the fishery including gear types used, areas fished, level of catch or effort, none of the alternatives considered would affect the safety of fishermen at sea.

#### **4.1.3 Potential Impacts to Fishery Administration and Enforcement**

Under all alternatives considered, NMFS and the Council would continue to monitor catches of spiny lobster in all island areas based on all available sources of information, and federal regulations would continue to require the Council-appointed FEP plan team to prepare an annual report on the performance of the American Samoa spiny lobster fishery by June 30 of each year. Additionally, all other regulations implemented by other federal agencies and local state and territorial governments would continue to apply to spiny lobster fisheries operating in the U.S. EEZ.

While Alternatives 2, 3 (Preferred), and 4 would implement ACLs and a post-season accounting of the catch relative to the ACL, none of the alternatives would result in commitment of additional resources or increased need for fishery enforcement as monitoring of catch is required under all alternatives, including the no action alternative.

#### **4.1.4 Potential Impacts to Protected Resources**

None of the alternatives considered would modify operations of the American Samoa lobster fishery in any way that would be expected to affect populations of endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations described in Section 3.1.4.

While Alternatives 2, 3 (Preferred), and 4 would implement ACLs and a possible reduction to the ACL in a subsequent fishing year, if necessary, fishery managers do not have the ability to conduct in-season tracking of catch towards an ACL, and so there is no in-season closure being proposed. Therefore, participants in the American Samoa lobster fishery would continue to fish as they do under the Alternative 1. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

Table 18 provides a comparison of the potential impacts of the American Samoa spiny lobster alternatives on elements of the affected environment.

**Table 18.** American Samoa Spiny Lobster Alternative Comparison Tables.

| <b>Topic</b>                                                                                                        | <b>Alternative 1<br/>(No Action)</b>                                         | <b>Alternative 2<br/>(Status Quo)</b>                         | <b>Alternative 3<br/>(Preferred)</b>                                                  | <b>Alternative 4<br/>(Lower than<br/>Preferred)</b> |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------|
| ACL specification                                                                                                   | No ACL                                                                       | 2,300 lb                                                      | 4,845 lb                                                                              | 3,300 to 4,600 lb                                   |
| AM:                                                                                                                 | No AM                                                                        | Council would take action to correct issue if ACL is exceeded | NMFS would reduce the ACL in subsequent year, if 3-year average catch exceeds the ACL | Same as Alt. 3                                      |
| Expected catch in 2015-2018                                                                                         | Similar to Ave. 2011-13 catch of 1,757 lb                                    | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |
| Impacts to target stock in terms of probability of overfishing in any given year if the entire ACL amount is caught | Less than 5% probability of overfishing                                      | Same as Alt. 1                                                | <35%                                                                                  | 15-30%                                              |
| Impacts to non-target stock                                                                                         | No impact as hand harvest/ spear method are highly selective fishing methods | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |
| Max. potential annual fleet-wide revenue                                                                            | Unlimited                                                                    | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |
| Impacts to protected species                                                                                        | None observed or reported                                                    | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |
| Administration and Enforcement                                                                                      | Annual evaluation of fishery performance                                     | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |

## 4.2 CNMI

### 4.2.1 Potential Impacts to Target and Non-target Stock

#### 4.2.1.1 Alternative 1: No ACL and AM Management (No Action)

Currently, NMFS has not specified an ACL and AM for the CNMI spiny lobster fishery for fishing year 2015. Under the no-action alternative, an ACL would not be specified for the CNMI a spiny lobster fishery and AMs would not be necessary. However, NMFS and the Council would continue to monitor catches of spiny lobster in all island areas based on all available sources of information.

Under this alternative, the lack of an ACL or AMs in fishing year 2015 through 2018 is not likely to result in overfishing of spiny lobsters in any year. As shown in Table 6, the highest recorded catch of spiny lobster in the CNMI was 5,610 lb, which occurred in 2005 when there were no ACL and AM mandate in place. This level of catch is well below the OFL proxy of 9,200 lb and MSY estimate of 9,600 lb. Since 2005, spiny lobster harvest has fluctuated between 600 lb and 4,300 lb with the average annual catch for the most recent three year period 2011-2013 being 1,115 lb. Under this alternative, spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013 and would be sustainable. Because spiny lobsters in the CNMI are harvested by hand, there is no bycatch of non-target stocks in this fishery. For these reasons, even without ACL or AM management, the expected impacts to target and non-target stocks would be similar to the impacts described in Alternatives 2 and 3.

#### **4.2.1.2 Alternative 2: Specify 2013 ACL of 5,500 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would specify an ACL of 5,500 lb for CNMI spiny lobsters for fishing years 2015 through 2018. Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 5,500 lb is associated with less than a 5 percent probability of overfishing should the entire ACL be caught (Table 1). Under this alternative, NMFS and the Council would continue to monitor catches of spiny lobster based on all available sources of information. However, because catch statistics are not available until at least six months after the data have been collected, NMFS and the Council have no way to determine during the fishing year whether the ACL might be reached, and cannot prevent the ACL from being exceeded. Therefore, fishers would be able to fish throughout the fishing year in the same manner as under Alternative 1, and as recently occurred in 2011-2013.

Based on past fishery performance shown in Table 6, spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, or 1,115 lb. This level of catch would be well below the OFL proxy of 9,200 lb and the MSY of 9,600 lb, and would not result in overfishing. Because spiny lobsters in the CNMI are harvested by hand, there is no bycatch of non-target stocks in this fishery.

Under this alternative, if the Council determines the ACL is exceeded, the Council as an AM would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage, or other measures, as appropriate. However, it is unlikely the Council would recommend a reduced ACL if the fishery exceeds 5,500 lb, unless catch exceeds the OFL proxy of 9,200 lb in 2015-2018. If the Council does recommend a reduced ACL, any ACL less than 5,500 lb would have less than a 5 percent probability of overfishing. However, because in-season AMs to prevent the ACL from being exceeded is not possible, compared to Alternative 1, Alternative 2 is not likely to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch, or have large beneficial or adverse effects on target or non-target stocks.

#### **4.2.1.3 Alternative 3: Specify Council Recommended ACL of 7,410 lb (Preferred)**

Under Alternative 3 (the Council's and NMFS' Preferred Alternative), NMFS would specify an ACL of 7,410 lb for CNMI spiny lobster for fishing years 2015 through 2018. This is five percent lower than the ABC of 7,800 lb. Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 7,410 lb is associated with less than a 30 percent probability of overfishing should the entire ACL be caught (Table 1). Under this alternative, NMFS and the Council would continue to monitor catches of spiny lobster based on all available sources of information. However, because catch statistics are not available until at least six months after the data have been collected, NMFS and the Council have no way to determine during the fishing year whether the ACL might be reached, and cannot prevent the ACL from being exceeded. Therefore, fishers would be able to fish throughout the fishing year in the same manner as under Alternative 1 and Alternative 2.

Based on past fishery performance shown in Table 6, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, or 1,115 lb. This level of catch would be well below the OFL proxy of 9,200 lb and the MSY of 9,600 lb, and would not result in overfishing. Because spiny lobsters in the CNMI are harvested by hand, there is no bycatch of non-target stocks in this fishery. Therefore, under Alternative 3, impacts to target and non-target stocks would be identical to the impacts under Alternative 2, which is identical to the impacts under Alternative 1 .

Under this alternative, if the Council determines the three-year average catch for spiny lobster exceeded the proposed ACL in any fishing year, NMFS would reduce the ACL by the amount of the overage in the subsequent years (See Section 1.3- Proposed Action for detailed information on how this AM is triggered). The impacts of a reduced ACL to target and non-target stocks are described in Alternative 4 below.

#### **4.2.1.4 Alternative 4: Specify ACL between 6,100 lb and 7,100 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL that is lower than the preferred alternative (Alternative 3) for fishing years 2015 through 2018, but higher than the ACL of 5,500 lb described in Alternative 2 (Status Quo). NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs could range from 7,100 lb (probability of overfishing of 25 percent), down to 6,100 lb (probability of overfishing of 10 percent) (Table 1). Because the OFL proxy for CNMI spiny lobsters is 9,200 lb, any level of catch below the OFL proxy would not result in overfishing. Therefore, the expected impacts target and non-target stocks as a result of selecting Alternative 4 are expected to be the same as the impacts under Alternatives 2 and 3.

However, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system for setting ACLs, as necessary, to improve its performance and effectiveness. Additionally, if NMFS determines overfishing is occurring, NMFS would immediately notify the Council to take action to end overfishing in the fishery.

## **4.2.2 Potential Impacts to Fishery Participants and Fishing Community**

In fishing year 2011, the commercial price per pound for CNMI spiny lobster was \$6.49. Since no price estimate exists for 2012 and 2013, the 2011 value is used in the impacts analysis for this section. Based on an average reported commercial landing of 1,115 lb for fishing years 2011-2013, the average annual estimated commercial value for the CNMI spiny lobster fishery for this three year period was approximately \$7,236. The number of participants in this fishery is unknown.

### **4.2.2.1 Alternative 1: No ACL and AM Management (No Action)**

Currently, NMFS has not specified an ACL and AM for the CNMI spiny lobster fishery in fishing year 2015. Under the no-action alternative, an ACL would not be specified for the CNMI lobster fishery and AMs would not be necessary. Therefore, fishing would continue throughout the entire fishing year. As shown in Table 6, the highest recorded catch occurred in 2005 when 5,610 lb of spiny lobsters were caught. If there was no ACL, catches could reach or surpass 2005 levels. Using the 2011 price per pound of \$6.49, the potential annual fleet-wide revenue during 2015-2018 under Alternative 1 could be at least \$36,409 if the record high of 5,610 lb of spiny lobsters was caught. However, under this alternative, spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, which is 1,115 lb. Using the 2011 price per pound \$6.49, the expected potential annual fleet-wide revenue during 2015-2018 under Alternative 1 would be \$7,236.

The CNMI lobster fishery provides fresh lobster for sustenance, customary exchange and other gifts, and allows some lobsters to enter local markets. This provides positive social and economic benefits to fishermen, buyers and the CNMI fishing community.

### **4.2.2.2 Alternative 2: Specify 2013 ACL of 5,500 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would specify an ACL of 5,500 lb of CNMI spiny lobsters for fishing years 2015 through 2018. Using the 2011 price per pound of \$6.49, the potential annual fleet-wide revenue during 2015-2018 under Alternative 2 would be \$35,695 if this level of catch is reached in any fishing year. However, under this alternative, the CNMI spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, which is 1,115 lb. and is expected to produce an annual fleet-wide revenue of \$7,236. Therefore, under Alternative 2, the impacts to fishery participants and the CNMI fishing community would be identical to the impacts under Alternative 1.

### **4.2.2.3 Alternative 3: Specify Council Recommended ACL of 7,410 lb (Preferred)**

Under Alternative 3 (the Council and NMFS' Preferred Alternative), NMFS would specify an ACL at 7,410 lb of spiny lobster for fishing years 2015 through 2018. Using the 2011 price per pound of \$3.89, the potential annual fleet-wide revenue during 2015-2018 under Alternative 3 would be \$48,091 if this level of catch is reached in any fishing year. However, under this alternative, CNMI spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, which is 1,115 lb and is expected to produce an annual fleet-wide

revenue of \$7,236. Therefore, under Alternative 3, the impacts to fishery participants and the CNMI fishing community would be identical to the impacts under Alternative 2, which is identical to the impacts under Alternative 1.

#### **4.2.2.4 Alternative 4: Specify ACL between 6,100 lb and 7,100 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL that is lower than the preferred alternative (Alternative 3) for fishing years 2015 through 2018, but higher than the ACL of 5,500 lb described in Alternative 2 (Status Quo). NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs could range from 7,100 lb down to 6,100 lb.

Using the 2011 price per pound of \$3.89, the potential annual fleet-wide revenue during 2015-2018 under Alternative 4 would be range from \$46,079 down to \$35,598. However, CNMI spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, which is 1,115 lb and is expected to produce an annual fleet-wide revenue of \$7,236. In other words, the impacts to fishery participants and the CNMI fishing community under Alternative 4 would be identical to the impacts under Alternatives 2 and 3, which are identical to the impacts under Alternative 1.

Because none of the alternatives considered would result in changes in the conduct of the fishery including gear types used, areas fished, level of catch or effort, none of the alternatives considered would affect the safety of fishermen at sea.

#### **4.2.3 Potential Impacts to Fishery Administration and Enforcement**

Under all alternatives considered, NMFS and the Council would continue to monitor catches of spiny lobster in all island areas based on all available sources of information, and federal regulations would continue to require the Council-appointed FEP plan team to prepare an annual report on the performance of the CNMI spiny lobster fishery by June 30 of each year. Additionally, all other regulations implemented by other federal agencies and local state and territorial governments would continue to apply to spiny lobster fisheries operating in the U.S. EEZ.

While Alternatives 2, 3 (Preferred), and 4 would implement ACLs and a post-season accounting of the catch relative to the ACL, none of the alternatives would result in commitment of additional resources or increased need for fishery enforcement as monitoring of catch is required under all alternatives, including the no action alternative.

#### **4.2.4 Potential Impacts to Protected Resources**

None of the alternatives considered would modify operations of the CNMI lobster fishery in any way that would be expected to affect populations of endangered or threatened species or critical

habitat in any manner not previously considered in previous ESA or MMPA consultations described in Section 3.2.4.

While Alternatives 2, 3 (Preferred), and 4 would implement ACLs and a possible reduction to the ACL in a subsequent fishing year, if necessary, fishery managers do not have the ability to conduct in-season tracking of catch towards an ACL, and so there is no in-season closure being proposed. Therefore, participants in the CNMI lobster fishery would continue to fish as they do under the Alternative 1. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources. Table 19 provides a comparison of the potential impacts of the CNMI spiny lobster alternatives on elements of the affected environment.

**Table 19.** CNMI Spiny Lobster Alternative Comparison Tables.

| <b>Topic</b>                                                                              | <b>Alternative 1<br/>(No Action)</b>                           | <b>Alternative 2<br/>(Status Quo)</b>                         | <b>Alternative 3<br/>(Preferred)</b>                                                  | <b>Alternative 4<br/>(Lower than<br/>Preferred)</b> |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------|
| ACL specification                                                                         | No ACL                                                         | 5,500 lb                                                      | 7,410 lb                                                                              | 6,100 to 7,100 lb                                   |
| AM                                                                                        | No AM                                                          | Council would take action to correct issue if ACL is exceeded | NMFS would reduce the ACL in subsequent year, if 3-year average catch exceeds the ACL | Same as Alt. 3                                      |
| Expected catch in 2015-2018                                                               | Similar to Ave. 2011-13 catch of 1,115 lb                      | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |
| Impact to target stock in terms of probability of overfishing if the entire ACL is caught | Less than 5% probability of overfishing                        | Same as Alt. 1                                                | 30%                                                                                   | 10-20%                                              |
| Impact to non-target stock                                                                | No impact as hand harvest is a highly selective fishing method | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |
| Max. potential annual fleet-wide revenue                                                  | Unlimited                                                      | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |
| Impacts to protected species                                                              | None observed or reported                                      | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                      |

| <b>Topic</b>                   | <b>Alternative 1<br/>(No Action)</b>     | <b>Alternative 2<br/>(Status Quo)</b> | <b>Alternative 3<br/>(Preferred)</b> | <b>Alternative 4<br/>(Lower than<br/>Preferred)</b> |
|--------------------------------|------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------------------------|
| Administration and Enforcement | Annual evaluation of fishery performance | Same as Alt. 1                        | Same as Alt. 2                       | Same as Alt. 2                                      |

### **4.3 Guam**

#### **4.3.1 Potential Impacts to Target and Non-Target Stock**

##### **4.3.1.1 Alternative 1: No ACL and AM Management (No Action)**

Currently, NMFS has not specified an ACL and AM for the Guam spiny lobster fishery for fishing year 2015. Under the no-action alternative, an ACL would not be specified for the Guam a spiny lobster fishery and AMs would not be necessary. However, NMFS and the Council would continue to monitor catches of spiny lobster in all island areas based on all available sources of information.

Under this alternative, the lack of an ACL or AMs in fishing year 2015 through 2018 is not likely to result in overfishing of spiny lobsters in any year. As shown in Table 10, spiny lobster catch in Guam exceeded the current OFL proxy of 4,300 lb in 2006 and again in 2007, when respectively, 5,089 lb and 4,725 lb were caught. Since then, spiny lobster harvest has fluctuated between 900 lb and 2,000 lb with the average annual catch for the most recent three year period 2011-2013 being 1,167 lb. This level of catch is well below the OFL proxy and MSY estimate of 4,600 lb. Under this alternative, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013 and would be sustainable. Because spiny lobsters in Guam are harvested by hand, there is no bycatch of non-target stocks in this fishery. For these reasons, even without ACL or AM management, the expected impacts to target and non-target stocks would be similar to the impacts described in Alternatives 2 and 3.

##### **4.3.1.2 Alternative 2: Specify 2013 ACL of 2,700 lb (Status Quo/NEPA Baseline)**

Under this Alternative, NMFS would specify an ACL of 2,700 lb of Guam spiny lobsters for fishing years 2015 through 2018. Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 2,700 lb is associated with less than a 25 percent probability of overfishing should the entire ACL be caught (Table 1). Under this alternative, NMFS and the Council would continue to monitor catches of spiny lobster based on all available sources of information. However, because catch statistics are not available until at least six months after the data have been collected, NMFS and the Council have no way to determine during the fishing year whether the ACL might be reached, and cannot prevent the ACL from being exceeded. Therefore, fishers would be able to fish throughout the fishing year in the same manner as under Alternative 1, and as recently occurred in 2011-2013.



Based on past fishery performance shown in Table 10, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, or 1,167 lb. This level of catch is well below the OFL proxy of 4,300 lb and the MSY of 4,600 lb, and would not result in overfishing. Because spiny lobsters in Guam are harvested by hand, there is no bycatch of non-target stocks in this fishery.

Under this alternative, if the Council determines the ACL is exceeded, the Council as an AM would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage, or other measures, as appropriate. However, it is unlikely the Council would recommend a reduced ACL if the fishery exceeds 2,700 lb unless catch exceeds the OFL proxy of 4,300 lb in 2015-2018. If the Council does recommend a reduced ACL, any ACL less than 2,700 lb would have less than a 25 percent probability of overfishing. However, because in-season AMs to prevent the ACL from being exceeded is not possible, compared to Alternative 1, Alternative 2 is not likely to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch, or have large beneficial or adverse effects on target or non-target stocks.

#### **4.3.1.3 Alternative 3: Specify Council Recommended ACL of 3,135 lb (Preferred)**

Under Alternative 3 (the Council's and NMFS' Preferred Alternative), NMFS would specify an ACL at 3,135 lb of spiny lobster for fishing years 2015 through 2018. This is five percent lower than the ABC of 3,300 lb. Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 3,135 lb is associated with less than a 35 percent probability of overfishing should the entire ACL be caught (Table 1). Under this alternative, NMFS and the Council would continue to monitor catches of spiny lobster based on all available sources of information. However, because catch statistics are not available until at least six months after the data have been collected, NMFS and the Council have no way to determine during the fishing year whether the ACL might be reached, and cannot prevent the ACL from being exceeded. Therefore, fishers would be able to fish throughout the fishing year in the same manner as under Alternative 1 and Alternative 2.

Based on past fishery performance shown in Table 10, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, or 1,167 lb. This level of catch is well below the OFL proxy of 4,300 lb and the MSY of 4,600 lb, and would not result in overfishing. Because spiny lobsters in Guam are harvested by hand, there is no bycatch of non-target stocks in this fishery. Therefore, under Alternative 3, impacts to target and non-target stocks would be identical to the impacts under Alternative 2, which is identical to the impacts under Alternative 1.

Under this alternative, if the Council determines the three-year average catch for spiny lobster exceeded the proposed ACL in any fishing year, NMFS would reduce the ACL by the amount of the overage in the subsequent years (See Section 1.3- Proposed Action for detailed information on how this AM is triggered). The impacts of a reduced ACL to target and non-target stocks are described in Alternative 4 below.

#### **4.3.1.4 Alternative 4: Specify ACL between 2,200 lb and 3,000 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL that is lower than the preferred alternative (Alternative 3) and generally lower than the ACL of 2,700 lb described in Alternative 2 (Status Quo) for fishing years 2015 through 2018. NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACL could range from 3,000 lb (probability of overfishing of 30 percent) down to 2,200 lb (probability of overfishing of 15 percent) (Table 1).

Because the OFL proxy for Guam spiny lobsters is 4,300 lb, any level of catch below the OFL proxy would not result in overfishing. However, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system for setting ACLs, as necessary, to improve its performance and effectiveness. Additionally, if NMFS determines overfishing is occurring, NMFS would immediately notify the Council to take action to end overfishing in the fishery. Therefore, the expected impacts target and non-target stocks as a result of selecting Alternative 4 are expected to be the same as the impacts under Alternatives 2 and 3.

#### **4.3.2 Potential Impacts to Fishery Participants and Fishing Communities**

In fishing year 2013, the commercial price per pound for Guam spiny lobster was \$3.73 (Table 10). Based on an average reported commercial landing of 1,167 lb for fishing years 2011-2013, the average annual estimated commercial value for the Guam spiny lobster fishery for this three year period was approximately \$4,353. The number of participants in this fishery is unknown.

##### **4.3.2.1 Alternative 1: No ACL and AM Management (No Action)**

Currently, NMFS has not specified an ACL and AM for the Guam spiny lobster fishery in fishing year 2015. Under the no-action alternative, an ACL would not be specified for the Guam spiny lobster fishery and AMs would not be necessary. Therefore, fishing would continue throughout the entire fishing year. As shown in Table 10, the highest recorded spiny lobster catch in Guam occurred in 2006 when 5,388 lb of spiny lobsters were caught. If there was no ACL, catches could reach or surpass 2006 levels. Using the 2013 price per pound of \$3.73, the potential annual fleet-wide revenue during 2015-2018 under Alternative 1 could be at least \$18,982 if the record high of 5,089 lb of spiny lobsters was caught. However, under this alternative, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, which is 1,167 lb. Using the 2013 price per pound \$3.73, the expected potential annual fleet-wide revenue during 2015-2018 under Alternative 1 would be \$4,353.

The Guam lobster fishery provides fresh lobster for sustenance, customary exchange and other gifts, and allows some lobsters to enter local markets. This provides positive social and economic benefits to fishermen, buyers and the American Samoa fishing community.

#### **4.3.2.2 Alternative 2: Specify 2013 ACL of 2,700 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would specify an ACL of 2,700 lb of Guam spiny lobsters for fishing years 2015 through 2018. Using the 2013 price per pound of \$3.73, the potential annual fleet-wide revenue during 2015-2018 under Alternative 2 would be \$10,071 if this level of catch is reached in any fishing year. However, under this alternative, Guam spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, which is 1,167 lb and is expected to produce an annual fleet-wide revenue of \$4,353. Therefore, under Alternative 2, the impacts to fishery participants and the Guam fishing community would be identical to the impacts under Alternative 1 (no action).

#### **4.3.2.3 Alternative 3: Specify Council Recommended ACL of 3,135 lb (Preferred)**

Under Alternative 3 (the Council's and NMFS' Preferred Alternative), NMFS would specify an ACL at 3,135 lb of Guam spiny lobster for fishing years 2015 through 2018. Using the 2013 price per pound of \$3.73, the potential annual fleet-wide revenue during 2015-2018 under Alternative 3 would be \$11,694 if this level of catch is reached in any fishing year. However, under this alternative, Guam spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, which is 1,167 lb and is expected to produce an annual fleet-wide revenue of \$4,353. Therefore, under Alternative 3, the impacts to fishery participants and the American Samoa fishing community would be identical to the impacts under Alternative 2 (status quo), which is identical to the impacts under Alternative 1.

#### **4.3.2.4 Alternative 4: Specify ACL between 2,200 lb and 3,000 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL that is lower than the preferred alternative (Alternative 3), and generally lower than the ACL of 2,700 lb described in Alternative 2 (Status Quo) for fishing years 2015 through 2018. NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs could range from 3,000 lb down to 2,200 lb.

Using the 2013 price per pound of \$3.73, the potential annual fleet-wide revenue during 2015-2018 under Alternative 4 would be range from \$11,190 down to \$8,206. However, Guam spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, which is 1,167 lb and is expected to produce an annual fleet-wide revenue of \$4,353. In other words, the impacts to fishery participants and the Guam fishing community under Alternative 4 would be identical to the impacts under Alternatives 2 and 3, which are identical to the impacts under Alternative 1.

Because none of the alternatives considered would result in changes in the conduct of the fishery including gear types used, areas fished, level of catch or effort, none of the alternatives considered would affect the safety of fishermen at sea.

### **4.3.3 Potential Impacts to Fishery Administration and Enforcement**

Under all alternatives considered, NMFS and the Council would continue to monitor catches of spiny lobster in all island areas based on all available sources of information, and federal regulations would continue to require the Council-appointed FEP plan team to prepare an annual report on the performance of the Guam spiny lobster fishery by June 30 of each year. Additionally, all other regulations implemented by other federal agencies and local state and territorial governments would continue to apply to spiny lobster fisheries operating in the U.S. EEZ.

While Alternatives 2, 3 (Preferred), and 4 would implement ACLs and a post-season accounting of the catch relative to the ACL, none of the alternatives would not result in commitment of additional resources or increased need for fishery enforcement as monitoring of catch is required under all alternatives, including the no action alternative.

### **4.3.4 Potential Impacts to Protected Resources**

None of the alternatives considered would modify operations of the Guam lobster fishery in any way that would be expected to affect populations of endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations described in Section 3.3.4.

While Alternatives 2, 3 (Preferred), and 4 would implement ACLs and a possible reduction to the ACL in a subsequent fishing year, if necessary, fishery managers do not have the ability to conduct in-season tracking of catch towards an ACL, and so there is no in-season closure being proposed. Therefore, participants in the Guam lobster fishery would continue to fish as they do under the Alternative 1 (No Action). However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

Table 20 provides a comparison of the potential impacts of the Guam spiny lobster alternatives on elements of the affected environment.

**Table 20.** Guam Spiny Lobster Alternative Comparison Tables.

| <b>Topic</b>                                                                              | <b>Alternative 1<br/>(No Action)</b>                         | <b>Alternative 2<br/>(Status Quo)</b>                         | <b>Alternative 3<br/>(Preferred)</b>                                                  | <b>Alternative 4<br/>(Lower than Preferred)</b> |
|-------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------|
| ACL specification                                                                         | No ACL                                                       | 2,700 lb                                                      | 3,135 lb                                                                              | 2,200 to 3,000 lb                               |
| AM:                                                                                       | No AM                                                        | Council would take action to correct issue if ACL is exceeded | NMFS would reduce the ACL in subsequent year, if 3-year average catch exceeds the ACL | Same as Alt. 3                                  |
| Expected catch in 2015-2018                                                               | Similar to Ave. 2011-13 catch of 1,167 lb                    | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                  |
| Impact to target stock in terms of probability of overfishing if the entire ACL is caught | Less than 25% probability of overfishing                     | 25%                                                           | <35%                                                                                  | 15 to 30%                                       |
| Impact to non-target stock                                                                | No impact as hand harvest is highly selective fishing method | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                  |
| Max. potential annual fleet-wide revenue                                                  | Unlimited                                                    | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                  |
| Impacts to protected species                                                              | None observed or reported                                    | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                  |
| Administration and Enforcement                                                            | Annual evaluation of fishery performance                     | Same as Alt. 1                                                | Same as Alt. 2                                                                        | Same as Alt. 2                                  |

## 4.4 Hawaii

### 4.4.1 Potential Impacts to Target and Non-Target Stock

#### 4.4.1.1 Alternative 1: No ACL and AM Management (No Action)

Currently, NMFS has not specified an ACL and AM for the MHI spiny lobster fishery in fishing year 2015. Under the no-action alternative, an ACL would not be specified for the MHI a spiny lobster fishery and AMs would not be necessary. However, NMFS and the Council would continue to monitor catches of spiny lobster in all island areas based on all available sources of information.

Under this alternative, the lack of an ACL or AMs in fishing year 2015 through 2018 is not likely to result in overfishing of spiny lobsters in any year. As shown in Table 14, the highest recorded catch of spiny lobster in the MHI was 14,437 lb, which occurred in 2009 when there were no ACL and AM mandate in place. This level of catch is well below the OFL proxy of 19,200 lb and MSY of 20,400 lb. Since 2009, spiny lobster harvest has fluctuated between 9,700 and 12,300 lb with the average annual catch for the most recent three year period 2011-2013 being 10,242 lb. Under this alternative, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013 and would be sustainable. Because spiny lobsters in the MHI are harvested primarily by hand, and less than 2% of the total spiny lobster catch comes from EEZ waters, there is little to no bycatch of non-target stocks in the fishery. For these reasons, even without ACL or AM management, the expected impacts to target and non-target stocks would be similar to the impacts described in Alternatives 2 and 3.

#### **4.4.1.2 Alternative 2: Specify 2013 ACL of 10,000 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would specify an ACL of 10,000 lb of MHI spiny lobsters for fishing years 2015 through 2018. Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 10,000 lb is associated with a less than 5 percent probability of overfishing should the entire ACL be caught (Table 1). Under this alternative, NMFS and the Council would continue to monitor catches of spiny lobster based on all available sources of information. However, because catch statistics are not available until at least six months after the data have been collected, NMFS and the Council have no way to determine during the fishing year whether the ACL might be reached, and cannot prevent the ACL from being exceeded. Therefore, fishers would be able to fish throughout the fishing year in the same manner as under Alternative 1 and as recently occurred in 2011-2013.

Based on past fishery performance shown in Table 15, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, or 10,242 lb. While this level of catch would exceed the ACL under this alternative, this level of catch is well below the OFL proxy of 19,200 lb and the MSY of 20,400 lb, and would not result in overfishing. Because spiny lobsters in the MHI are harvested primarily by hand, there is little to no bycatch of non-target stocks in the fishery.

Under this alternative, if the Council determines the ACL is exceeded, the Council as an AM would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage, or other measures, as appropriate. However, it is unlikely the Council would recommend a reduced ACL if the fishery exceeds 10,000 lb in 2015-2018 as the OFL proxy is 19,200 lb. If the Council does recommend a reduced ACL, any ACL less than 10,000 lb would have less than a 5 percent probability of overfishing. Because in-season AMs to prevent the ACL from being exceeded is not possible, compared to Alternative 1, Alternative 2 is not likely to result in changes in the conduct of the fishery, including gear types used, areas fished, level of catch, or have large beneficial or adverse effects on target or non-target stocks.

#### **4.4.1.3 Alternative 3: Specify Council Recommended ACL of 15,000 lb (Preferred)**

Under Alternative 3 (the Council's and NMFS' Preferred Alternative), NMFS would specify an ACL at 15,000 lb of spiny lobster for fishing years 2015 through 2018. This is five percent lower than the ABC of 15,800 lb. Based on risk projections from method B of the Biomass Augmented Catch-MSY model (Appendix B), an ACL of 15,000 lb is associated with a 25 percent probability of overfishing should the entire ACL be caught (Table 1). Under this alternative, NMFS and the Council would continue to monitor catches of spiny lobster based on all available sources of information. However, because catch statistics are not available until at least six months after the data have been collected, NMFS and the Council have no way to determine during the fishing year whether the ACL might be reached, and cannot prevent the ACL from being exceeded. Therefore, fishers would be able to fish throughout the fishing year in the same manner as under Alternative 1 and Alternative 2.

Based on past fishery performance shown in Table 2, spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, or 10,242 lb. This level of catch is well below the OFL proxy of 19,200 lb and the MSY of 20,400 lb, and would not result in overfishing. Because spiny lobsters in the MHI are harvested primarily by hand, there is little to no bycatch of non-target stocks in the fishery. Therefore, under Alternative 3, impacts to target and non-target stocks would be identical to the impacts under Alternative 2, which is identical to the impacts under Alternative 1.

Under this alternative, if the Council determines the three-year average catch for spiny lobster exceeded the proposed ACL in any fishing year, NMFS would reduce the ACL by the amount of the overage in the subsequent years (See Section 1.3- Proposed Action for detailed information on how this AM is triggered). The impacts of a reduced ACL to target and non-target stocks are described in Alternative 4 below.

#### **4.4.1.4 Alternative 4: Specify ACL between 11,700 lb and 14,300 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL that is lower than the preferred alternative (Alternative 3), but higher than the ACL of 10,000 lb described in Alternative 2 (Status Quo) for fishing years 2015 through 2018. NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward overage adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACL could range from 14,300 lb (probability of overfishing of 20 percent) down to 11,700 lb (probability of overfishing of 5 percent) (Table 1).

Because the OFL proxy for MHI spiny lobsters is 19,200 lb, any level of catch below the OFL proxy would not result in overfishing. Therefore, the expected impacts target and non-target stocks as a result of selecting Alternative 4 are expected to be the same as the impacts under Alternatives 2 and 3.

However, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system for setting ACLs, as necessary, to improve its

performance and effectiveness. Additionally, if NMFS determines overfishing is occurring, NMFS would immediately notify the Council to take action to end overfishing in the fishery.

#### **4.4.2 Potential Impacts to Fishery Participants and Fishing Communities**

In fishing year 2013, the commercial price per pound for MHI spiny lobster was \$10.73 (Table 14). Based on an average reported commercial landing of 10,242 lb for fishing years 2011-2013, the average annual estimated commercial value for the MHI spiny lobster fishery for this three year period was approximately \$1,091,000. The total number of participants in this fishery is unknown.

##### **4.4.2.1 Alternative 1: No Action**

Currently, NMFS has not specified an ACL and AM for the MHI spiny lobster fishery in fishing year 2015. Under the no-action alternative, an ACL would not be specified for the MHI spiny lobster fishery and AMs would not be necessary. Therefore, fishing would continue throughout the entire fishing year. As shown in Table 14, the highest recorded catch occurred in 2009 when 14,437 lb of spiny lobsters were caught. If there was no ACL, catches could reach or surpass 2009 levels. Using the 2013 price per pound of \$10.73, the potential annual fleet-wide revenue during 2015-2018 under Alternative 1 could be at least \$154,909 if the record high of 14,437 lb of spiny lobsters was caught. However, under this alternative, spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, which is 10,242 lb. Using the 2013 price per pound of \$10.73, the expected potential annual fleet-wide revenue during 2015-2018 under Alternative 1 would be \$109,897.

The MHI spiny lobster fishery provides fresh lobster for sustenance, and other gifts, and allows some lobsters to enter local markets. This provides positive social and economic benefits to fishermen, buyers and fishing communities in Hawaii.

##### **4.4.2.2 Alternative 2: Specify 2013 ACL of 10,000 lb (Status Quo/NEPA Baseline)**

Under Alternative 2, NMFS would specify an ACL of 10,000 lb of MHI spiny lobsters for fishing years 2015 through 2018. Using the 2013 price per pound of \$10.73 the potential annual fleet-wide revenue during 2015-2018 under Alternative 2 would be \$107,300 if this level of catch is reached in any fishing year. However, under this alternative, MHI spiny lobster catch in 2015 through 2018 is expected to be similar to the average harvest from 2011-2013, which is 10,242 lb and is expected to produce an annual fleet-wide revenue of \$109,897. Therefore, under Alternative 2, the impacts to fishery participants and the fishing communities of Hawaii would be identical to the impacts under Alternative 1.

##### **4.4.2.3 Alternative 3: Specify Council Recommended ACL of 15,000 lb (Preferred)**

Under Alternative 3 (the Council and NMFS' Preferred Alternative), NMFS would specify an ACL at 15,000 lb of MHI spiny lobster for fishing years 2015 through 2018. Using the 2013 price per pound of \$10.73, the potential annual fleet-wide revenue during 2015-2018 under Alternative 3 would be \$160,950 if this level of catch is reached in any fishing year. However,



under this alternative, MHI spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, which is 10,242 lb and is expected to produce an annual fleet-wide revenue of \$109,897. Therefore, under Alternative 3, the impacts to fishery participants and the fishing communities of Hawaii would be identical to the impacts under Alternative 2, which is identical to the impacts under Alternative 1.

#### **4.4.2.4 Alternative 4: Specify ACL between 11,700 lb and 14,300 lb (lower than preferred)**

Under Alternative 4, NMFS would specify an ACL that is lower than the preferred alternative (Alternative 3), but higher than the ACL of 10,000 lb described in Alternative 2 (Status Quo) for fishing years 2015 through 2018. NMFS included a range of ACLs lower than the ACL that would be established under the preferred alternative in the event that the proposed ACL under Alternative 3 is implemented and exceeded in 2015, 2016 or 2017, and a downward adjustment in the amount of the overage is necessary in a subsequent year. Under this alternative, the ACLs would range from 14,300 lb down to 11,700 lb.

Using the 2013 price per pound of \$10.73, the potential annual fleet-wide revenue during 2015-2018 under Alternative 4 would range from \$153,439 down to \$125,541. However, MHI spiny lobster catch in 2015 through 2018 is expected be similar to the average harvest from 2011-2013, which is 10,242 lb and is expected to produce an annual fleet-wide revenue of \$109,897. In other words, the impacts to fishery participants and fishing communities of Hawaii under Alternative 4 would be identical to the impacts under Alternatives 2 and 3 , which are identical to the impacts under Alternative 1 (no action).

Because none of the alternatives considered would result in changes in the conduct of the fishery including gear types used, areas fished, level of catch or effort, none of the alternatives considered would affect the safety of fishermen at sea.

#### **4.4.3 Potential Impacts to Fishery Administration and Enforcement**

Under all alternatives considered, NMFS and the Council would continue to monitor catches of spiny lobster in all island areas based on all available sources of information, and federal regulations would continue to require the Council-appointed FEP plan team to prepare an annual report on the performance of the MHI spiny lobster fishery by June 30 of each year. Additionally, all other regulations implemented by other federal agencies and local state and territorial governments would continue to apply to spiny lobster fisheries operating in the U.S. EEZ.

While Alternatives 2, 3 (Preferred), and 4 would implement ACLs and a post-season accounting of the catch relative to the ACL, none of the alternatives would result in commitment of additional resources or increased need for fishery enforcement as monitoring of catch is required under all alternatives, including the no action alternative.

#### **4.4.4 Potential Impacts to Protected Resources**

None of the alternatives considered would modify operations of the MHI lobster fishery in any way that would be expected to affect populations of endangered or threatened species or critical

habitat in any manner not previously considered in previous ESA consultations described in Section 3.4.4.

While Alternatives 2, 3 (Preferred), and 4 would implement ACLs and a possible reduction to the ACL in a subsequent fishing year, if necessary, fishery managers do not have the ability to conduct in-season tracking of catch towards an ACL, and so there is no in-season closure being proposed. Therefore, participants in the Hawaii lobster fishery would continue to fish as they do under the Alternative 1 (No Action). However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

Table 21 provides a comparison of the potential impacts of the Hawaii spiny lobster alternatives on elements of the affected environment.

**Table 21.** Hawaii Spiny Lobster Alternative Comparison Tables.

| <b>Topic</b>                                                                                      | <b>Alternative 1<br/>(No Action)</b>                                       | <b>Alternative 2<br/>(Status Quo)</b>                                        | <b>Alternative 3<br/>(Preferred)</b>                                                                       | <b>Alternative 4<br/>(Lower than<br/>Preferred)</b> |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| ACL specification                                                                                 | No ACL                                                                     | 10,000 lb                                                                    | 15,000 lb                                                                                                  | 11,700 to 14,300 lb                                 |
| AM                                                                                                | No AM                                                                      | Council<br>would take<br>action to<br>correct issue<br>if ACL is<br>exceeded | NMFS would<br>reduce the<br>ACL in<br>subsequent<br>year, if 3-year<br>average catch<br>exceeds the<br>ACL | Same as Alt. 3                                      |
| Expected catch in<br>2015-2018                                                                    | Similar to Ave.<br>2011-13 catch<br>of 10,242 lb                           | Same as Alt. 1                                                               | Same as Alt. 2                                                                                             | Same as Alt. 2                                      |
| Impact to target<br>stock in terms of<br>probability of<br>overfishing if entire<br>ACL is caught | Approx. a 5%<br>probability of<br>overfishing                              | <5%                                                                          | 25%                                                                                                        | 5 to 20%                                            |
| Impact to non-target<br>stock                                                                     | No impact as<br>hand harvest is<br>a highly<br>selective fishing<br>method | Same as Alt. 1                                                               | Same as Alt. 2                                                                                             | Same as Alt. 2                                      |
| Max. potential<br>annual fleet-wide<br>revenue                                                    | Unlimited                                                                  | Same as Alt. 1                                                               | Same as Alt. 2                                                                                             | Same as Alt. 2                                      |

| <b>Topic</b>                   | <b>Alternative 1<br/>(No Action)</b>     | <b>Alternative 2<br/>(Status Quo)</b> | <b>Alternative 3<br/>(Preferred)</b> | <b>Alternative 4<br/>(Lower than<br/>Preferred)</b> |
|--------------------------------|------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------------------------|
| Impacts to protected species   | None observed or reported                | Same as Alt. 1                        | Same as Alt. 2                       | Same as Alt. 2                                      |
| Administration and Enforcement | Annual evaluation of fishery performance | Same as Alt. 1                        | Same as Alt. 2                       | Same as Alt. 2                                      |

#### **4.5 Potential Impacts to Essential Fish Habitat**

Essential fish habitat (EFH) is defined as those waters and substrate as necessary for fish spawning, breeding, feeding, and growth to maturity. This includes marine areas and their chemical and biological properties that are utilized by the organism. Substrate includes sediment, hard bottom, and other structural relief underlying the water column along with their associated biological communities. In 1999, the Council developed and NMFS approved EFH definitions for management unit species (MUS) of the Bottomfish and Seamount Groundfish FMP (Amendment 6), Crustacean FMP (Amendment 10), Pelagic FMP (Amendment 8), and Precious Corals FMP (Amendment 4) (74 FR 19067, April 19, 1999). NMFS approved additional EFH definitions for coral reef ecosystem species in 2004 as part of the implementation of the Coral Reef Ecosystem FMP (69 FR 8336, February 24, 2004). EFH definitions were also approved for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

Ten years later, in 2009, the Council developed and NMFS approved five new archipelagic-based fishery ecosystem plans (FEP). The FEP incorporated and reorganized elements of the Councils' species-based FMPs into a spatially-oriented management plan (75 FR 2198, January 14, 2010). EFH definitions and related provisions for all FMP fishery resources were subsequently carried forward into the respective FEPs. In addition to and as a subset of EFH, the Council described habitat areas of particular concern (HAPC) based on the following criteria: ecological function of the habitat is important, habitat is sensitive to anthropogenic degradation, development activities are or will stress the habitat, and/or the habitat type is rare. In considering the potential impacts of a proposed fishery management action on EFH, all designated EFH must be considered. The designated areas of EFH and HAPC for all FEP MUS by life stage are summarized in Table 22.

**Table 22.** EFH and HAPC for Western Pacific FEP MUS.

| MUS                   | Species Complex                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | EFH                                                                                                                                                                                                                                                                              | HAPC                                                                                                                                                 |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bottomfish MUS</b> | <b>American Samoa, Guam and CNMI bottomfish species:</b> lehi ( <i>Aphareus rutilans</i> ) uku ( <i>Aprion virescens</i> ), giant trevally ( <i>Caranx ignobilis</i> ), black trevally ( <i>Caranx lugubris</i> ), blacktip grouper ( <i>Epinephelus fasciatus</i> ), Lunartail grouper ( <i>Variola louti</i> ), ehu ( <i>Etelis carbunculus</i> ), onaga ( <i>Etelis coruscans</i> ), ambon emperor ( <i>Lethrinus amboinensis</i> ), redgill emperor ( <i>Lethrinus rubrioperculatus</i> ), taape ( <i>Lutjanus kasmira</i> ), yellowtail kalekale ( <i>Pristipomoides auricilla</i> ), opakapaka ( <i>P. filamentosus</i> ), yelloweye snapper ( <i>P. flavipinnis</i> ), kalekale ( <i>P. sieboldii</i> ), gindai ( <i>P. zonatus</i> ), and amberjack ( <i>Seriola dumerili</i> ). | <b>Eggs and larvae:</b> the water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm).<br><br><b>Juvenile/adults:</b> the water column and all bottom habitat extending from the shoreline to a depth of 400 m (200 fm)          | All slopes and escarpments between 40–280 m (20 and 140 fm)                                                                                          |
|                       | <b>Hawaii bottomfish species:</b> uku ( <i>Aprion virescens</i> ), thicklip trevally ( <i>Pseudocaranx dentex</i> ), giant trevally ( <i>Caranx ignobilis</i> ), black trevally ( <i>Caranx lugubris</i> ), amberjack ( <i>Seriola dumerili</i> ), taape ( <i>Lutjanus kasmira</i> ), ehu ( <i>Etelis carbunculus</i> ), onaga ( <i>Etelis coruscans</i> ), opakapaka ( <i>Pristipomoides filamentosus</i> ), yellowtail kalekale ( <i>P. auricilla</i> ), kalekale ( <i>P. sieboldii</i> ), gindai ( <i>P. zonatus</i> ), hapuupuu ( <i>Epinephelus quernus</i> ), lehi ( <i>Aphareus rutilans</i> )                                                                                                                                                                                    | <b>Eggs and larvae:</b> the water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fathoms)<br><br><b>Juvenile/adults:</b> the water column and all bottom habitat extending from the shoreline to a depth of 400 meters (200 fm) | All slopes and escarpments between 40–280 m (20 and 140 fm)<br><br>Three known areas of juvenile opakapaka habitat: two off Oahu and one off Molokai |

| MUS                            | Species Complex                                                                                                                                                                                                                                                                                                                                     | EFH                                                                                                                                                                                                                                                                                                                 | HAPC                                                                                        |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <b>Seamount Groundfish MUS</b> | <b>Hawaii Seamount groundfish species (50–200 fm):</b> armorhead ( <i>Pseudopentaceros wheeleri</i> ), raftfish/butterfish ( <i>Hyperoglyphe japonica</i> ), alfonsin ( <i>Beryx splendens</i> )                                                                                                                                                    | <p><b>Eggs and larvae:</b> the (epipelagic zone) water column down to a depth of 200 m (100 fm) of all EEZ waters bounded by latitude 29°–35°</p> <p><b>Juvenile/adults:</b> all EEZ waters and bottom habitat bounded by latitude 29°–35° N and longitude 171° E–179° W between 200 and 600 m (100 and 300 fm)</p> | No HAPC designated for seamount groundfish                                                  |
| <b>Crustaceans MUS</b>         | <p><b>Spiny and slipper lobster complex (all FEP areas):</b> spiny lobster (<i>Panulirus marginatus</i>), spiny lobster (<i>P. penicillatus</i>, <i>P. spp.</i>), ridgeback slipper lobster (<i>Scyllarides haanii</i>), Chinese slipper lobster (<i>Parribacus antarcticus</i>)</p> <p><b>Kona crab :</b><br/>Kona crab (<i>Ranina ranina</i>)</p> | <p><b>Eggs and larvae:</b> the water column from the shoreline to the outer limit of the EEZ down to a depth of 150 m (75 fm)</p> <p><b>Juvenile/adults:</b> all of the bottom habitat from the shoreline to a depth of 100 m (50 fm)</p>                                                                           | All banks in the NWHI with summits less than or equal to 30 m (15 fathoms) from the surface |
|                                | <b>Deepwater shrimp (all FEP areas):</b><br>( <i>Heterocarpus spp.</i> )                                                                                                                                                                                                                                                                            | <p><b>Eggs and larvae:</b> the water column and associated outer reef slopes between 550 and 700 m</p> <p><b>Juvenile/adults:</b> the outer reef slopes at depths between 300-700 m</p>                                                                                                                             | No HAPC designated for deepwater shrimp.                                                    |

| MUS                             | Species Complex                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | EFH                                                                                                                                                                                                                                                                                                                                                                                    | HAPC                                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Precious Corals MUS</b>      | <p><b>Shallow-water precious corals (10-50 fm) all FEP areas:</b><br/>black coral (<i>Antipathes dichotoma</i>), black coral (<i>Antipathis grandis</i>), black coral (<i>Antipathes ulex</i>)</p> <p><b>Deep-water precious corals (150–750 fm) all FEP areas:</b><br/>Pink coral (<i>Corallium secundum</i>), red coral (<i>C. regale</i>), pink coral (<i>C. laauense</i>), midway deepsea coral (<i>C. sp nov.</i>), gold coral (<i>Gerardia spp.</i>), gold coral (<i>Callogorgia gilberti</i>), gold coral (<i>Narella spp.</i>), gold coral (<i>Calyptrophora spp.</i>), bamboo coral (<i>Lepidisis olapa</i>), bamboo coral (<i>Acanella spp.</i>)</p> | <p>EFH for Precious Corals is confined to six known precious coral beds located off Keahole Point, Makapuu, Kaena Point, Wespac bed, Brooks Bank, and 180 Fathom Bank</p> <p>EFH has also been designated for three beds known for black corals in the Main Hawaiian Islands between Milolii and South Point on the Big Island, the Auau Channel, and the southern border of Kauai</p> | <p>Includes the Makapuu bed, Wespac bed, Brooks Banks bed</p> <p>For Black Corals, the Auau Channel has been identified as a HAPC</p>                                                     |
| <b>Coral Reef Ecosystem MUS</b> | <b>Coral Reef Ecosystem MUS (all FEP areas)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | EFH for the Coral Reef Ecosystem MUS includes the water column and all benthic substrate to a depth of 50 fm from the shoreline to the outer limit of the EEZ                                                                                                                                                                                                                          | Includes all no-take MPAs identified in the CREFMP, all Pacific remote islands, as well as numerous existing MPAs, research sites, and coral reef habitats throughout the western Pacific |

Spiny lobster are found at depths that overlap with EFH for coral reef MUS and certain crustacean and bottomfish MUS. However, spiny lobsters fisheries in American Samoa, Guam, the CNMI and Hawaii are harvested primarily by hand and by spear. These harvest methods are highly selective and are not known to cause damage to the ocean, coastal habitats, corals, or marine habitats. None of the alternatives, including the preferred alternative (Alternative 3) will change the way in which fisheries are conducted. For these reasons, none of the alternatives considered are expected to lead to substantial physical, chemical, or biological alterations to habitat or result in adverse impacts to the marine habitat, including areas designated as EFH, habitat areas of particular concern (HAPC), or unique areas such as marine protected areas, marine sanctuaries or marine monuments.

#### 4.6 Potential Impacts to Biodiversity/Ecosystem Function

When compared against recent fishing harvests, ACLs are higher but are, nevertheless, are lower than MSY and OFL estimates for spiny lobster stocks in all island areas. The specifications were developed using the best available scientific information, in a manner that accords with the

fishery regulations and after considering catches, participation trends, and estimates of the status of the fishery resources. The ACLs and AMs are not likely to cause large adverse impacts to resources because the conduct of lobster fishing would not change as a result of the specifications and post-season AMs. Over the long term, the post-season data review of the fishery performance and status of fish stocks would help to ensure that western Pacific lobster fisheries are being managed and harvested sustainably. Western Pacific lobster fisheries occur at relatively low levels of intensity and, because of the methods used, are target specific. There have been no identified impacts to marine biodiversity and/or ecosystem function from the spiny lobster fisheries in American Samoa, Guam, the CNMI and the MHI and none of the alternatives is expected to result in impacts to these environmental features.

#### **4.7 Potential Impacts to Scientific, Historic, Archeological or Cultural Resources**

There are no known districts, sites, highways, structures or objects that are listed in or eligible for listing in the National Register of Historic Places within waters where federal lobster fishing is authorized. Shipwrecks and other objects from the Pacific theatre in World War II could possibly occur in federal waters around the U.S. Pacific Islands. However, lobster fishing methods and activities do not have the potential affect these objects.

Most lobster fishing occurs by hand or by spear in State or territorial waters in American Samoa, Guam, the CNMI, and Hawaii. The lobster fishery is not known to cause the loss or destruction of significant scientific, cultural or historical resources because fishing methods are highly selective techniques using primarily hand harvest or spear and lobster fishing. These methods are also not known to cause damage to the ocean, coastal habitats, corals, or marine habitats. Because the specification of ACLs and AMs would not result in changes to the way any lobster fishery is conducted including type of gear used, area fished, or level of catch or effort as compared with baseline conditions, none of the alternatives are expected to result in large adverse impacts to resources of scientific, historic, cultural, or ecological importance. Lobster fishing in marine protected areas would continue to be subject to permits, reporting, and monitoring that help to ensure the marine resources of these special areas are sustainable.

#### **4.8 Cumulative Effects of the Proposed Action**

Cumulative effects refer to the impact on the environment, which results from the incremental effects of a proposed action when added to other past, present, or reasonably foreseeable future actions within the geographic area of the proposed action. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

##### **4.8.1 Multi-year ACLs and AMs for spiny lobster stocks**

The specification of multi-year ACLs and AMs for Pacific Island spiny lobster fisheries in 2015, 2016, 2017 and again in 2018, is not expected to result in cumulative environmental effects. This is because the proposed action would set the ACL for spiny lobsters in each island area substantially lower than the stock's estimated OFL proxy, and annual catches in fishing years 2015-2018 are expected to remain below the proposed ACLs.

#### **4.8.2 ACL and AM specifications for other western Pacific fisheries**

In addition to the ACLs and AMs for spiny lobsters being considered in this EA, NMFS is proposing to implement the Council's ACL and AM recommendations for all other western Pacific fisheries for 2015-18 including other crustacean fisheries (slipper lobster, Kona crab and deepwater shrimp), precious coral, MHI non-Deep 7 bottomfish, and coral reef fisheries. NMFS will also continue to specify annual catch limits for MHI Deep 7 bottomfish on an annual basis. These fisheries have been managed using ACLs and AMs since 2012; and these specifications do not have unknown or uncertain impacts. NMFS developed environmental impact analysis documents on the proposed specifications for these fisheries, which can be obtained from NMFS or the Council by request, or at [www.regulations.gov](http://www.regulations.gov) using the regulatory identification number (RIN) 0648-XD558.

The lobster fisheries in all four areas that are being considered in this EA do not overlap with other demersal fisheries to a large extent such that ACLs and AMs in the lobster fishery would result in more fishing in other demersal (or pelagic) fisheries. For this reason, the impacts of the proposed lobster ACLs and AMs can be considered separately from the other ACL and AM specifications.

#### **4.8.3 Foreseeable management actions related to western Pacific fisheries**

In the foreseeable future, the Council may re-evaluate the need for conservation and management for federal spiny lobster fisheries and may recommend NMFS remove spiny lobsters from the FEPs and/or re-classify species as "ecosystem component" (EC) species. To be considered for possible classification as an EC species, the species should be: 1) a non-target species; 2) a stock that is not determined to be subject to overfishing, approaching overfished, or overfished; 3) not likely to become subject to overfishing or overfished; and 4) generally not retained for sale or personal use. Various methods for categorizing species and EC components have been preliminarily discussed at Council meetings. These include, but are not limited to, species that are caught exclusively or predominately in state/territorial waters, species that occur infrequently in the available time series, species that are non-native to an FEP area, and species associated with ciguatoxin poisoning and are generally discarded.

In accordance with National Standard 1 guidelines found in 50 CFR §600.310(d), EC species are not considered to be "in the fishery" and thus, do not require specification of an ACL. EC species may, but are not required to remain in the FEP for data collection purposes, for ecosystem considerations related to the specification of optimum yield for associated MUS, for consideration in the development of conservation and management measures for a fishery; and/or to address other ecosystem issues (e.g., such as management of bycatch). However, until such time a particular MUS is classified as an EC species, it will remain in the fishery and be subject to the ACL requirements.

#### **4.8.4 Other foreseeable NOAA/NMFS management actions in federal waters**

On June 2, 2011, NMFS published a proposed rule (76 FR 32026) to designate areas in the main Hawaiian Islands (MHI) as monk seal critical habitat. Specific areas proposed include terrestrial



and marine habitats from 5 m inland from the shoreline extending seaward to the 500 m depth contour around Kaula Island, Niihau, Kauai, Oahu, Maui Nui (including Kahoolawe, Lanai, Maui and Molokai) and Hawaii Island. The final determinations on whether designate monk seal critical habitat in the MHI have not been made.

At this point in time there is insufficient information in the proposal to allow NMFS to evaluate the potential impact of a designation of monk seal critical habitat on the MHI crustacean fisheries, including spiny lobsters. However, a designation of critical habitat for monk seals in the MHI is not expected to affect the efficacy of using ACLs and AMs to promote long-term sustainability of the MHI crustacean fisheries.

While recent quantitative fatty acid signature analysis results indicate that monk seals consume a wide range of species including lobsters (Iverson et al. 2011); under current levels of fishing pressure in the MHI, the monk seal population is growing, pupping is increasing, and the pups appear to be foraging successfully. In contrast, the Hawaiian monk seal subpopulation continue to decline in the NWHI where fishing has been minimized in past years and recently terminated completely.

Considering that monk seal foraging success appears to be higher in the MHI than in the NWHI despite higher fishing pressure in the MHI, competition for forage with the MHI crustacean fisheries does not appear to be adversely impacting monk seals in the MHI. Therefore, the proposed ACL specifications and AMs is not considered to be affecting monk seals through completion for prey and is not expected to affect the quality of habitat being considered for designation as monk seal critical habitat because no change to the conduct of the existing MHI crustacean fisheries is likely to occur with under the proposed action.

Specifying ACLs will not have an environmental outcome that would affect the agency's decision of whether or not to revise designated critical habitat. The specification would not change the likelihood of interactions, or affect the survival, distribution or behavior of the species in any way. However, if the pending Hawaiian monk seal actions are approved, NMFS will initiate consultation in accordance with Section 7 of the ESA to ensure that Hawaii's fisheries are not likely to jeopardize the continued existence of the species, or result in the destruction or adverse modification of critical habitat.

#### **4.8.5 Other Foreseeable NOAA Actions**

On March 26, 2015, NOAA's Office of National Marine Sanctuaries (ONMS) published a proposed rule to expand the boundaries of the Humpback Whale National Marine Sanctuary in the main Hawaiian Islands (80 FR 16224). The purpose of this action is to transition the sanctuary from a single species management approach to an ecosystem-based management approach. The proposal would also change the name of the sanctuary to Na Kai Ewalu National Marine Sanctuary. The phrase means "the eight seas" in Hawaiian language and refers to the channels between the MHI and a poetic reference to the islands themselves.

Because there are no in-season management measures proposed, the ways in which the lobster fishery is conducted is not expected to change and, therefore, the proposed ACL specification and AMs would not have an environmental effect that would affect future decisions about

possible changes to the sanctuary management plan nor would the proposed action affect sanctuary resources to an extent that comprehensive effective management of the Sanctuary would not be possible.

#### **4.8.6 Climate change**

Changes in the environment from global climate change have the potential to affect spiny lobster fisheries. Effects of climate change may include: sea level rise; increased intensity or frequency of coastal storms and storm surges; changes in rainfall (more or less) that can affect salinity nearshore or increase storm runoff and pollutant discharges into the marine environment; increased temperatures resulting in coral bleaching, and hypothermic responses in some marine species (IPCC 2007). Increased carbon dioxide uptake can increase ocean acidity, which can disrupt calcium uptake processes in corals, crustaceans, mollusk, reef-building algae, and plankton, among other organisms (Houghton et al. 2001; The Royal Society 2005; Caldeira and Wickett 2005; Doney 2006; Kleypas et al. 2006). Climate change can also lead to changes in ocean circulation patterns which can affect the availability of prey, migration, survival, and dispersal (Buddenmeier et al. 2004). Damage to coastal areas due to storm surge or sea level rises as well as changes to catch rates, migratory patterns, or visible changes to habitats are among the most likely changes that would be noted first. Climate change has the potential to adversely affect some organisms, while others could benefit from changes in the environment to ensure that the spiny lobster catches are sustainable, regardless of environmental conditions.

The impacts to spiny lobsters from climate change may be difficult to discern from other impacts; however monitoring of physical conditions and biological resources by a number of agencies will continue to occur and will allow fishery managers to continually make adjustments in fishery management regimes in response to changes in the environment for any alternative.

The efficacy of the proposed ACL and AM specifications in providing for sustainable levels of fishing for spiny lobsters is not expected to be adversely affected by climate change. Recent catches relative to MSY and OFL estimates species helped to inform the development of the ACLs and AMs. Monitoring would continue, and, if monitoring shows overfishing is occurring, ACLs and other fishery management provisions could be adjusted in the future. The proposed specifications are not expected to result in a change to the manner in which any of the affected fisheries are conducted, so no change in greenhouse gas emissions is expected.

For these reasons, climate change, considered in addition to all other factors affecting lobster stocks (including fishing) is not expected to result in a large and adverse cumulative impact on lobster stocks that. The proposed action under each alternative is not expected to change the operation of the fishery and therefore, none of the action alternatives would result in changes in climate change-promoting gas emissions.

## **5 Consistency with Other Applicable Laws**

### **5.1 National Environmental Policy Act**

NOAA Administrative Order (NAO) 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act, in accordance with NEPA, requires the consideration of effects of proposed agency actions and alternatives on the human environment and allows for involvement of interested and affected members of the public before a decision is made. The NMFS Regional Administrator will use the analysis in this EA and public received on the draft EA to determine whether the proposed action would have a significant environmental impact, which, if so, would require the preparation of an environmental impact statement.

### **5.2 Preparers and Reviewers**

Nikhil Mehta, Fishery Biologist, SERO, SFD (preparer)  
Jarad Makaiau, Natural Resource Management Specialist, PIRO, SFD (preparer)  
Phyllis Ha, NEPA Specialist, PIRO, SFD NEPA (reviewer)  
Michelle McGregor, Regional Economist, PIRO, SFD (reviewer)

### **5.3 Agencies and Persons Consulted**

The proposed action described in this EA was developed in coordination with various federal and local government agencies that are represented on the Western Pacific Fishery Management Council. Specifically, agencies that participated in the deliberations and development of the proposed management measures include:

- American Samoa Department of Marine and Wildlife Resources
- Coastal Zone Management Program of American Samoa
- Guam Department of Agriculture, Division of Aquatic and Wildlife Resources
- Coastal Zone Management Program of Guam
- Hawaii Department of Land and Natural Resources, Division of Aquatic Resources
- Coastal Zone Management Program of Hawaii
- Commonwealth of the Northern Mariana Islands Department of Land and Natural Resources, Division of Fish and Wildlife
- U.S. Coast Guard
- U.S. Fish and Wildlife Service
- U.S. Department of State

### **5.4 Public Coordination**

The development of the proposed ACL and AM specifications for spiny lobster fisheries of American Samoa, Guam, the CNMI, and MHI took place in public meetings of the SSC and the Council. In addition, the Council advertised the need to focus on federal annual catch limits and accountability measures in media releases, newsletter articles, and on the Council's website, <http://www.wpcouncil.org>. Additionally, on July 21, 2015, NMFS published in the *Federal*

Register the proposed specification and solicited public comments on the action and on the draft EA (80 FR 4346). NMFS received one comment from a federal agency regarding ACLs at Wake Island. NMFS responded to this comment in the final rule.

## 5.5 Endangered Species Act

The Endangered Species Act (ESA) provides for the protection and conservation of threatened and endangered species. Section 7(a)(2) of the ESA requires federal agencies to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

Pursuant to Section 7 of the ESA, NMFS has evaluated the crustacean fisheries managed under the FEPs, including spiny lobster fisheries for potential impacts on ESA-listed species under the jurisdiction of NMFS. Table 23 summarizes ESA section 7 consultations for these fisheries managed under the FEPs for American Samoa, the Marianas (including Guam and CNMI) and Hawaii.

**Table 23.** ESA section 7 consultations for western Pacific crustacean fisheries.

| <b>FEP Fishery</b>                                                                  | <b>ESA Consultation</b>                   | <b>NMFS Determination</b>                                                 |
|-------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------|
| American Samoa Crustacean Fisheries (Deepwater shrimp, spiny lobster and Kona crab) | September 28, 2007, Letter of Concurrence | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                                                                     | April 9, 2015, Letter of Concurrence      |                                                                           |
| CNMI Crustacean Fisheries (Deepwater shrimp, spiny lobster and Kona crab)           | September 28, 2007, Letter of Concurrence | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                                                                     | April 29, 2015, Letter of Concurrence     |                                                                           |
| Guam Crustacean Fisheries (Deepwater shrimp, spiny lobster and Kona crab)           | September 28, 2007, Letter of Concurrence | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                                                                     | April 29, 2015, Letter of Concurrence     |                                                                           |
| Hawaii Crustacean Fisheries (Deepwater shrimp, spiny lobster and Kona crab)         | April 4, 2008, Letter of Concurrence      | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                                                                     | December 5, 2013, Letter of Concurrence   |                                                                           |

Because the proposed action is not expected to modify vessel operations or other aspects of any spiny lobster fishery in the four areas, NMFS concludes that crustacean fisheries in American Samoa, Guam, CNMI, and Hawaii under the preferred proposed action alternatives would not have an adverse effect on ESA listed species or any designated critical habitats that was not considered in prior consultations, and that no further consultation is required at this time.

## **5.6 Marine Mammal Protection Act**

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries (LOF) that classifies U.S. commercial fisheries into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. A Category 1 fishery is one with frequent incidental mortality and serious injury of marine mammals. A Category 2 fishery is one with occasional incidental mortality and serious injury of marine mammals. A Category 3 fishery is one with a remote likelihood or no known incidental mortality and serious injury of marine mammals.

On December 29, 2014, (79 FR 77919), NMFS published the final LOF for 2014 which classified Hawaii spearfishing, Hawaii lobster diving, and Hawaii lobster trap fishery as a Category 3 fishery under Section 118 of the MMPA. Category 3 fisheries are not required to register with the MMAP in order to engage in commercial fishing. NMFS has not yet included the commercial spiny lobster fisheries of American Samoa, Guam, and CNMI in the annual List of Fisheries. However, because spiny lobsters in these island areas are harvested by hand or by spear, it is reasonable to assume that they would be comparable to the Hawaii spearfishing and Hawaii lobster diving fisheries, and would have a remote likelihood of incidental mortality and serious injury of marine mammals.

Because the proposed action would not modify vessel operations or other aspects of any spiny lobster fishery, spiny lobster fisheries in American Samoa, Guam, CNMI and the MHI, spiny lobster fisheries as conducted under the proposed action, are not expected to affect marine mammals in any manner not previously considered or authorized the commercial fishing take exemption under section 118 of the MMPA.

## **5.7 Coastal Zone Management Act**

The Coastal Zone Management Act (CZMA) requires a determination that a recommended management measure has no effect on the land, water uses, or natural resources of the coastal zone or is consistent to the maximum extent practicable with an affected state's enforceable coastal zone management program. NMFS determined that the proposed specifications are consistent to the maximum extent practicable with the enforceable policies of the approved coastal zone management programs of American Samoa, Guam, the Northern Mariana Islands, and Hawaii. NMFS submitted this determination on June 1, 2015, for review by the appropriate agencies under section 307 of the CZMA.

## **5.8 National Historic Preservation Act**

The National Historic Preservation Act (NHPA) requires federal agencies undergo a review process for all federally funded and permitted projects that will impact sites listed on, or eligible for listing on, the National Register of Historic Places. Currently, there are no known sites or historic properties in EEZ waters 3 to 200 nm offshore of American Samoa, Guam, the CNMI or the MHI that are listed on or eligible for listing on the National Register of Historic Places.

Although shipwrecks and other objects from the Pacific theatre in World War II could possibly occur in federal waters around the U.S. Pacific Islands, lobster fishing, which involve harvest by hand or by spear is not known to have a damaging impact on the marine environment, and the proposed action would not change the manner in which any lobster fishery is conducted. Therefore, the proposed action would have no potential to effect on sites protected by the NHPA.

## **5.9 Paperwork Reduction Act**

The purpose of the Paperwork Reduction Act is to minimize the paperwork burden on the public resulting from the collection of information by or for the Federal government. It is intended to ensure the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501(1)). The proposed action would not establish any new permitting or reporting requirements and therefore it is not subject to the provisions of the Paperwork Reduction Act.

## **5.10 Regulatory Flexibility Act**

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) requires government agencies to assess and present the impact of their regulatory actions on small entities including small businesses, small organizations, and small governmental jurisdictions. The assessment is done by preparing an Initial Regulatory Flexibility Analysis and Final Regulatory Flexibility Analysis (FRFA) for each proposed and final rule, respectively. Under the RFA, an agency does not need to conduct an IRFA or FRFA if a certification can be made that the proposed rule, if adopted, will not have a significant adverse economic impact on a substantial number of small entities.

On June 12, 2014, the Small Business Administration issued an interim final rule revising small business size standards, effective July 14, 2014 (79 FR 33647). The rule increased the size standard for finfish fishing from 19.0 to \$20.5 million, shellfish fishing from \$5.0 million to \$5.5 million, and other marine fishing from \$7.0 million to \$7.5 million.

Based on available information presented in this EA, NMFS has determined that all vessels participating in the spiny lobster fisheries in American Samoa, Guam, the CNMI and the MHI are small entities under the Small Business Administration's definition of a small entity. That is, they are engaged in the business of fish harvesting, are independently owned or operated, are not dominant in their field of operation, and have annual gross receipts not in excess of \$5.5million, the small business size standard for shellfish fishing.

Even though this proposed ACL and AM would apply to a substantial number of vessels, i.e., 100 percent of the fleet, if fishing were to occur in federal waters, NMFS does not expect the rule will have a significantly adverse economic impact to individual vessels. This is because there is no in-season AM to prevent the fishery from exceeding an ACL, such as a fishery closure. Therefore, fishermen would not be required to alter any aspect of their fishing operations. Additionally, the catch limit does not favor any fisherman or disproportionately adversely affect a certain type of participant. Therefore, there are no disproportionate economic impacts between large and small entities and the proposed action, if implemented, would not have a significant economic impact on small entities. Furthermore, there are no disproportionate

economic impacts among the universe of vessels based on gear, home port, or vessel length. NMFS may request that the Department of Commerce Chief Counsel for Regulation certify to the Small Business Administration that the proposed rule and specifications would not have a significant economic impact on a substantial number of small entities.

### **5.11 Administrative Procedure Act**

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II) which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the *Federal register* and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it becomes effective, with rare exceptions.

The specification of ACLs for spiny lobsters in American Samoa, Guam, the CNMI and Hawaii complies with the provisions of the APA. In developing the proposed ACL specifications and AM recommendations, the Council and the SSC held public meetings, provided opportunities for the public to give comments on the proposed methods, specifications and recommendations, and the Council considered comments from the public and membership. NMFS will publish in the *Federal register*, a proposed specification announcing the proposed ACL specifications and AMs described in this document. The proposed specification will include requests for public comments and inform the public of the availability of the EA and request comments on the EA. After considering public comments, NMFS will publish in the *Federal register* a final specification which will become effective 30 days after publication, unless there is good cause to waive the 30-day delay of effectiveness period.

### **5.12 Executive Order 12898 Environmental Justice**

NMFS considered the effect of the proposed ACL specifications and AMs on Environmental Justice communities that include members of minority and low-income groups. The ACLs would apply to everyone that catches spiny lobsters in federal waters, and no new monitoring is required for the ACL specification or the AM to be implemented. The environmental review in this EA establishes that the proposed specifications of ACLs and provisions for post-season harvest reviews as the AMs in the western Pacific spiny lobster fisheries are not expected to result in a change to the way the fisheries are conducted.

The ACLs and AMs are intended to provide for long-term sustainability of spiny lobsters in American Samoa, Guam, the CNMI and Hawaii. Specification of the ACLs and post-season reviews are expected to benefit the target resources by providing annual review of the fishery performance and other information related to evaluating lobster stock status. This in turn, is expected to benefit fishery participants and fishing communities that rely on this resource for food, employment, recreation and enjoyment. The proposed specifications are not likely to result in a large adverse impact to the environment that could have disproportionately large or adverse effects on members of Environmental Justice communities in American Samoa, Guam, the CNMI, or Hawaii.

### **5.13 Executive Order 12866 Regulatory Impact Review**

A “significant regulatory action” means any regulatory action that is likely to result in a rule that may –

- 1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal government or communities;
- 2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- 3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- 4) Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

The specification of ACLs and AMs for Pacific Island spiny lobster fisheries is exempt from the procedures of E.O. 12866 because this action contains no implementing regulations.

### **5.14 Information Quality Act**

The Information Quality Act requires federal agencies to ensure and maximize the quality, objectivity, utility, and integrity of information disseminated by federal agencies. To the extent feasible, the information in this document is current. Much of the information was made available to the public during the deliberative phases of developing the proposed specifications during meetings of the Council and its SSC. The information was also improved based on the guidance and comments from the Council’s advisory groups.

NMFS staffs prepared the documents based on information provided to the Council by NMFS Pacific Islands Fisheries Science Center (PIFSC) and NMFS Pacific Islands Regional Office (PIRO) and after providing opportunities for members of the public to comment at Council meetings. Additionally, this EA will be made available to the public during the comment period for the proposed specification. The process of public review of this document provides an opportunity for comments on the information contained in this document, as well as for the provision of additional information regarding the proposed specifications and potential environmental effects.



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## Appendix A Western Pacific Crustacean Management Unit Species

### American Samoa Spiny Lobster Management Unit Species

| Scientific Name               | English Common Name | Local Name |
|-------------------------------|---------------------|------------|
| <i>Panulirus marginatus</i>   | spiny lobster       | ula        |
| <i>Panulirus penicillatus</i> | spiny lobster       | ula-sami   |

### Mariana Spiny Lobster Management Unit Species (CNMI and Guam)

| Scientific Name               | English Common Name | Local Name<br>(Chamorro/Carolinian) |
|-------------------------------|---------------------|-------------------------------------|
| <i>Panulirus penicillatus</i> | spiny lobster       | Mahongang                           |

### Hawaii Spiny Lobster Management Unit Species

| Scientific Name               | English Common Name | Local Name |
|-------------------------------|---------------------|------------|
| <i>Panulirus marginatus</i>   | spiny lobster       | ula        |
| <i>Panulirus penicillatus</i> | spiny lobster       | ula        |

## **Appendix B**      Results of the Biomass Augmented Catch-MSY model

Tables B1-B4 below summarize the maximum sustainable yield (MSY) estimates and risk of overfishing percentages for spiny lobsters presented in Appendix 2 in Sabater and Kleiber (2014). Risk projections are presented in 5 percent increments. In accordance with National Standard 1 guidelines of the Magnuson-Stevens Act, the probability of overfishing cannot exceed 50 percent and should be a lower value (74 FR 3178, January 9, 2011).

**Table B1. American Samoa Spiny Lobster (k-revise method B results)**

| <b>MSY Estimate: 7,300 lb</b>  |                                 |
|--------------------------------|---------------------------------|
| <b>Risk of overfishing (%)</b> | <b>Corresponding Catch (lb)</b> |
| 50%                            | 7,100                           |
| 45%                            | 6,400                           |
| 40%                            | 5,900                           |
| 35%                            | 5,300                           |
| 30%                            | 4,700                           |
| 25%                            | 4,300                           |
| 20%                            | 3,800                           |
| 15%                            | 3,300                           |
| 10%                            | 2,800                           |
| 5%                             | 2,300                           |

**Table B2. CNMI Spiny Lobster (k-revise method B results)**

| <b>MSY Estimate: 9,600 lb</b>  |                                 |
|--------------------------------|---------------------------------|
| <b>Risk of overfishing (%)</b> | <b>Corresponding Catch (lb)</b> |
| 50%                            | 9,200                           |
| 45%                            | 8,700                           |
| 40%                            | 8,300                           |
| 35%                            | 7,800                           |
| 30%                            | 7,400                           |
| 25%                            | 7,100                           |
| 20%                            | 6,700                           |
| 15%                            | 6,400                           |
| 10%                            | 6,100                           |
| 5%                             | 5,700                           |

**Table B3. Guam Spiny Lobster (k-revise method B results)**

| <b>MSY Estimate: 4,600 lb</b>  |                                 |
|--------------------------------|---------------------------------|
| <b>Risk of overfishing (%)</b> | <b>Corresponding Catch (lb)</b> |
| 50%                            | 4,300                           |
| 45%                            | 4,000                           |
| 40%                            | 3,600                           |
| 35%                            | 3,300                           |
| 30%                            | 3,000                           |
| 25%                            | 2,700                           |
| 20%                            | 2,500                           |
| 15%                            | 2,200                           |
| 10%                            | 2,000                           |
| 5%                             | 1,700                           |

**Table B4. Main Hawaiian Islands Spiny Lobster (k-revise method B results)**

| <b>MSY Estimate: 20,400 lb</b> |                                 |
|--------------------------------|---------------------------------|
| <b>Risk of overfishing (%)</b> | <b>Corresponding Catch (lb)</b> |
| 50%                            | 19,200                          |
| 45%                            | 18,100                          |
| 40%                            | 17,200                          |
| 35%                            | 16,500                          |
| 30%                            | 15,800                          |
| 25%                            | 15,000                          |
| 20%                            | 14,300                          |
| 15%                            | 13,500                          |
| 10%                            | 12,600                          |
| 5%                             | 11,700                          |

## Appendix C Report of the P\* Working Group



### **P\* Working Group Meeting**

December 11-12, 2013  
1:00 pm – 5:00 pm  
Council Conference Room  
WPRFMC Office

#### **Day 1**

**Present On Site:** Dr. Pierre Kleiber (ret. NMFS PIFSC), Dr. Bob Humphreys (NMFS PIFSC), Mr. Ed Watamura (Advisory Panel Chair), Mr. Roy Morioka (H-FACT), Mr. Ed Ebisui (Council member, Program Planning Chair), Marlowe Sabater (WPRFMC), Dr. Bob Skillman (ret. NMFS PIFSC), Paul Dalzell (WPRFMC)

**On the Conference Line:** Dr. Erik Franklin (UH HIMB), Dr. Domingo Ochavillo (DMWR, AS), Dr. Todd Miller (DFW, CNMI), Michael Tenorio (DFW, CNMI), Mr. Jarad Makaiau (NMFS – PIRO)

#### **Day 2**

**Present On Site:** Dr. Pierre Kleiber (ret. NMFS PIFSC), Dr. Bob Humphreys (NMFS PIFSC), Mr. Ed Watamura (Advisory Panel Chair), Mr. Roy Morioka (H-FACT), Mr. Ed Ebisui (Council member, Program Planning Chair), Marlowe Sabater (WPRFMC), Paul Dalzell (WPRFMC), Dr. Erik Franklin (UH HIMB), Gerard DiNardo (NMFS PIFSC), Lennon Thomas (NMFS PIFSC)

**On the Conference Line:** Dr. Domingo Ochavillo (DMWR, AS), Mr. Jarad Makaiau (NMFS – PIRO)

## **REPORT**

### **Introductions**

Mr. Edwin Ebisui chaired the third meeting of the P\* Working Group. In attendance were Robert Skillman, Pierre Kleiber, Robert Humphreys, Ed Watamura, Roy Morioka, Jarad Makaiau, Erik Franklin, Domingo Ochavillo, Todd Miller and Michael Tenorio. Marlowe Sabater and Paul Dalzell provided technical and administrative support.

### **Recommendations from the SSC**

Council staff presented on the summary of the recommendations by the Scientific and Statistical Committee from its 114<sup>th</sup> meeting. The recommendation focuses on the endorsement of the Martell, Froese and Kleiber (MFK) model for management purposes and directed staff to finalize the MSY estimates for P\* analysis. In addition, the SSC recommended to reconvene the P\* WG and finalize the criteria to determine the appropriate level of risk and associated acceptable biological catch for the fishing year 2015. The SSC also suggested applying the MFK model to fully assessed Tier 1 stocks (e.g., bottomfish) in order to gauge the MFK model's accuracy. Council staff reminded the working group members that it is critical to finalize the P\* score in this meeting in order to meet the timeline needed to complete the specification package to utilize the new ABCs for fishing year 2015.

### **Review of the previous P\* WG Meeting**

Council staff summarized the accomplishments of the P\* WG from the 2 previous meetings, held May 28-29, 2013 and June 12, 2013, respectively. Staff also presented on the action items of the WG from the second meeting and how those action items were addressed. The actions included: 1) Covert the PSA scores from Thomas (2013) to the same scale as what is used in the Productivity-Susceptibility Dimension of the P\* Analysis. The converted values were included in the briefing materials (Document 7.0). This would serve as a proxy for the Guam P-S exercise; 2) Finish/refine the P\* criteria particularly the scientific information and the stock status. The scientific information was revisited and the approach aspect elements were re-evaluated for changes; 3) Follow-up with SSC members on their P-S scores. All of the P\* WG members assigned to provide P-S scores had submitted their scores and was included in the briefing materials; and 4) Finalize the technical paper. The technical paper was included in the briefing materials as the final draft.

### **Review of the biomass-augmented catch-MSY model**

Dr. Pierre Kleiber presented on the results of the comparative analysis suggested by the SSC to determine accuracy of the MSY results from the augmented catch-MSY model. MSY estimates from the MFK model were compared to MSY estimates from two PIFSC bottomfish stock assessments, the 2011 MHI Deep 7 bottomfish stock assessment and the 2012 bottomfish stock assessment for American Samoa, Guam and the CNMI. In two instances, the results of the augmented catch-MSY model were more conservative than the stock assessment results. Specifically, the results for American Samoa showed more conservative results where the augmented catch-MSY model estimated MSY at 51,000 lbs and the stock assessment estimated MSY at 76,000 lbs. Similarly, the results for CNMI from the catch-MSY approach are less than half of the results of the stock assessment (catch-MSY = 100,000 lbs and stock assessment = 173,000 lbs).

For Guam bottomfish and MHI Deep 7 bottomfish, the augmented catch-MSY approach provided less conservative estimates of MSY. Specifically, for Guam bottomfish, the augmented catch-MSY model estimated an MSY of 60,000 lbs while the stock assessment estimated and MSY of 56,000 lbs. For all comparative analysis, the biomass estimates are incorporated to simulate what was done with the augmented catch MSY approach. However, there is some circularity in the approach because the biomass estimates used in the augmented catch-MSY approach came from the biomass generated by the stock assessment. Similarly for MHI Deep 7 bottomfish, the augmented catch-MSY model resulted in MSY estimates that are higher than the MSY estimated in the PIFSC 2011 stock assessment. The data used for the augmented catch-MSY analysis was catch scenario 2/CPUE scenario 1 where the unreported non-commercial landing was assumed to be 1:1 to the reported commercial landing. The resulting MSY estimate for the catch-MSY approach was 1,548,000 lbs whereas the resulting MSY from the stock assessment (using CPUE scenario 1) was 848,000 lbs which is 45% lower than the catch-MSY result. It was hoped that the estimates be more close to each other.

The discrepancy in the Hawaii results may be due to how the augmented catch-MSY model responds to assumptions in stock exploitation relative to stock biomass. Bottomfish fisheries in the territories (with perhaps the exception of Guam) have high biomass and low fishing mortality. However Hawaii has higher fishing mortality and therefore higher population turnover



per time step. Too much turnover per time step can cause the underlying population model in the catch-MSY approach to be erratic. This is not a problem inherent in the Schaefer model but rather a problem in way it is currently coded in the catch-MSY software. This could be fixed, though perhaps at the expense of longer running times for the model.

The data also for Hawaii goes all the way back to 1948. Simulation run was also conducted to test for effect of the long catch time series by truncating to the most catch data since 1970. The results were almost the same. Also checked was the  $r$ -k density plot to see if there is anything wrong, but the plot does not provide any indication that there is something wrong in the  $r$ -k algorithm.

The Hawaii data seemed to be anomalous in more than one case. The Chair liked the idea that the model is generating conservative results for data poor stocks. However, in the case for stocks that are exploited there must be some ancillary factors affecting the results that need to be accounted for.

### **Review and changes to the P\* Dimensions and Criteria**

Council staff presented the different dimensions of the P\* analysis and the criteria under each dimension as revised by the P\* WG members from the last 2 meetings. The WG members reviewed the preliminary scores of the Model Information and Uncertainty Characterization Dimensions. The WG members retained the preliminary scores and deemed it applicable for the current methods under Tier 3.

For the Model Information Dimension, the WG deemed the MFK model falls somewhere between 2 and 4 since it aspects captured within this range.

| <b>Model Information Description</b>                                                                                                                                                                                                            | <b>Score</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Highly quantitative probabilistic approach that provides estimates of depletion and biomass status; includes MSY benchmarks; model input parameters include fishery dependent and independent information with limited assumptions              | 0.0          |
| Quantitative probabilistic approach that provides estimates of depletion and biomass status; includes MSY benchmarks; model input parameters include at least fishery dependent or fishery independent information with additional assumptions; | 2.0          |
| Quantitative assessment non-probabilistic approach utilizing bulk estimators providing measures of exploitation or B, proxy reference points, includes MSY benchmarks; some sources of mortality accounted for                                  | 4.0          |
| Semi quantitative assessment; utilizes estimators that generate relative measures of exploitation or B, proxy reference points, no MSY benchmarks, absolute measures of stock unavailable                                                       | 6.0          |
| No benchmark values, but reliable catch history                                                                                                                                                                                                 | 8.0          |
| Bad. No benchmark values, and scarce or unreliable catch records                                                                                                                                                                                | 10.0         |

In order to determine exactly where, the WG scored the approach aspect. The scores are as follows:

| Approach Aspects (AAs)                         | Score      |
|------------------------------------------------|------------|
| Reliable catch history                         | 0          |
| Measure of depletion                           | 1          |
| Species-specific data                          | 1          |
| All sources of mortality accounted for (z)     | 0.5        |
| Fishery independent information                | 0.5        |
| Probability distribution available (output)    | 0          |
| Population/biological parameters (r or k etc.) | 0.5        |
| <b>SUM</b>                                     | <b>3.5</b> |

Using the scaling equivalency table, the score of 3.5 has a scaled equivalent of 3.0.

| AAs Score  | Scaled equivalent | AAs Score | Scaled equivalent |
|------------|-------------------|-----------|-------------------|
| 0.5        | 2.1               | 4         | 3.1               |
| 1          | 2.3               | 4.5       | 3.3               |
| 1.5        | 2.4               | 5         | 3.4               |
| 2          | 2.6               | 5.5       | 3.6               |
| 2.5        | 2.7               | 6         | 3.7               |
| 3          | 2.9               | 6.5       | 3.9               |
| <b>3.5</b> | 3.0               | 7         | 4.0               |

Hence for the **Model Information Dimension the score is 3.0.**

The Uncertainty Characterization Dimension had not been revised since this dimension is applicable for a Tier 1 to Tier 3 stock. The WG maintained the **score of 5** for this model-based approach under this Tier. The group scored this dimension as 5.0 since uncertainties can be adjusted by controlling for the range of r and k as well as the process error of the Schaefer Model (see P\* WG second meeting report). By process of elimination it cannot be scored as 7.5 because there is an estimate of MSY and probability distribution around that MSY.

The table for this Dimension is shown below:

| Uncertainty Characterization Description                                                                                                            | Score      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Complete. Key determinant – uncertainty in both assessment inputs and environmental conditions included                                             | 0.0        |
| High. Key determinant – reflects more than just uncertainty in future recruitment                                                                   | 2.5        |
| <b>Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections</b> | <b>5.0</b> |
| Low. Distributions of Fmsy and MSY are lacking                                                                                                      | 7.5        |
| None. Only single point estimates; no sensitivities or uncertainty evaluations                                                                      | 10.0       |

### Fishing Level Scoring Session

This model approach provides an estimate of relative sustainable harvest level and has limited information on the stock status. Hence the third dimension had been revised to provide insight of  $F/F_{MSY}$  and not  $B/B_{MSY}$ . Council staff presented a summary of the Fishing Level Table (Document 4.0) and explained how the values were derived. Each of the families with MSY estimates were scored based on the criteria constructed by the P\* Working Group at its second meeting. The summary of the scoring criteria is shown in the table below. A logical argument in Excel was crafted following the criteria designed by the WG members. In order to determine the final scores for each family, the WG was asked to define and determine 2 parameters:

- 1) Define catch – would the catch be defined as the point estimate of the most recent year in the time series; or an average of 3 years; or an average of 5 years
- 2) Determine MSY based on 2 different method in defining the  $r$  and  $k$  range – here termed as  $k$ -revise method A and  $k$ -revise method B

| Description             | Fishing level       | Score |
|-------------------------|---------------------|-------|
| Lightly harvested       | Catch $\ll 1/3MSY$  | 0.0   |
| Moderately harvested    | Catch $< MSY$       | 2.5   |
| Fully harvested         | Catch $\approx MSY$ | 5.0   |
| Over harvested          | Catch $> MSY$       | 7.5   |
| Severely Over harvested | Catch $> 2x+MSY$    | 10.0  |

#### Rationale for using 3 year average:

The WG members defined catch as average catch over a three year period. Using an average of a recent segment of the catch time series addresses short term fluctuation in catches brought about by variability in productivity and fishery dynamics. A three year average allows us to see trends that are occurring recently and is reasonable time frame for management to be reactive to recent changes in the fishery. This also balances random fluctuation in catch as opposed to real stock change which can then be used as point estimate for comparison with MSY reference points.

#### Rationale for using $k$ -revise method B:

The catch-MSY method examines 30,000 randomly chosen points in a window in  $r$ - $k$  space. Each point corresponds to a pair of  $r$  and  $k$  values. Plausible  $r$ - $k$  pairs are identified if a Schaefer model run with those parameter values can generate a biomass time series that accommodates the catch time series as well as any measured values of biomass and satisfies other criteria such as biomass not going below zero or not exceeding  $k$ . The plausibility density in  $r$ - $k$  space is interpreted as a probability density from which  $r$ ,  $k$ , and hence MSY can be estimated where

$$MSY = rk/4. \quad (1)$$

At the outset the window in  $r$ - $k$  space is determined by ranges of  $r$  and  $k$  assumed to contain the true values of  $r$  and  $k$ . These ranges are purposely wide -- perhaps orders of magnitude (particularly for  $k$ ) -- to minimize the possibility that the true value of either  $r$  or  $k$  is outside the window. To focus into a region of high density, another set of 30,000 points is then examined

from a revised window and MSY estimated. The revised ranges are calculated based on the outcome from the first window.

There are two methods for calculating the revised range for  $k$ , method A and method B, and Figures 1 and 2 show plausibility density for method A and B respectively. The dashed lines in the density plots indicate the locus of points corresponding to a constant value for MSY determined by equation (1) above with  $r$  and  $k$  estimated from the plausible  $r$ - $k$  pairs. Ideally the density plots should show a high density ridge with density sloping off on either side and the MSY line associated with that ridge. Good examples are in the sigma-a plot in Figure 1 and most of the plots in Figure 2. Some of the plots in Figure 1 indicate that the final window in  $r$ - $k$  space was missing the highest density ridge, being located too far below/left (e.g. caran-a) or too far above/right (e.g. holo-a). The scattering of holes in the density plots is another indication that the window was not well located, and the near verticality of the MSY lines in several plots indicates that the range in  $k$  values was too narrow and badly located. Mis-located windows are also indicated in truncated density distributions of MSY from method A (Figure 3).

Because  $k$ -revise method B was more consistent in finding a good  $k$  range, the WG members determined that MSY estimates generated from the  $k$ -revise method B is preferred over  $k$ -revise method A. However, it was suggested that determination of ranges for  $r$  and particularly for  $k$  might be improved with a more flexible and perhaps interactive method for final placement of the window in  $r$ - $k$  space.

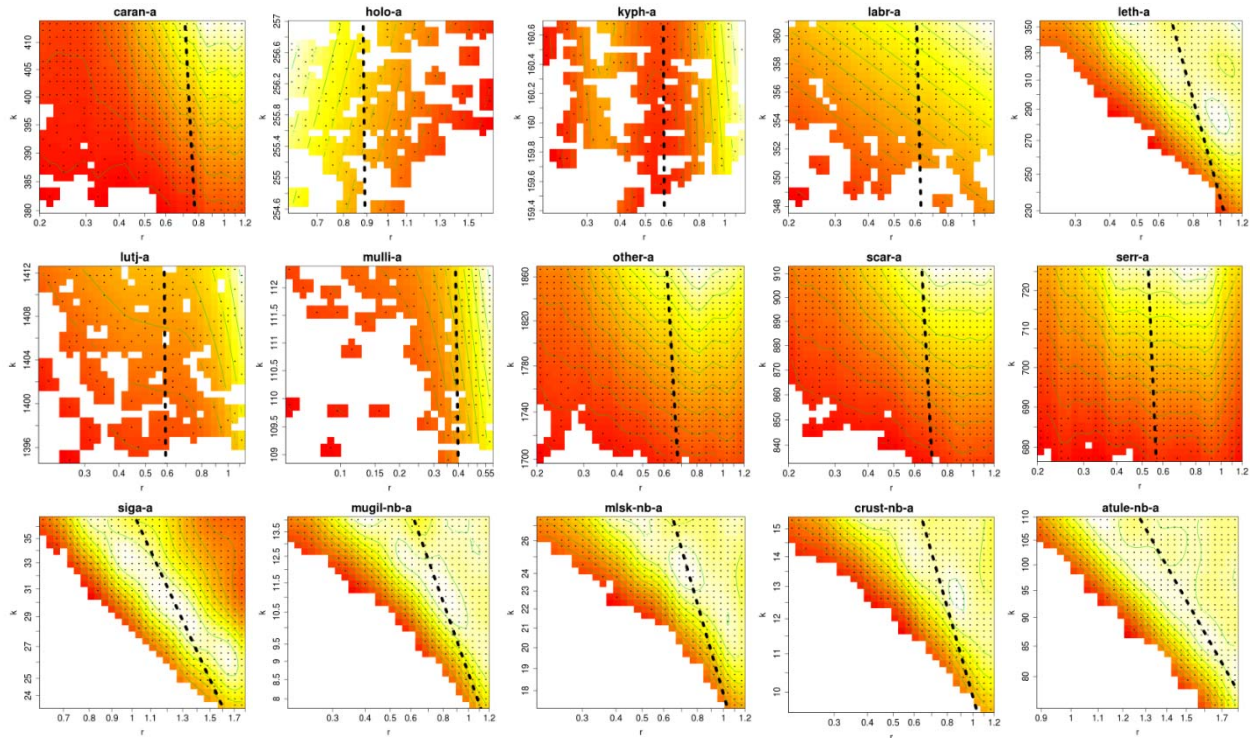


Figure 1. Density of plausible  $r$ - $k$  combinations for the different families of reef fish and reef associated organisms using  $k$ -revise method A. Dashed lines show the locus of points corresponding to the estimated MSY.



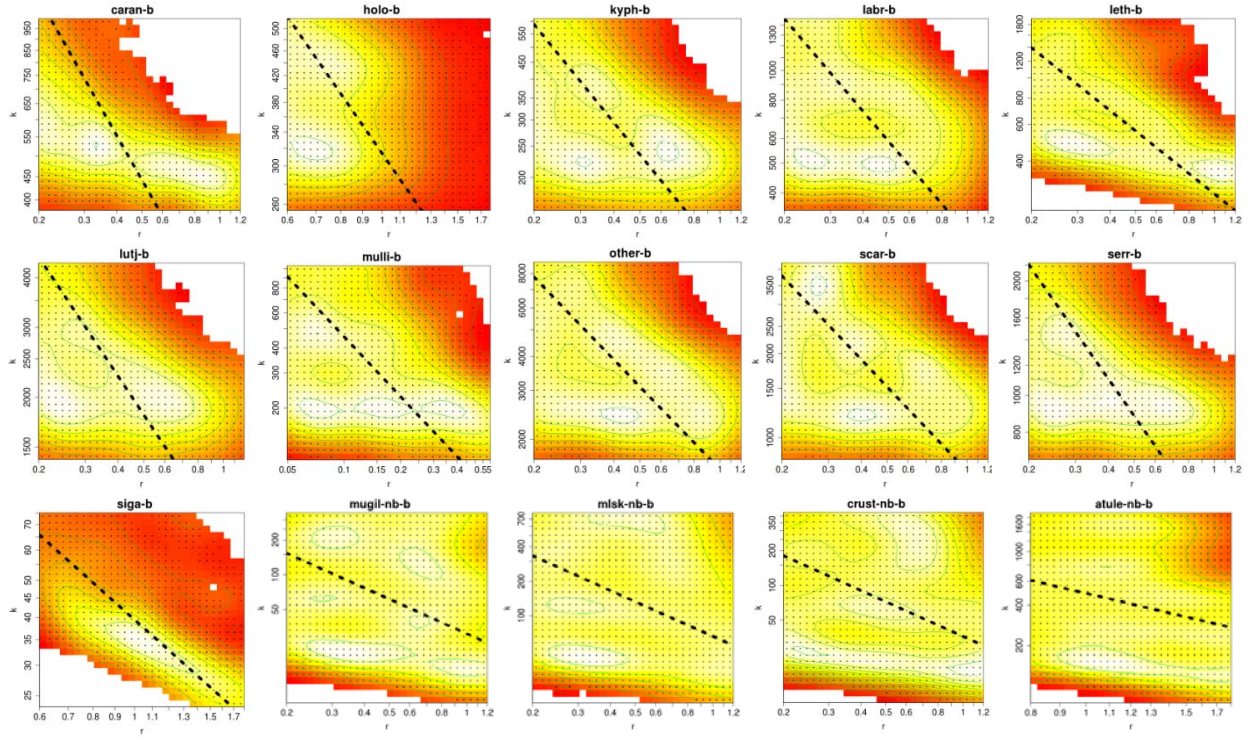


Figure 2. Density of plausible  $r$ - $k$  combinations in  $r$ - $k$  space for the different families of reef fish and reef associated organisms using  $k$ -revise method B. Dashed lines show the locus of points corresponding to the estimated MSY.

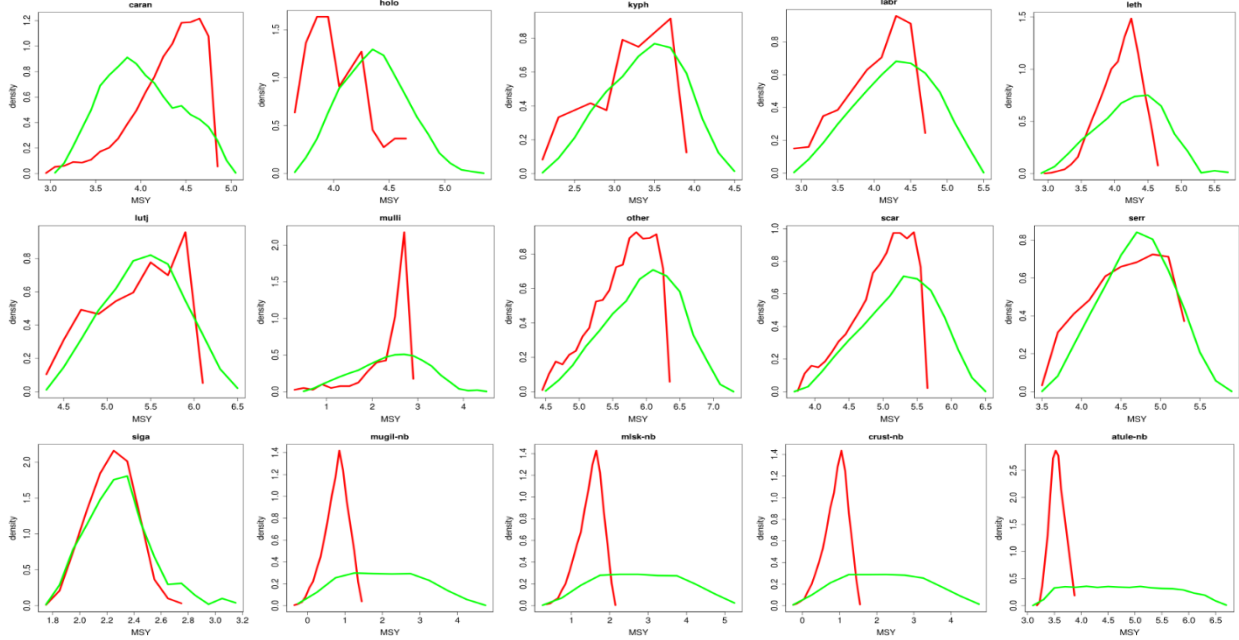


Figure 3. Density distributions of MSY values estimated by  $k$ -revise method A (red) and method B (green).

### Productivity and Susceptibility Scoring Session

P\* Working Group Members were requested to provide a score on the productivity and susceptibility for species that dominates the catch under each of their respective family grouping. When multiple species are scored under each family, the scores were averaged across species to represent the final score.

| Productivity and Susceptibility Description            | Score      |
|--------------------------------------------------------|------------|
| Low risk. High productivity, susceptibility low.       | 0.0        |
| Low/Medium                                             | 2.5        |
| Medium risk. Moderate productivity, and susceptibility | <b>5.0</b> |
| Medium/High                                            | 7.5        |
| High risk. Low productivity, high susceptibility       | 10         |

Hawaii – Bob Humphreys presented a summary of the Productivity Susceptibility scores (in collaboration with Ed DeMartini) for the coral reef MUS for Hawaii. The scores were given for species that make up the 90% of the coral reef catch. The productivity scores were based on the life history characteristics (e.g. age and growth, longevity,  $L_{inf}$  etc.) available from local studies or from the literature. Susceptibility scores were based on the type of fishery it was harvested as well as proximity of the habitat to human presence. If there is no information then a default risk score of 5 is assigned. Details of the PS scores are found in Appendix 1.

Guam – Lennon Thomas presented on the Productivity Susceptibility Analysis for the Guam coral reef MUS. The analysis utilized the expanded creel survey data and focused on 33 species that comprised more than 50% of the catch (Thomas 2013). These species represents the families of reef fishes that have ACLs. Six life history attributes were used to evaluate productivity: 1) Maximum age; 2) Maximum size; 3) Age at maturity; 4) Von Bertalanffy growth coefficient; 5) Natural mortality; and 6) Trophic level; were used to evaluate productivity. On the other hand, the four attributes used to evaluate susceptibility were: 1) Fishery value; 2) Vertical range; 3) Geographic distribution; and 4) Behavior and relationship to catchability; were used to evaluate susceptibility. All attributes were scored on a range of 1 to 3 where 1 is low, 2 is moderate, and 3 is high. The vulnerability of each species was then calculated which is the Euclidean distance from the xy origin of a scatterplot. However, for the purposes of the P\* analysis, only the final scores for the productivity and susceptibility were used. The final productivity and susceptibility scores were rescaled to the 0-10 scale of the P\* PSA with 2.5 increments. The conversion table is shown below.

| DESCRIPTION | PSA_scale | P_scale | S_scale |
|-------------|-----------|---------|---------|
| <b>LOW</b>  | 1         | 10      | 0       |
|             | 1.1       | 9.5     | 0.5     |
|             | 1.2       | 9       | 1       |
|             | 1.3       | 8.5     | 1.5     |
|             | 1.4       | 8       | 2       |
|             | 1.5       | 7.5     | 2.5     |

| DESCRIPTION     | PSA_scale | P_scale | S_scale |
|-----------------|-----------|---------|---------|
|                 | 1.6       | 7       | 3       |
|                 | 1.7       | 6.5     | 3.5     |
|                 | 1.8       | 6       | 4       |
|                 | 1.9       | 5.5     | 4.5     |
| <b>MODERATE</b> | 2         | 5       | 5       |
|                 | 2.1       | 4.5     | 5.5     |
|                 | 2.2       | 4       | 6       |
|                 | 2.3       | 3.5     | 6.5     |
|                 | 2.4       | 3       | 7       |
|                 | 2.5       | 2.5     | 7.5     |
|                 | 2.6       | 2       | 8       |
|                 | 2.7       | 1.5     | 8.5     |
|                 | 2.8       | 1       | 9       |
|                 | 2.9       | 0.5     | 9.5     |
| <b>HIGH</b>     | 3         | 0       | 10      |

To ensure compatibility with the study results, the converted scores for the P\* PSA and the vulnerability scores were compared. Details of the PS scores are found in Appendix 2.

CNMI – Todd Miller presented on the summary of the Productivity Susceptibility scores (in collaboration with Michael Tenorio, Sean MacDuff and John Gourley) for the coral reef MUS for CNMI. The basis for the scoring was from its commonness or predominance in the underwater census surveys, creel survey, market survey and BioSampling program. For the productivity scores this was based on the frequency of sighting in the underwater surveys. The susceptibility scores were based on whether the species are targeted and its commonality in the commercial and non-commercial landing. Details of the PS scores are found in Appendix 3

American Samoa – Domingo Ochavillo presented the summary of the Productivity Susceptibility scores for the coral reef MUS for American Samoa. The scoring was based on the available life history characteristics for the productivity criteria. Scoring for the susceptibility was based on dominance in the coral reef fish catch. Details of the PS scores are found in Appendix 4.

#### **P\* for the Western Pacific Coral Reef Management Unit Species**

Summing all the dimension scores yields the total uncertainties and when deducted from the 50% risk of overfishing will result in the P\*. If accepted by the SSC, the level of catch associated with P\* as provided in Sabater and Kleiber (2013) will correspond to the acceptable biological catch. Since the P\* values in Sabater and Kleiber (2013) are presented in 5% increment, the SSC may consider rounding P\* values up or down depending on the scores proximity to the incremental value.

Table 1. Summary of the dimension scores and the resulting P\* for the Hawaii management unit species with ACLs for fishing year 2015.

| <b>Hawaii Grouping</b>                | <b>M.I.</b> | <b>U.C</b> | <b>S.S</b> | <b>P.S</b> | <b>Σ</b> | <b>P*</b> |
|---------------------------------------|-------------|------------|------------|------------|----------|-----------|
| Acanthuridae – surgeonfish            | 3           | 5          | 0          | 5.8        | 13.8     | 36.2      |
| Atule - <i>Selar crumenophthalmus</i> | 3           | 5          | 2.5        | 2.5        | 13.0     | 37.0      |
| Carangidae – jacks                    | 3           | 5          | 0          | 2.5        | 10.5     | 39.5      |
| Carharhinidae – reef sharks           | 3           | 5          |            |            |          |           |
| Crustaceans – crabs                   | 3           | 5          | 5          | 5          | 18.0     | 32.0      |
| Holocentridae – squirrelfish          | 3           | 5          | 2.5        | 6.3        | 16.8     | 33.3      |
| Kyphosidae - rudderfish               | 3           | 5          | 0          | 5          | 13.0     | 37.0      |
| Labridae - wrasses                    | 3           | 5          | 0          | 5          | 13.0     | 37.0      |
| Lethrinidae - emperors                | 3           | 5          | 0          | 5          | 13.0     | 37.0      |
| Lutjanidae – snappers                 | 3           | 5          | 0          | 1.2        | 9.2      | 40.8      |
| Mollusks – turbo snails; octopus      | 3           | 5          | 5          | 5          | 18.0     | 32.0      |
| Mugilidae – mullets                   | 3           | 5          | 2.5        | 6.6        | 17.1     | 32.9      |
| Mullidae – goatfish                   | 3           | 5          | 2.5        | 5.6        | 16.1     | 33.9      |
| Opelu - <i>Decapterus macarellus</i>  | 3           | 5          | 2.5        | 5          | 15.5     | 34.5      |
| Other CREMUS                          | 3           | 5          | 0          | 6          | 14.0     | 36.0      |
| Scaridae – parrotfish                 | 3           | 5          | 0          | 7.5        | 15.5     | 34.5      |
| Serranidae - groupers                 | 3           | 5          | 0          | 0          | 8.0      | 42.0      |
| Spiny lobster                         | 3           | 5          | 0          | 5          | 13.0     | 37.0      |

Table 2. Summary of the dimension scores and the resulting P\* and associated ABCs for the Guam management unit species with ACLs for fishing year 2015.

| <b>Guam Grouping</b>            | <b>M.I.</b> | <b>U.C</b> | <b>S.S</b> | <b>P.S</b> | <b>Σ</b> | <b>P*</b> |
|---------------------------------|-------------|------------|------------|------------|----------|-----------|
| Acanthuridae – surgeonfish      | 3           | 5          | 2.5        | 3.9        | 14.4     | 35.6      |
| Algae                           | 3           | 5          | 0          | 5          | 13       | 37        |
| <i>Selar crumenophthalmus</i>   | 3           | 5          | 7.5        | 4.3        | 19.8     | 30.2      |
| Carangidae – jacks              | 3           | 5          | 5          | 5.7        | 18.7     | 31.3      |
| Carcharhinidae – reef sharks    | 3           | 5          |            |            |          |           |
| Crustaceans – crabs             | 3           | 5          | 0          | 5          | 13       | 37        |
| Holocentridae – squirrelfish    | 3           | 5          | 0          | 4.8        | 12.8     | 37.2      |
| Kyphosidae – rudderfish         | 3           | 5          | 2.5        | 5.6        | 16.1     | 33.9      |
| Labridae – wrasses              | 3           | 5          | 0          | 7.5        | 15.5     | 34.5      |
| Lethrinidae – emperors          | 3           | 5          | 0          | 6.3        | 14.3     | 35.7      |
| Lutjanidae – snappers           | 3           | 5          | 0          | 7.4        | 15.4     | 34.6      |
| Mollusks – turbo snail; octopus | 3           | 5          | 0          | 5          | 13       | 37        |
| Mugilidae – mullets             | 3           | 5          | 0          | 5.8        | 13.8     | 36.2      |
| Mullidae – goatfish             | 3           | 5          | 0          | 3.8        | 11.8     | 38.2      |



|                        |   |   |     |     |      |      |
|------------------------|---|---|-----|-----|------|------|
| Other CREMUS           | 3 | 5 | 0   | 5   | 13   | 37   |
| Scaridae – parrotfish  | 3 | 5 | 2.5 | 5.8 | 16.3 | 33.7 |
| Serranidae – groupers  | 3 | 5 | 0   | 6.7 | 14.7 | 35.3 |
| Siganidae – rabbitfish | 3 | 5 | 0   | 4.1 | 12.1 | 37.9 |
| Spiny lobster          | 3 | 5 | 0   | 5   | 13   | 37   |

Table 3. Summary of the dimension scores and the resulting P\* and associated ABCs for the CNMI management unit species with ACLs for fishing year 2015.

| <b>CNMI Grouping</b>            | <b>M.I.</b> | <b>U.C</b> | <b>S.S</b> | <b>P.S</b> | <b>Σ</b> | <b>P*</b> |
|---------------------------------|-------------|------------|------------|------------|----------|-----------|
| Acanthuridae – surgeonfish      | 3           | 5          | 0          | 4.3        | 12.3     | 37.7      |
| <i>Selar crumenophthalmus</i>   | 3           | 5          | 0          | 2.5        | 10.5     | 39.5      |
| Carangidae – jacks              | 3           | 5          | 0          | 4.2        | 12.2     | 37.8      |
| Crustaceans-crab                | 3           | 5          | 0          | 5          | 13       | 37        |
| Holocentridae - squirrelfish    | 3           | 5          | 0          | 4.8        | 12.8     | 37        |
| Kyphosidae – rudderfish         | 3           | 5          | 0          | 5.6        | 13.6     | 36        |
| Labridae – wrasses              | 3           | 5          | 0          | 7.5        | 15.5     | 35        |
| Lethrinidae – emperors          | 3           | 5          | 2.5        | 4.9        | 15.4     | 34.6      |
| Lutjanidae – snappers           | 3           | 5          | 0          | 3.2        | 11.2     | 38.8      |
| Mollusks – turbo snail; octopus | 3           | 5          | 0          | 3.2        | 11.2     | 38.8      |
| Mugilidae – mullets             | 3           | 5          | 0          | 4          | 12       | 38        |
| Mullidae – goatfish             | 3           | 5          | 0          | 4          | 12       | 38        |
| Other CREMUS                    | 3           | 5          | 0          | 4.8        | 12.8     | 37.2      |
| Scaridae – parrotfish           | 3           | 5          | 0          | 6          | 14       | 36        |
| Serranidae – groupers           | 3           | 5          | 0          | 5.3        | 13.3     | 36.7      |
| Siganidae – rabbitfish          | 3           | 5          | 2.5        | 4          | 14.5     | 35.5      |
| Spiny lobster                   | 3           | 5          | 0          | 5          | 13       | 37        |

Table 4. Summary of the dimension scores and the resulting P\* and associated ABCs for the American Samoa management unit species with ACLs for fishing year 2015.

| <b>American Samoa Grouping</b>  | <b>M.I.</b> | <b>U.C</b> | <b>S.S</b> | <b>P.S</b> | <b>Σ</b> | <b>P*</b> |
|---------------------------------|-------------|------------|------------|------------|----------|-----------|
| Acanthuridae – surgeonfish      | 3           | 5          | 0          | 3.3        | 11.3     | 38.7      |
| <i>Selar crumenophthalmus</i>   | 3           | 5          | 0          | 2.5        | 10.5     | 39.5      |
| Carangidae – jacks              | 3           | 5          | 0          | 5          | 13       | 37        |
| Carcharhinidae – reef sharks    | 3           | 5          |            |            |          |           |
| Crustaceans – crabs             | 3           | 5          | 5          | 6.3        | 19.3     | 30.8      |
| Holocentridae – squirrelfish    | 3           | 5          | 0          | 6.3        | 14.3     | 35.8      |
| Lethrinidae – emperors          | 3           | 5          | 0          | 5          | 13       | 37        |
| Lutjanidae – snappers           | 3           | 5          | 0          | 7.5        | 15.5     | 34.5      |
| Mollusks – turbo snail; octopus | 3           | 5          | 0          | 7.5        | 15.5     | 34.5      |

|                         |   |   |   |     |      |      |
|-------------------------|---|---|---|-----|------|------|
| Mugilidae – mullets     | 3 | 5 | 0 | 5   | 13   | 37   |
| Kyphosidae – rudderfish | 3 | 5 | 0 | 5   | 13   | 37   |
| Labridae – wrasses      | 3 | 5 | 0 | 5   | 13   | 37   |
| Mullidae – goatfish     | 3 | 5 | 0 | 5   | 13   | 37   |
| Siganidae – rabbitfish  | 3 | 5 | 0 | 2.5 | 10.5 | 39.5 |
| Other CREMUS            | 3 | 5 | 0 | 5   | 13   | 37   |
| Scaridae – parrotfish   | 3 | 5 | 0 | 5   | 13   | 37   |
| Serranidae – groupers   | 3 | 5 | 0 | 3.8 | 11.8 | 38.3 |
| Spiny lobster           | 3 | 5 | 0 | 5   | 13   | 37   |

### **Rationale for the species grouping**

In the initial 2012 ACL specifications, the different coral reef management unit species were grouped by family and ACLs were specified only for groups that comprised 90% of the total catch. This was done to reduce the number of species that would require ACLs as well as include all families that are harvested in large amounts in the fishery. The rest of the families were grouped as the bottom 10% of the catch and assumed not to be significant in terms of total landings.

The data used in the initial 2012 ACL specification was all available catch data up to 2008 for the territories and through 2009 for Hawaii. In the re-analysis of the data to be used in the model based approach, the data was updated to include all available catch through 2012. Catch data for the Territories was from the creel surveys (proxy for total catch to include shore-based and boat-based catch with varying levels of non-commercial catches from multiple gear) and dealer reports (commercial catch). The Hawaii data was only from commercial catch reports filed by fishermen with Commercial Marine Licenses. Non-commercial catch was not included. In the process of identifying the top 90%, the results yield a different grouping compared to the initial specification. This has legal ramifications because the National Standard 1 requires stocks subject to ACL specification be identified. This should be a static list to ensure consistent monitoring of each group over time. Process-wise this will result in the re-calculation of the top 90% every time new data is available otherwise it is not utilizing the best scientific information available. Shifting species groups that require ACLs is hard to monitor and will result in inconsistencies in the specification that ultimately will confuse the stakeholders. The species groupings that result from incorporating data through 2012 are the groups being monitored by the Archipelagic Plan Team and described in the Council annual reports. By using these fixed groupings into the future, it will enable consistent monitoring of catches and groups that would require ACLs should new data become available.

### **Rationale for the P\* values**

The assumption behind the tiered system approach is that the scientific uncertainties increase from a data-rich tier (e.g. Tier 1) to a catch-only tier (e.g. Tier 5). So in situations where less information is available regarding stock status as well as the fishery that harvests the stock, a larger buffer is needed to ensure that the stock is not going to be subject to overfishing or being overfished. This follows the precautionary principle in data poor situations. In the case for most of the Western Pacific stocks (e.g. coral reefs) where the current ACLs are based on catch-only information, the uncertainties were reduced when the augmented catch-MSY approach was used

to estimate MSY. Incorporating biomass from underwater census surveys into the model and some information regarding resilience and assumptions on carrying capacity enabled the Council to enhance the ACL specification from the catch-only approach. The critical factor is the biomass because this parameter is commonly estimated by using CPUE as a proxy in most surplus production models, yet these approaches are treated as a Tier 1.

Determining the appropriate level of scientific risk varies between regions. Other Regional Fishery Management Councils had specified either default  $P^*$  values for each tier and a range of  $P^*$  with a  $P^*$ max. Currently, the omnibus amendment does not prescribe a range of  $P^*$  values for each tier. Each tier is comprised of varying level of scientific information and model reliability. Tier 3 utilizes model based approaches where the uncertainty of OFL (in this case probability distribution around MSY as a proxy for OFL) can be estimated using Monte-Carlo simulation. The criteria for Tier 3  $P^*$  analysis was tweaked from the Tier 1  $P^*$  analysis applied to western Pacific bottomfish recognizing that the Tier 3 approach is not a real model based stock assessment. The model and scientific information are based on the merits and demerits of parameters and information that fits the Tier 3 methods. Hence a direct comparison between a Tier 1  $P^*$  score and a Tier 3  $P^*$  score is not feasible. Although intuitively based on the Tiered approach principle, the  $P^*$  scores in Tier 3 should not exceed or be equal to the Tier 1  $P^*$  score. However, in this case, they do. Specifically,  $P^*$  values for Hawaii CREMUS ranged from 32-42%. Species groups that exceeded or equaled the Tier 1 MHI Deep 7 Bottomfish ( $P^*=40.8$ ) were the families Lutjanidae and Serranidae from Hawaii at 40.8 and 42, respectively. These families are comprised of taape (*Lutjanus kasmira*) and roi (*Cephalopholis argus*) which are non-native species in Hawaii and considered invasive. There are some eradication efforts being conducted (on roi) by local fishing clubs to maintain ecological balance hence limiting catches for these species is not a priority for the Council.

The  $P^*$  values for MUS groupings from all other jurisdiction falls generally below the  $P^*$  values for the Tier 1 Territory Bottomfish (American Samoa 41%; Guam 40%; CNMI 39%). The stocks we analyzed and the Territory bottomfish stocks (majority of which are considered reef fish as well) both showed similar characteristics in which biomass levels are high relative to what is currently being harvested. Based on Tables 1-4 above, the  $P^*$  range for CREMUS in each island area should be follows:

American Samoa - 30.8-39.5%

Guam – 30.2-37.9%

CNMI – 34.6-39.42%

Hawaii – 32-42%

A more detail comparison between the dimensions in the Tier 1 and the Tier 3 accounted for the scientific uncertainties by using a Tier 3 approach. Table 5 shows the comparative scores between assessments versus the augmented catch-MSY approach

Table 5. Comparative analysis of the dimension scores between Tier 1 and Tier 3.

| Model                       | Tier level | D1 score | D2 score | D3 score | D4 score |
|-----------------------------|------------|----------|----------|----------|----------|
| MHI Deep 7 Bottomfish       | 1          | 1.3      | 0        | 3        | 4.9      |
| Am. Samoa shallow/deep BF   | 1          | 1.6      | 5.0      | 0        | 1.95     |
| Guam shallow/deep BF        | 1          | 1.6      | 5.0      | 0        | 4.45     |
| CNMI shallow/deep BF        | 1          | 1.6      | 5.0      | 0        | 4.61     |
| Biomass augmented catch_MSY | 3          | 3.0      | 5.0      | 0-7.5    | 0-7.5    |

The tier 3 had higher reduced scores for dimension 1 (assessment information) accounting for the lower quality and less quantity of scientific information utilized in the augmented catch-MSY approach. For dimension 2 (uncertainty characterization), the augmented catch-MSY score is similar to the Territory Bottomfish. The territory bottomfish assessment and the augmented catch-MSY approach had uncertainties around the OFL estimates via the probability distribution around the MSY estimate. These uncertainties were not carried forward to future projections for the augmented catch-MSY approach but were accounted for in the Territory bottomfish assessment. In hindsight, the Territory bottomfish assessment should have been scored with a 2.5 instead of 5.

### Hawaii Non-Deep 7 Bottomfish

The previous ACL specification of the Hawaii non-deep 7 bottomfish was based on a model result averaging between: 1) the analog approach with the MHI Deep 7 bottomfish; 2) the 75<sup>th</sup> percentile of the catch; and 3) the average of the past 3 years of catch. Concerns were raised regarding this method of model result averaging for this was not based on any simulation or re-sampling method but simply took an average of three point estimates. This also did not generate any probability distribution around the mean value. In order to be consistent with the current effort to standardize the ACL specification process using the tier 3 approach, the biomass-augmented catch-MSY approach was applied to the updated catch time series of the non-deep 7 and applied the MHI biomass estimate of *Aprion virescens* (locally known as uku) which makes up more than 87% of the non-deep 7 complex.

There were previous recommendations to remove uku from the non-deep 7 complex because of recent changes in the fishery whereby uku is no longer a substitute fish when the MHI deep 7 bottomfish fishery closes. The uku fishery had evolved on its own and is now a regular targeted fishery. If a separate ACL were to be specified for uku, an FEP amendment is required to establish uku as a different management unit. The working group members agreed to keep uku under the non-deep 7 but to also to treat uku as an indicator species to be monitored as a separate species and as a complex.

Using the biomass-augmented catch-MSY approach, the method-B MSY estimate for the non-deep 7 bottomfish is 265,000 lbs. Applying the same stock status determination methodology in the P\* analysis, the stock status dimension score is 2.5. The P-S dimension yields a score of 7.5 (see table below for details). Combining all the dimension scores yield a score of **18** and a corresponding P\* value of **32**. The risk table is shown below.

**Hawaii Coral Reef Ecosystem (Mullidae-Goatfish) (non-FSSI)**

| Species Name | Scientific Name  | Prod. | Susc. | Sum | Ave | Justification                                                                                                                     |
|--------------|------------------|-------|-------|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------|
| UKU          | Aprion virescens | 7.5   | 7.5   | 15  | 7.5 | Long lived (26 years); slow growing; highly targeted; takes 5 years to reach maturity; average length 50 cm from an Lmax of 81 cm |

**Risk table for the non-deep 7 bottomfish**

| risk table – k-revise b |       |       |       |       |       |       |       |       |       |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 5%                      | 10%   | 15%   | 20%   | 25%   | 30%   | 35%   | 40%   | 45%   | 50%   |
| 112.2                   | 129.9 | 144.5 | 158.1 | 172.3 | 187.1 | 203.7 | 221.2 | 239.9 | 259.2 |

**Next Step**

1. SSC review of the P\* score
2. SSC decide which ABC to take given that the risk table is in 5% increment (round up or down)

## Appendix D      Report of the SEEM Working Group



### **Social, Economic, Ecological, and Management (SEEM) Working Group Meeting for Coral Reef Fisheries in Hawaii, Samoa, and Marianas Archipelagos**

February 26-28, 2014  
1:00 pm – 5:00 pm  
Council Conference Room

### **DRAFT REPORT**

#### **Report Highlights**

- Chair welcomed members and asked for introductions.
  - Council staff provided background and described Working Group purpose.
  - The Working Group discussed fishery attributes that facilitate the use of ACLs in policy and management and the need to consider SEEM factors when setting these catch limits.
  - In all island areas (three archipelagos; four political jurisdictions), the current level of observed catch of each coral reef stock is generally far below the stock's assumed biomass (note: this is not the case for the MHI bottomfish fishery, which is managed under a separate management plan.)
  - The Working Group decided to use SEEM factors for the NMI that were recently developed by researchers at the NMFS Pacific Islands Fisheries Science Center as a starting point to consider factors important to the other three jurisdictions.
  - The Working Group decided to comprehensively describe and score all SEEM factors, but to use only the ecological and management uncertainty factor scores to reduce from ABC, since the Council cannot use the results of a SEEM analysis to increase an ACL.
  - Outcome: Based on ecological and management uncertainty considerations, the SEEM Working Group determined that reductions from coral reef MUS ABC in American Samoa, Hawaii, and the Marianas archipelagos of 5%, 5%, and 3% respectively may be warranted.
- 

#### **Full Report**

The Council's Coral Reef Fisheries SEEM Working Group met from February 26<sup>th</sup> – 28<sup>th</sup>, 2014 at the Council office in Honolulu to examine social, economic, ecological, and management uncertainty factors inherent in coral reef fisheries in American Samoa, Guam, Hawaii, and the Northern Mariana Islands.

Council Vice-Chair, Edwin Ebisui welcomed the Working Group members and opened the meeting with introductions.

Following introductions, Council staff provided a summary of the history of ACL management and the basis for conducting a SEEM analysis on the Region's coral reef fisheries. The Council now uses a catch-MSY model, augmented by Marlowe Sabater and Pierre Klieber to account for biomass, to specify ACLs for the Region's coral reef MUS and as such most of those fisheries are now considered Tier 3 stocks. Because of this change, the Council requested staff to convene a SEEM Working Group to examine SEEM factors for coral reef fisheries in the three island areas.

Staff also provided the Working Group with an overview of the Main Hawaiian Islands bottom fish fishery SEEM analysis, including process and scoring determinations, that was conducted in 2011. Staff recommended that the Working Group consider a similar process for the current analysis, since it has been accepted by the Council and NMFS, but that improvements to the process could be discussed and considered for future SEEM exercises.

The Group discussed the difference between setting ACLs for coral reef fisheries and the MHI bottomfish fishery. In the latter fishery, the ACL is more meaningful, since there is near-real time catch reporting, which enables in-season tracking of catch towards the ACL and ability to close the fishery if the ACL is going to be reached. After considering these differences, the Working Group affirmed the usefulness of conducting a thorough SEEM analysis on regional coral reef fisheries, to guide future SEEM-related research, to highlight the importance of WPacFIN, and to further the ecosystem fishery management approach the Council has undertaken.

Following this discussion, Drs. Cynthia Grace-McCaskey and Leila Sievanen (JIMAR-PIFSC) presented their recent research in the Northern Mariana Islands to determine how fishermen perceived the social and economic importance of reef fisheries, local knowledge of coral reef ecosystems and associated species, and perceptions about various management strategies. The team interviewed 38 fishermen and vendors and worked with Council staff to determine the scope of the research and appropriate questions. A purpose of the research was to provide data into the SEEM analysis for CNMI reef fisheries. Council staff discussed the extent to which this CNMI-specific information applied to regional coral reef fisheries.

Before proceeding to the four SEEM dimensions, the Working Group discussed several topics: fishermen discussing and practicing conservation; income from fishing should include money saved from food fishermen don't have to buy; conflict between ethnic groups; overfishing terminology and perceptions; and village net exceptions in the NMI.

After the presentation, the Group discussed the best way to proceed. It was decided to follow the existing approach and comprehensively describe and score all relevant SEEM factors. Each item will be scored between -2 and +2. This scale was developed by the MHI bottomfish SEEM Working Group. The main benefit of this approach is that it can be used by each member to highlight how important he believes each social and economic factor is and how serious a concern he believes each management uncertainty factor to be. It is also sensitive to the uniqueness of the ecological dimension, where scoring factors tends to be less one-sided (positive or negative) than in the other three dimensions. Finally, since each ecological and

management uncertainty factor can only be given a maximum of -2, there is less potential for one or two items to result in large reductions.

Like the MHI bottom fish SEEM group, the current working group decided that a net positive score across the S and E factors will equal no reduction. The reduction would thus come from the scores of the items in the ecological and management uncertainty factors. The Group also decided to use the NMI study factors as starting factors when discussing the other three jurisdictions. Finally, the Working Group decided to score all SEEM factors for all jurisdictions at the end.

Before proceeding to the four SEEM dimensions, the Group discussed several topics: fishermen discussing and practicing conservation; income from fishing should include money saved from food fishermen don't have to buy; conflict between ethnic groups; overfishing terminology and perceptions; and village net exceptions in the NMI.

### Mariana Archipelago

#### *Social Dimension Factors*

The Group discussed the importance of understanding the cultural importance around sharing catch and post harvest distribution (fish flow) as well as the various effort triggers, since some of this information was not captured in the PIFSC study interviews. From the social attributes found in the PIFSC study, the Working Group decided to lump “food security” with “diet” and unpack “social identity” and “pride.”

The final list of social factors the Working Group selected was:

|                                                                                         |
|-----------------------------------------------------------------------------------------|
| Allows traditional practices and values to continue                                     |
| Is an important part of Marianas food security and healthier diet                       |
| Reef fishing as part of social identity status                                          |
| Provides fish important for culturally important events e.g. fiestas, funerals, parties |
| Is a highly skilled and well-respected practice and occupation                          |
| Sense of pride and accomplishment in producing food and cultural benefit to others      |

#### *Economic Dimension Factors*

Most discussion of economic factors centered on the notion that money associated with coral reef fishing in the NMI stayed local, as some interviewees claimed. It was pointed out that while some revenue might stay in the Commonwealth, some of it is remitted and that much of the gear and equipment is purchased off island. The second issue that was discussed was the relative importance of subsistence fishing in reducing an individual's or household's grocery bills.



The final list of economic factors the Working Group selected was:

|                                                                        |
|------------------------------------------------------------------------|
| Supports the local economy                                             |
| Supplements income of those with part-time jobs or low wages           |
| Is an important source of income and jobs (i.e. primary and secondary) |
| Acts as an economic “safety net”                                       |
| Supports extractive tourism/service industries                         |
| Supports non extractive value (aesthetic and existence value)          |
| House hold expenses are reduced by subsistence fishing                 |

#### *Ecological Factor Items*

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| Coral reefs provide buffer from large scale perturbation                                           |
| Uncertainty of ecosystem dynamics (trophic interactions; life history; impacts of climate changes) |
| Non-fishing factors that affects fish stocks and habitat (pollution, run-off, development)         |
| De-facto MPAs provide additional protection for reef stocks                                        |

#### *Management Uncertainty Dimension Factors*

|                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Level of education, outreach and enforcement                                                                                                     |
| Management effectiveness (local-federal linkages; real-time accountability measure)                                                              |
| Availability of reliable fishery information (catch, effort, life history, real-time monitoring, late reporting, mis-reporting, under reporting) |
| Data collection improvement efforts (mandatory reporting in CNMI)                                                                                |
| Other management systems may provide additional protection of reef stocks (monuments, sanctuaries, military closed areas)                        |

### American Samoa

#### *Social Dimension Factors*

The Working Group discussed some of the important cultural differences around fish and fishing in AS. Notably, that there are prescribed ways in which fish are distributed throughout the chief system. The Group also discussed the importance of communal fishing activities, such as for palolo and atulai, and the fact that there tends to be more village control of local fisheries resources than in other areas.

The final list of social factors the Working Group selected was:

|                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------|
| Allows traditional practices and values to continue                                                                           |
| Is an important part of Am. Samoa food security and healthier diet                                                            |
| Reef fishing as part of social identity status                                                                                |
| Provides fish important for culturally important events (e.g. Fa'lavalave, to'ona'i funerals, weddings, Chiefly investitures) |
| Is a highly skilled and well-respected practice and occupation Tautai?                                                        |
| Sense of pride and accomplishment in producing food and cultural benefit to others                                            |

### *Economic Dimension Factors*

Members generally agreed that reef fish are not currently an important part of the local economy, but recognized that new fish markets are opening soon and that reef fishing is always there in the event of an economic downturn. In fact, it is not clear what will happen as federal money following the tsunami is phased out.

The final list of economic factors the Working Group selected was:

|                                                                        |
|------------------------------------------------------------------------|
| Supports the local economy                                             |
| Supplements income of those with part-time jobs or low wages           |
| Is an important source of income and jobs (i.e. primary and secondary) |
| Acts as an economic "safety net"                                       |
| Supports extractive tourism/service industries                         |
| Supports non extractive value (aesthetic and existence value)          |
| House hold expenses are reduced by subsistence fishing                 |

### *Ecological Dimension Factors*

American Samoa has some unique attributes relevant to ecological factors for ACL consideration. The islands are fairly small and high and receive a lot of annual rainfall, often in intense bouts. When this happens, people tend to stay out of the nearshore water because of pollution and reduced visibility. Members also discussed the ecological implications of management areas, such as community based fishery management sites.

The final list of ecological factors the Working Group selected was:

|                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coral reefs provide buffer from large scale perturbation                                                                                                                                                      |
| Uncertainty of ecosystem dynamics (trophic interactions; life history; impacts of climatological changes)                                                                                                     |
| Non-fishing factors that affects fish stocks and habitat (pollution, run-off, development); frequency of high rain events and unfavorable weather and climatological conditions keeps people out of the water |
| Dominance of Community Based FMAs in most villages                                                                                                                                                            |
| Large biomass potential due to under-utilized stocks (due to changes in the social and economic status)                                                                                                       |

#### *Management Uncertainty Dimension Factors*

The Working Group discussed the data uncertainty problem in American Samoa. Improvements have been made, but there continue to no real time tracking of catch and no mechanism or process to close the coral reef fishery should the ACL be reached. There also is limited local capacity to conduct regular government enforcement of fishery regulations.

The final list of management uncertainty factors the Working Group selected was:

|                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Management effectiveness (local-federal coordinated management regime; real-time accountability measure)                                         |
| Availability of reliable fishery information (catch, effort, life history, real-time monitoring, late reporting, mis-reporting, under reporting) |
| Timeliness of QA/QC input and output in catch and effort data which would affect the ability to conduct near-real-time monitoring of catch       |
| Data collection improvement efforts (mandatory reporting in Am Samoa; improvement through efforts)                                               |
| Other management systems may provide additional protection of reef stocks (monuments sanctuaries, CFMP closed areas)                             |

## Hawaii

### *Social Dimension Factors*

The cultural context of the reef fishery in Hawaii is more fragmented than in the other archipelagos, owing mostly to demography. However, there are still parts of the islands where coral reef fishing retains its cultural connotations and subsistence importance. Reef fish are also connected to the wider social fabric through events and ceremonies such as luaus, parties and weddings.

The final list of social factors the Working Group selected was:

|                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------|
| Allows a variety of cultural, ethnic and Hawaiian traditional practices and values to continue                         |
| Is an important part of Hawaii food security and healthier diet                                                        |
| Reef fishing as part of social identity and status (clubs built around these fisheries)                                |
| Provides fish important for culturally important events e.g. first birthday luau, weddings, graduations, holidays etc. |
| Is a highly skilled and well-respected practice and occupation                                                         |
| Sense of pride and accomplishment in producing food and cultural benefit to others                                     |
| Practice of customary exchange and fish flow to the community is still tied to the contemporary social fabric          |

### *Economic Dimension Factors*

Members agreed that direct revenue from reef fish sales is not large. However, the sales of fishing gear and other fishing related provisions is likely an economic benefit to each of the islands. In addition, the important tourism component of the economy in some ways depends upon the availability of reef fish (divers, etc.).

The final list of economic factors the Working Group selected was:

|                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------|
| Supports the local economy (including the fishing supply chain, fish markets and support network related to fishing) |
| Supplements income of those with part-time jobs or low wages                                                         |
| Is a source of income and jobs (i.e. primary and secondary)                                                          |
| Acts as an economic “safety net”                                                                                     |
| Supports extractive tourism/service industries                                                                       |
| Supports non extractive value (aesthetic and existence value)                                                        |
| Money stays in the local economy (local manufacturing of fishing gear and supplies)                                  |
| House hold expenses are reduced by subsistence fishing                                                               |

### *Ecological Dimension Factors*

The comparatively large size of the Hawaiian Islands makes for additional ecological factors to consider. For example, unlike the other two archipelagos, the Working Group felt that invasive marine species are important to consider. Also, the scale of development and issues like injection wells were discussed.

The final list of ecological factors the Working Group selected was:

|                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coral reefs provide buffer from large scale perturbation                                                                                                         |
| Uncertainty of ecosystem dynamics (trophic interactions; life history; impacts of climate changes)                                                               |
| Potential effects of fishing interaction with protected species (prey competition)                                                                               |
| Non-fishing factors that affects fish stocks and habitat (pollution, run-off, development, injection wells, ecological alteration, physical habitat degradation) |
| Effects of invasive species on ecological functions and stability                                                                                                |
| Ecological effects of ciguatera “scare”                                                                                                                          |
| De-facto MPAs and MLCs provide additional protection for reef stocks                                                                                             |

### *Management Uncertainty Dimension Factors*

Hawaii management uncertainty items largely mirror the other two areas. The state does benefit from more staff and financial resources, but the islands are larger, which stretch those resources thin. As a result, enforcement is challenging. Also though the State is in the process of improving data collection, reef fish catch and effort statistics can be unreliable, especially for non-commercial participants.

The final list of management uncertainty factors the Working Group selected was:

|                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Level of education, outreach and enforcement                                                                                                                                              |
| Management effectiveness (local-federal linkages; real-time accountability measure)                                                                                                       |
| Availability of reliable fishery information (commercial catch, effort, life history, real-time monitoring, late reporting, mis-reporting, under reporting)                               |
| Data collection improvement efforts (improvements in online reporting); revision of HMRFS                                                                                                 |
| Availability of reliable fishery information (non-commercial catch and effort information is unknown, life history, real-time monitoring, late reporting, mis-reporting, under reporting) |
| Other management systems may provide additional protection of reef stocks (monuments, State MPAs, military closed areas, community based management areas)                                |

## Scoring and Final Scores

The Working Group discussed scoring and factor wording prior to voting, to ensure that all members were approaching the exercise the same way. Members generally agreed that the lack of socially-derived data specific to SEEM scoring for each archipelago was not ideal and discussed the need to conduct research into SEEM factors and the importance of each of those items to members of the fishery. However, most members felt fairly comfortable in making a determination, given that estimated catch is well below the estimated available biomass.

Appendix A contains the scores for each item in each SEEM factor for each archipelago. The table below contains the averaged scores for each factor for each archipelago and the corresponding percentage reduction from ABC recommended by the SEEM Working Group.

| Archipelago    | Social | Economic | Ecological | Management | % Reduction from ABC |
|----------------|--------|----------|------------|------------|----------------------|
| American Samoa | 7      | 6        | 2          | -5         | -5                   |
| Hawaii         | 9      | 8        | -1.4       | -3.2       | -5                   |
| Marianas       | 9      | 8        | 0          | -3         | -3                   |

Following the factor scoring, the Working Group discussed the issue that despite the fact that there is less management uncertainty surrounding MHI bottomfish management than the Region's coral reef fisheries, the management uncertainty scores in this SEEM analysis were less than those produced by the MHI bottomfish fishery SEEM Working Group in 2011. The Group came to three conclusions: 1) Membership of the two SEEM working groups differed, and this will produce different results, 2) the biomass-to-fishing effort ratio is much different for coral reef fisheries than for the MHI bottomfish fishery and it is likely that members were taking this into account when scoring, and 3) this working group worded some factors, especially ones in the ecological and management uncertainty dimensions, more neutrally.

## Appendix A. SEEM scores

| <b>AMERICAN SAMOA</b>                                                                                | Mem#1        | Mem#2        | Mem#3        | Mem#4        | Mem#5        | Mem#6        | Mem#7        | Mem#8        | Mem#9        |
|------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Social n=6</b>                                                                                    | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> |
| Allows traditional practices and values to continue                                                  | 2            | 1            | 2            | 2            | 2            | 1            | 2            | 1            | 2            |
| Is an important part of Am. Samoa food security and fishery development                              | 1            | 1            | 0            | 1            | 1            | 1            | 1            | 0            | 2            |
| Reef fishing as part of social identity status e.g. tautai                                           | 1            | 1            | 1            | 1            | 1            | 1            | 2            | 0            | 2            |
| Provides fish important for culturally important events e.g. fa'a lave lave, funerals, weddings etc. | 2            | 2            | 2            | 2            | 2            | 2            | 2            | 0            | 2            |
| Is a highly skilled and well-respected practice and occupation                                       | 1            | 1            | 1            | 1            | 2            | 0            | 2            | 0            | 0            |
| Sense of pride and accomplishment in producing food and cultural benefit to others                   | 1            | 1            | 1            | 2            | 2            | 0            | 1            | 0            | 1            |
| <b>SUM</b>                                                                                           | <b>8</b>     | <b>7</b>     | <b>7</b>     | <b>9</b>     | <b>10</b>    | <b>5</b>     | <b>10</b>    | <b>1</b>     | <b>9</b>     |

|                                                                        | Mem#1        | Mem#2        | Mem#3        | Mem#4        | Mem#5        | Mem#6        | Mem#7        | Mem#8        | Mem#9        |
|------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Economic n=7</b>                                                    | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> |
| Supports the local economy through fishery development                 | 1            | 1            | 0            | 0            | 0            | 0            | 1            | 0            | 2            |
| Supplements income of those with part-time jobs or low wages           | 0            | 2            | 0            | 1            | 0            | 1            | 2            | 0            | 2            |
| Is an potential source of income and jobs (i.e. primary and secondary) | 1            | 1            | 1            | 0            | 1            | 0            | 1            | 0            | 2            |
| Acts as a potential economic "safety net"                              | 0            | 2            | 1            | 2            | 1            | 1            | 1            | 1            | 2            |
| Supports extractive tourism/service industries                         | 0            | 1            | 1            | 0            | 0            | 0            | 1            | 0            | 0            |
| Supports non extractive value (aesthetic and existence value)          | 0            | 0            | 1            | 1            | 0            | 2            | 1            | 0            | 0            |

|                                                                    |   |   |   |   |   |   |   |   |    |
|--------------------------------------------------------------------|---|---|---|---|---|---|---|---|----|
| House hold expenses are potentially reduced by subsistence fishing | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 0 | 2  |
| SUM                                                                | 3 | 8 | 5 | 6 | 3 | 6 | 9 | 1 | 10 |

|                                                                                                                                                                                                               | Mem#1 | Mem#2 | Mem#3 | Mem#4 | Mem#5 | Mem#6 | Mem#7 | Mem#8 | Mem#9 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ecological n=5                                                                                                                                                                                                | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE |
| Coral reefs provide buffer from large scale perturbation                                                                                                                                                      | -1    | 0     | 1     | 0     | 2     | -1    | 1     | 2     | -1    |
| Uncertainty of ecosystem dynamics (trophic interactions; life history; impacts of climatological changes)                                                                                                     | -1    | -1    | -1    | -1    | -2    | 0     | -1    | -2    | -1    |
| Non-fishing factors that affects fish stocks and habitat (pollution, run-off, development); frequency of high rain events and unfavorable weather and climatological conditions keeps people out of the water | 0     | 1     | -1    | -1    | -1    | 0     | 0     | -2    | 0     |
| Dominance of Community Based FMAs in most villages                                                                                                                                                            | 0     | 1     | 1     | 2     | 2     | 2     | 2     | 2     | 0     |
| Large biomass potential due to under-utilized stocks (due to changes in the social and economic status)                                                                                                       | 1     | 1     | 2     | 1     | 2     | 2     | 2     | 2     | 0     |
| SUM                                                                                                                                                                                                           | -1    | 2     | 2     | 1     | 3     | 3     | 4     | 2     | -2    |

|                                                                 | Mem#1 | Mem#2 | Mem#3 | Mem#4 | Mem#5 | Mem#6 | Mem#7 | Mem#8 | Mem#9 |
|-----------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Management n=6                                                  | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE |
| Level of education, outreach and enforcement                    | -1    | -1    | -1    | -1    | -1    | 0     | -1    | -1    | 0     |
| Management effectiveness (local-federal coordinated management) | -2    | -2    | -2    | 0     | -2    | 0     | -2    | -1    | -1    |



|                                                                                                                                                  |    |    |    |    |    |    |    |    |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|----|----|
| regime; real-time accountability measure)                                                                                                        |    |    |    |    |    |    |    |    |    |
| Availability of reliable fishery information (catch, effort, life history, real-time monitoring, late reporting, mis-reporting, under reporting) | -2 | -2 | -2 | -1 | -2 | -1 | -2 | -2 | -1 |
| Timeliness of QA/QC input and output in catch and effort data which would affect the ability to conduct near-real-time monitoring of catch       | -2 | -2 | -1 | -1 | -2 | -1 | -2 | -2 | -1 |
| Data collection improvement efforts (mandatory reporting in Am Samoa; improvement through efforts)                                               | 1  | -1 | -2 | 0  | 0  | 1  | -1 | -1 | 0  |
| Other management systems may provide additional protection of reef stocks (monuments sanctuaries, CFMP closed areas)                             | 2  | 1  | 1  | -1 | 2  | 2  | 1  | 1  | 0  |
| SUM                                                                                                                                              | -4 | -7 | -7 | -4 | -5 | 1  | -7 | -6 | -3 |

| <b>HAWAII</b>                                                                                                          | Mem#1        | Mem#2        | Mem#3        | Mem#4        | Mem#5        | Mem#6        | Mem#7        | Mem#8        | Mem#9        |
|------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Social n=7</b>                                                                                                      | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> |
| Allows a variety of cultural, ethnic and Hawaiian traditional practices and values to continue                         | 2            | 2            | 2            | 2            | 2            | 1            | 2            | 1            | 1            |
| Is an important part of Hawaii food security and healthier diet                                                        | 2            | 1            | 2            | 2            | 2            | 0            | 2            | 1            | 0            |
| Reef fishing as part of social identity and status (clubs built around these fisheries)                                | 2            | 2            | 1            | 2            | 1            | 1            | 2            | 1            | 0            |
| Provides fish important for culturally important events e.g. first birthday luau, weddings, graduations, holidays etc. | 2            | 1            | 1            | 2            | 2            | 1            | 2            | 1            | 0            |

|                                                                                                               |           |          |           |           |           |          |           |          |          |
|---------------------------------------------------------------------------------------------------------------|-----------|----------|-----------|-----------|-----------|----------|-----------|----------|----------|
| Is a highly skilled and well-respected practice and occupation                                                | 1         | 1        | 1         | 2         | 1         | 1        | 2         | 1        | 0        |
| Sense of pride and accomplishment in producing food and cultural benefit to others                            | 1         | 1        | 1         | 2         | 2         | 1        | 1         | 1        | 1        |
| Practice of customary exchange and fish flow to the community is still tied to the contemporary social fabric | 1         | 1        | 2         | 2         | 1         | 1        | 2         | 1        | 1        |
| <b>SUM</b>                                                                                                    | <b>11</b> | <b>9</b> | <b>10</b> | <b>14</b> | <b>11</b> | <b>6</b> | <b>13</b> | <b>7</b> | <b>3</b> |

|                                                                                                                      | Mem#1        | Mem#2        | Mem#3        | Mem#4        | Mem#5        | Mem#6        | Mem#7        | Mem#8        | Mem#9        |
|----------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Economic n=8</b>                                                                                                  | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> |
| Supports the local economy (including the fishing supply chain, fish markets and support network related to fishing) | 1            | 2            | 2            | 1            | 2            | 0            | 2            | 1            | 1            |
| Supplements income of those with part-time jobs or low wages                                                         | 1            | 1            | 1            | 1            | 1            | 1            | 2            | 1            | 0            |
| Is a source of income and jobs (i.e. primary and secondary)                                                          | 1            | 2            | 0            | 0            | 0            | 1            | 2            | 1            | 0            |
| Acts as an economic "safety net"                                                                                     | 0            | 1            | 0            | 2            | 0            | 2            | 1            | 1            | 0            |
| Supports extractive tourism/service industries                                                                       | 1            | 2            | 1            | 1            | 1            | -1           | 2            | 1            | 1            |
| Supports non extractive value (aesthetic and existence value)                                                        | 1            | -2           | 2            | 2            | 1            | 0            | 2            | 1            | -2           |
| Money stays in the local economy (local manufacturing of fishing gear and supplies)                                  | 1            | 1            | 1            | 1            | 2            | 1            | 1            | 1            | 1            |
| House hold expenses are reduced by subsistence fishing                                                               | 1            | 1            | 0            | 2            | 1            | 1            | 2            | 1            | 1            |
| <b>SUM</b>                                                                                                           | <b>7</b>     | <b>8</b>     | <b>7</b>     | <b>10</b>    | <b>8</b>     | <b>5</b>     | <b>14</b>    | <b>8</b>     | <b>2</b>     |

|                       | Mem#1        | Mem#2        | Mem#3        | Mem#4        | Mem#5        | Mem#6        | Mem#7        | Mem#8        | Mem#9        |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Ecological n=7</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> |

|                                                                                                                                                                 |    |    |    |    |    |    |    |    |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|----|----|
| Coral reefs provide buffer from large scale perturbation                                                                                                        | -1 | 0  | 0  | 0  | 2  | -1 | 1  | 2  | -1 |
| Uncertainty of ecosystem dynamics (trophic interactions; life history; impacts of climatological changes)                                                       | -1 | -1 | -1 | -1 | -2 | 0  | -1 | -1 | -1 |
| Potential effects of fishing interaction with protected species (prey competition)                                                                              | 0  | -1 | 1  | 0  | -1 | 0  | -1 | -1 | 0  |
| Non-fishing factors that affects fish stocks and habitat (pollution, run-off, development, injection well, ecological alteration, physical habitat degradation) | 0  | 1  | 1  | -2 | -2 | -1 | -1 | -2 | -2 |
| Effects of invasive species in ecological functions and stability                                                                                               | 0  | 0  | 0  | 0  | -1 | -1 | -1 | -1 | -1 |
| Ecological effects of ciguatera "scare"                                                                                                                         | 0  | 0  | 1  | 0  | 0  | 1  | 1  | -1 | 0  |
| De-facto MPAs provide additional protection for reef stocks                                                                                                     | 0  | 0  | 1  | 1  | 1  | 1  | 2  | 1  | 1  |
| SUM                                                                                                                                                             | -2 | -1 | 3  | -2 | -3 | -1 | 0  | -3 | -4 |

|                                                                                                                                                             | Mem#1 | Mem#2 | Mem#3 | Mem#4 | Mem#5 | Mem#6 | Mem#7 | Mem#8 | Mem#9 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Management n=6                                                                                                                                              | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE |
| Level of education, outreach and enforcement                                                                                                                | -1    | 0     | -2    | -1    | -1    | 1     | -1    | -1    | 0     |
| Management effectiveness (local-federal linkages; real-time accountability measure)                                                                         | -2    | -1    | -2    | 0     | -2    | -1    | -2    | -1    | 0     |
| Availability of reliable fishery information (commercial catch, effort, life history, real-time monitoring, late reporting, mis-reporting, under reporting) | -1    | -1    | -2    | 0     | 1     | -1    | -1    | 0     | -1    |
| Data collection improvement efforts (improvements in online reporting); revision of HMRFS                                                                   | 1     | 0     | -2    | 0     | 1     | 0     | -2    | -1    | 0     |

|                                                                                                                                                                                                   |    |    |    |    |    |    |    |    |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|----|----|
| Availability of reliable fishery information<br>(non-commercial catch and effort information<br>is unknown life history, real-time monitoring,<br>late reporting, mis-reporting, under reporting) | -1 | -1 | -2 | -1 | -2 | -1 | -1 | -2 | -1 |
| Other management systems may provide<br>additional protection of reef stocks<br>(monuments, State MPAs, military closed<br>areas, community based management<br>areas)                            | 2  | 0  | 1  | 1  | 2  | 1  | 1  | 1  | 0  |
| SUM                                                                                                                                                                                               | -2 | -3 | -9 | -1 | -1 | -1 | -6 | -4 | -2 |

| <b>MARIANAS</b>                                                                            | Mem#1 | Mem#2 | Mem#3 | Mem#4 | Mem#5 | Mem#6 | Mem#7 | Mem#8 | Mem#9 |
|--------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Social n=6</b>                                                                          | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE |
| Allows traditional practices and values to continue                                        | 2     | 1     | 2     | 2     | 2     | 2     | 2     | 2     | 2     |
| Is an important part of Marianas food security and<br>healthier diet                       | 2     | 2     | 2     | 2     | 2     | 1     | 2     | 0     | 2     |
| Reef fishing as part of social identity status                                             | 2     | 1     | 1     | 1     | 1     | 2     | 1     | 1     | 2     |
| Provides fish important for culturally important<br>events e.g. fiestas, funerals, parties | 2     | 2     | 2     | 2     | 2     | 1     | 2     | 2     | 2     |
| Is a highly skilled and well-respected practice and<br>occupation                          | 2     | 2     | 1     | 1     | 1     | 1     | 2     | 0     | 0     |
| Sense of pride and accomplishment in producing<br>food and cultural benefit to others      | 2     | 2     | 1     | 1     | 2     | 1     | 1     | 1     | 1     |
| SUM                                                                                        | 12    | 10    | 9     | 9     | 10    | 8     | 10    | 6     | 9     |

|                            | Mem#1 | Mem#2 | Mem#3 | Mem#4 | Mem#5 | Mem#6 | Mem#7 | Mem#8 | Mem#9 |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Economic n=7</b>        | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE | SCORE |
| Supports the local economy | 1     | 2     | 1     | 1     | 2     | 0     | 1     | 1     | 1     |

|                                                                        |           |          |          |          |           |          |           |          |          |
|------------------------------------------------------------------------|-----------|----------|----------|----------|-----------|----------|-----------|----------|----------|
| Supplements income of those with part-time jobs or low wages           | 2         | 2        | 2        | 1        | 2         | 1        | 2         | 1        | 1        |
| Is an important source of income and jobs (i.e. primary and secondary) | 2         | 1        | 1        | 1        | 2         | 0        | 1         | 1        | 1        |
| Acts as an economic “safety net”                                       | 2         | 2        | 1        | 2        | 2         | 2        | 2         | 2        | 2        |
| Supports extractive tourism/service industries                         | 1         | 0        | 0        | 1        | 1         | -1       | 2         | 0        | 1        |
| Supports non extractive value (aesthetic and existence value)          | 1         | 0        | -1       | 1        | 1         | 2        | 1         | 1        | -1       |
| House hold expenses are reduced by subsistence fishing                 | 2         | 1        | 1        | 2        | 1         | 1        | 2         | 1        | 1        |
| <b>SUM</b>                                                             | <b>11</b> | <b>8</b> | <b>5</b> | <b>9</b> | <b>11</b> | <b>5</b> | <b>11</b> | <b>7</b> | <b>6</b> |

|                                                                                                           | Mem#1        | Mem#2        | Mem#3        | Mem#4        | Mem#5        | Mem#6        | Mem#7        | Mem#8        | Mem#9        |
|-----------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Ecological n=4</b>                                                                                     | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> |
| Coral reefs provide buffer from large scale perturbation                                                  | -1           | 1            | -1           | 0            | 2            | -1           | 1            | 2            | -1           |
| Uncertainty of ecosystem dynamics (trophic interactions; life history; impacts of climatological changes) | -1           | -1           | -1           | -1           | -2           | 0            | -1           | -2           | -1           |
| Non-fishing factors that affects fish stocks and habitat (pollution, run-off, development)                | 0            | 1            | 1            | 0            | 2            | 1            | -1           | -2           | -1           |
| De-facto MPAs provide additional protection for reef stocks                                               | 1            | 1            | 1            | -1           | 2            | 2            | 1            | 1            | -1           |
| <b>SUM</b>                                                                                                | <b>-1</b>    | <b>2</b>     | <b>0</b>     | <b>-2</b>    | <b>4</b>     | <b>2</b>     | <b>0</b>     | <b>-1</b>    | <b>-4</b>    |

|                                              | Mem#1        | Mem#2        | Mem#3        | Mem#4        | Mem#5        | Mem#6        | Mem#7        | Mem#8        | Mem#9        |
|----------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Management n=5</b>                        | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> | <b>SCORE</b> |
| Level of education, outreach and enforcement | -1           | -2           | 0            | 0            | 0            | 0            | -1           | -1           | 0            |

|                                                                                                                                                  |    |    |    |    |    |    |    |    |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|----|----|
| Management effectiveness (local-federal linkages; real-time accountability measure)                                                              | -2 | -2 | -1 | 0  | -2 | -2 | -2 | -2 | -1 |
| Availability of reliable fishery information (catch, effort, life history, real-time monitoring, late reporting, mis-reporting, under reporting) | -2 | -2 | -2 | 0  | 0  | -1 | -2 | -2 | -1 |
| Data collection improvement efforts (mandatory reporting in CNMI; improvement through efforts)                                                   | 1  | -1 | -2 | 0  | 0  | 0  | -1 | -1 | 0  |
| Other management systems may provide additional protection of reef stocks (monuments sanctuaries, military closed areas)                         | 2  | 1  | 2  | -1 | 2  | 1  | -1 | 1  | 0  |
| SUM                                                                                                                                              | -2 | -6 | -3 | -1 | 0  | -2 | -7 | -5 | -2 |



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## **Environmental Assessment**

### **Specification of 2016-2018 Annual Catch Limits and Accountability Measures for Pacific Islands Crustacean and Precious Coral Fisheries**

(RIN 0648-XE587)

March 13, 2017

**Responsible Agency:** Pacific Islands Regional Office (PIRO)  
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### **Abstract**

NMFS is specifying annual catch limits (ACLs) and accountability measures (AMs) for Pacific Islands crustacean and precious coral fisheries of American Samoa, the Commonwealth of the Northern Mariana Islands (CNMI), Guam, and Hawaii. Species that have historically been harvested in Pacific Island crustacean fisheries include deep-water shrimps, spiny and slipper lobsters, and kona crab. Currently there is little-to-no fishing of these resources in areas administered as Federal fisheries. Precious coral fisheries have only developed in Hawaii and have historically targeted black, pink, and bamboo corals. Currently, only the Hawaii fishery for black corals is active with fewer than three participants and most of the fishing is occurring in nearshore waters managed by the State. Fishing for, taking, or retaining any gold coral in any precious coral permit area is prohibited through June 30, 2018.

The purpose of this action is to comply with provisions of the fishery ecosystem plans (FEPs) for American Samoa, the Mariana Islands, and Hawaii, which require NMFS to specify an ACL



for Pacific Island crustacean and precious coral fisheries and implement AMs that prevent ACLs from being exceeded, and correct or mitigate overages of ACLs if they occur. The proposed ACLs and AMs cover all previous crustacean and precious coral management unit species (MUS), except for Hawaii kona crab. The Western Pacific Fishery Management Council (Council) proposed the ACL specifications and developed in accordance with the approved ACL mechanism described in each FEP. The proposed specifications consider the best available scientific, commercial, and other information.

For all crustacean fisheries other than Hawaii kona crab, the ACLs and AMs would be applicable in fishing years 2016–2018, which begin on January 1 and end December 31 of each year. For all precious coral fisheries, the ACLs and AMs would be applicable in fishing years 2016–17, 2017–18, and 2018–19, which begin on July 1 and end June 30, the following year. Currently, near-real time processing of catch information is not being applied in any Pacific Island crustacean or precious coral fishery and, therefore, in-season AMs to prevent an ACL from being exceeded (e.g., fishery closures in Federal waters) are not possible; only a post-season AM is possible. As a proposed AM after the end of each fishing year, if NMFS and the Council determine that the average catch from the most recent three-year period exceeds a specified ACL, NMFS would reduce the ACL in the subsequent fishing years by the amount of the overage. Prior to implementing a reduced ACL, NMFS would conduct additional environmental analyses, if necessary, and the public would have the opportunity to provide input and comment on the reduced ACL specification at that time. If a fishery exceeds an ACL more than once in a four-year period, the Council is required to re-evaluate the ACL process and adjust the system, as necessary, to improve its performance and effectiveness.

In December 2015, NMFS and the Council received new information on the historical and projected stock status of Hawaii kona crab. While this information may accurately describe the stock status in 2006, NMFS notes that an independent reviewer identified data gaps and methodological concerns with the 2015 stock assessment. The NMFS Pacific Islands Fisheries Science Center (PIFSC), however, found that this assessment contains useful scientific information on the status of the stock over the last decade. NMFS believes that the stock assessment, although in need of updating with current information about the management of this stock, should be considered when setting an ACL. However, because the Council did not account for this information with other relevant information in recommending the 2016 kona crab ACL, NMFS will not set an ACL for Hawaii kona crab for 2016. Instead, NMFS will work with the Council to review available information and to work with its Scientific and Statistical Committee and PIFSC to set an acceptable biological catch and annual catch limit consistent with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) for the Hawaii kona crab stock for fishing year 2017.

NMFS prepared this environmental assessment (EA) to evaluate the potential environmental effects of the proposed ACL and AM specifications in fishing years 2016–2018 for crustaceans and in fishing years 2016–17, 2017–18, and 2018–19 for precious coral fisheries. Because there is no in-season management measure, NMFS does not expect the specification of ACLs or AMs to change the conduct of any Pacific Island crustacean or precious coral fishery and the fisheries would continue to be monitored and landings compared against ACLs annually. NMFS does not expect large or adverse environmental effects on target, non-target, or bycatch species, or on



protected species that may interact with these fisheries. The proposed ACL specifications and AMs would not result in conflicts with ongoing fishery management activities or result in any impacts to coastal or marine areas, including designated essential fish habitat, critical habitat, marine protected areas, or unique areas. Overall, the proposed action is expected to provide for sustainable harvest of crustacean and precious coral fishery resources while preventing overfishing from occurring, which would have positive long-term impacts on fishery participants and fishing communities. This EA, the proposed rule, and supporting documents may be found at [www.regulations.gov](http://www.regulations.gov) by searching on RIN 0648-XE587, or by contacting the responsible official or Council at the above address.

# Environmental Assessment

## Specification of 2016-2018 Annual Catch Limits and Accountability Measures for Pacific Islands Crustacean and Precious Coral Fisheries

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## Acronyms and Abbreviations

|                                                                                 |
|---------------------------------------------------------------------------------|
| ABC – Acceptable Biological Catch                                               |
| ACL – Annual Catch Limit                                                        |
| ACT – Annual Catch Target                                                       |
| AM – Accountability Measure                                                     |
| CNMI – Commonwealth of the Northern Mariana Islands                             |
| Council – Western Pacific Fishery Management Council (also WPFMC)               |
| CPUE – Catch Per Unit of Effort                                                 |
| DAWR – Guam Division of Aquatic and Wildlife Resources                          |
| DMWR – American Samoa Department of Marine and Wildlife Resources               |
| DFW – Northern Mariana Islands Division of Fish and Wildlife                    |
| EA – Environmental Assessment                                                   |
| EC – Ecosystem Component                                                        |
| EEZ – Exclusive Economic Zone                                                   |
| FEP – Fishery Ecosystem Plan                                                    |
| FMP – Fishery Management Plan                                                   |
| FR – Federal Register                                                           |
| HDAR – Hawaii Division of Aquatic Resources                                     |
| MHI – Main Hawaiian Islands                                                     |
| MFMT – Maximum Fishing Mortality Threshold                                      |
| Magnuson-Stevens Act – Magnuson-Stevens Fishery Conservation and Management Act |
| MSST – Minimum Stock Size Threshold                                             |
| MSY – Maximum Sustainable Yield                                                 |
| MUS – Management Unit Species                                                   |
| NEPA – National Environmental Policy Act                                        |
| NMFS – National Marine Fisheries Service                                        |
| NOAA – National Oceanic and Atmospheric Administration                          |
| OFL – Overfishing Limit                                                         |
| OY – Optimum Yield                                                              |
| PIFSC – NMFS Pacific Islands Fisheries Science Center                           |
| PIRO – Pacific Islands Regional Office                                          |
| SSC – Scientific and Statistical Committee                                      |
| WPacFIN – Western Pacific Fisheries Information Network                         |
| WPFMC – Western Pacific Fishery Management Council (also Council)               |

## 1 Background Information

Fishing for crustaceans and precious corals in Federal waters (that is, in the U.S. Exclusive Economic Zone (EEZ), generally 3-200 nm from shore) around the U.S. Pacific Islands is managed under one of four fishery ecosystem plans (FEPs) developed by the Western Pacific Fishery Management Council (Council) and implemented by the National Marine Fisheries Service (NMFS) under the authority of the Magnuson-Stevens Act. Three of the FEPs are archipelagic-based and include the American Samoa Archipelago FEP, the Hawaii Archipelago FEP, and the Mariana Archipelago FEP (which covers Federal waters around Guam and the CNMI). The fourth FEP covers Federal waters of the U.S. Pacific remote island areas (PRIA) which include Palmyra Atoll, Kingman Reef, Jarvis Island, Baker Island, Howland Island, Johnston Atoll, and Wake Island. ACLs and AMs are required to be specified for all stocks and stock complexes of management unit species (MUS) included in each FEP, with the exception of species with short life cycles, those stocks managed through international agreements, or those that qualify as ecosystem component species.

The crustacean management unit species include the following stocks and stock complexes:<sup>1</sup> deepwater shrimps, spiny lobsters, slipper lobsters, and Kona crab (see full species list, Appendix A). Precious corals MUS include the following stocks and stock complexes: black corals, pink corals, bamboo corals and gold corals (see full species list, Appendix B).

General Federal fishery regulations for crustacean and precious coral fisheries of the Western Pacific Region are found in 50 CFR 665 and include Federal permit and reporting requirements, vessel identification and observer requirements, fishing seasons, and size restrictions. Precious coral fishing in Hawaii is further regulated through closed areas and harvest quotas; however, there are no active fisheries for crustaceans or precious corals in Federal waters around any island area at present. Additionally, there is a moratorium on fishing for gold corals in the U.S. EEZ through June 30, 2018.

### *Overview of the ACL Specification Process*

NMFS is required to specify ACLs and AMs for all crustacean and precious coral stocks in fisheries of the Pacific Islands Region, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. This section provides an overview of the steps taken by the Council in developing its recommendation.

In accordance with the Magnuson-Stevens Act and the FEPs, there are three required elements in the development of an ACL specification. The first requires the Council's Scientific and Statistical Committee (SSC) to calculate an acceptable biological catch (ABC) that is set at or below the stock or stock complex's overfishing limit (OFL). The OFL is an estimate of the catch level above which overfishing is occurring. ABC is the level of catch that accounts for the

---

<sup>1</sup> The Magnuson-Stevens Act defines the term "stock of fish" to mean a species, subspecies, geographic grouping, or other category of fish capable of management as a unit. Federal regulations at 50 CFR §660.310 (c) defines "stock complex" to mean a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerability to the fishery such that the impact of management actions on the stock is similar.

scientific uncertainty in the estimate of OFL and other scientific uncertainty inherent in the estimate of fish stock status. In determining the appropriate ABC, the SSC follows the ACL mechanism described in the FEPs which includes a five-tiered system of “ABC control rules” that allows for different levels of scientific information to be considered. Tiers 1 and 2 involve data-rich to data-moderate situations and include levels of scientific uncertainty derived from model-based stock assessments. Tiers 3 through 5 involve data-poor situations and include levels of scientific uncertainty derived from ad-hoc procedures including simulations models or expert opinion.

When calculating an ABC for a stock or stock complex, the SSC must first evaluate the information available for the stock and assign the stock or stock complex into one of the five tiers. The SSC must then apply the control rule assigned to that tier to determine ABC.

For stocks like most precious corals and deepwater shrimp, which have estimates of maximum sustainable yield (MSY), but no current harvest, the ABC is to be calculated by the SSC based on the Tier 4 ABC control rule described in each FEP, which sets ABC as equal to 91% of the MSY estimate. As explained in the FEPs, the application of this control rule would result in a fishing mortality rate of  $0.70 F_{MSY}$ , which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty.

For data-poor stocks like slipper lobsters and Kona crab, for which only catch data are available and the OFL is unknown, ABC is to be calculated by the SSC based on the Tier 5 ABC control rule (Tier 5: Data poor, Ad-hoc Approach to Setting ABCs). Under this control rule the SSC is to multiply the average catch from a time period when there is no quantitative or qualitative evidence of declining abundance (“Recent Catch”) by a factor based on a qualitative estimate of relative stock size or biomass (B) in the year of management. When it is not possible to analytically determine B relative to the biomass necessary to produce the MSY from the fishery, or  $B_{MSY}$ , the process allows for an approach based on informed judgment, including expert opinion and consensus-building methods. Table 1 provides a summary of the Council’s default ABC control rule for data poor stocks.

**Table 1. Tier 5 ABC Control Rule (Data poor, Ad-hoc Approach to Setting ABCs)**

|                                                                                    |                                         |
|------------------------------------------------------------------------------------|-----------------------------------------|
| If estimate of B is above $B_{MSY}$                                                | $ABC = 1.00 \times \text{Recent Catch}$ |
| If estimate of B is above minimum stock size threshold (MSST), but below $B_{MSY}$ | $ABC = 0.67 \times \text{Recent Catch}$ |
| If estimate of B is below MSST (i.e., overfished)                                  | $ABC = 0.33 \times \text{Recent Catch}$ |

The ACL process also allows the SSC to utilize any other information deemed useful to establish an ABC and allows the SSC to recommend an ABC that differs from the results of the default ABC control rule calculation based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors determined relevant by the SSC. When using an alternate method, the SSC must explain its rationale.

The second step requires the Council to determine an ACL that may not exceed the SSC recommended ABC. The process includes methods by which the ACL may be reduced from the

ABC based on social, economic, and ecological considerations, or management uncertainty (SEEM). An ACL set below the ABC further reduces the probability that actual catch will exceed the OFL and result in overfishing.

The third and final step in the ACL process is the development of AMs. There are two categories of AMs; in-season AMs, and AMs that make adjustments to an ACL if it is exceeded. In-season AMs prevent an ACL from being exceeded and may include, but are not limited to, closing the fishery, closing specific areas, changing bag limits, or other methods to reduce catch. If the Council determines that an ACL has been exceeded, the Council may recommend, as an AM, that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage. In determining whether an overage adjustment is necessary, the Council would consider the magnitude of the overage and its impact on the affected stock's status. Additionally, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Figure 1 illustrates the relationship among the OFL, ABC, and ACLs described in this section.

For more details on the specific elements of the ACL specification mechanism and process, see Amendment 1 to the PRIA FEP, Amendment 2 to the American Samoa Archipelago FEP, Amendment 2 to the Mariana FEP, Amendment 3 to the Hawaii Archipelago FEP, and the final implementing regulations at 50 CFR §665.4 (76 FR 37285, June 27, 2011).

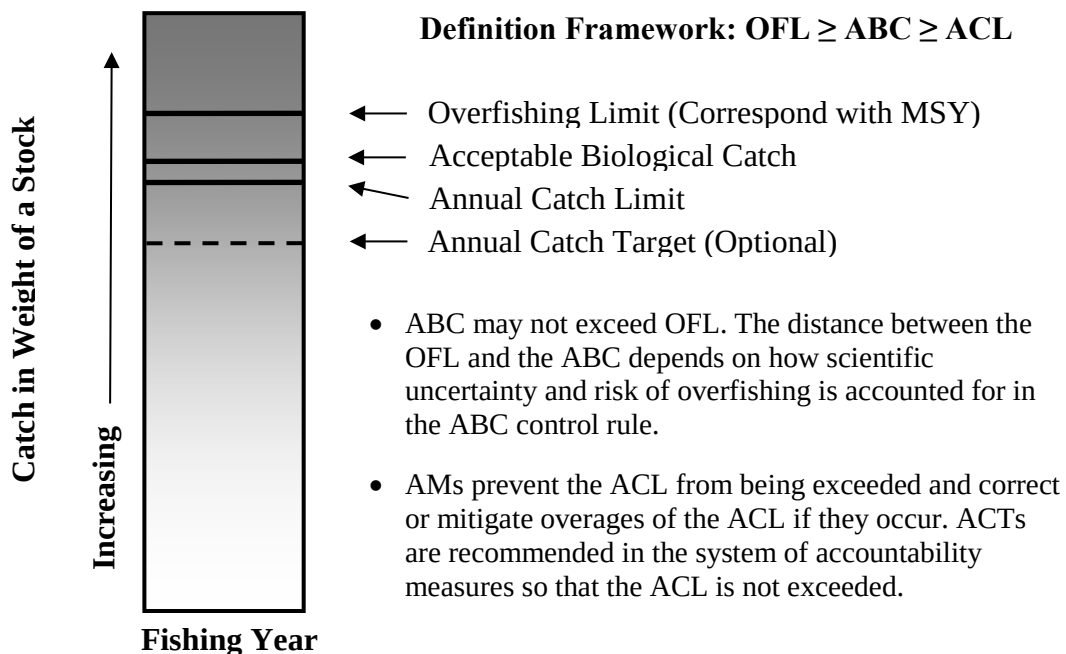


**Figure 1. Relationship among OFL, ABC, ACL and ACT.**

## 1.1 Purpose and Need

ACLs are needed in order to comply with the Magnuson-Stevens Act and provisions of the FEPs for American Samoa Archipelago, the Mariana Archipelago, and the Hawaii Archipelago which require NMFS to specify an ACL for each stock and stock complex in Pacific Island crustacean and precious coral fisheries. The fishery management objective of this action is to specify an ACL for all crustacean and precious coral MUS to prevent overfishing from occurring, and provide for long-term sustainability of the fishery resources while allowing fishery participants to continue to benefit from their utilization. AMs are to be used to correct or mitigate overages of the ACL should they occur.

## **1.2 Proposed Action**

Based on recommendations by the Council, NMFS proposes to specify multi-year annual catch limits (ACLs) and implement accountability measures (AMs) for each crustacean and precious coral stock or stock complex managed under the FEPs for American Samoa, the Mariana Islands (which include Guam and the CNMI), and Hawaii effective in fishing years 2016–2018. ACLs and AMs for spiny lobsters are not included in the proposed action here, as the specifications are covered in a separate environmental review (NMFS 2015).<sup>2</sup> NMFS proposes to implement the specifications for fishing year 2016, 2017, and 2018 separately prior to each fishing year. Each fishing year, in each island area, catches would be counted towards the ACL for the stock or stock complex based on catch data collected by local resource management agencies through their respective fishery monitoring programs,<sup>3</sup> and by NMFS through Federal logbook reporting.

Pursuant to applicable fishery management regulations found at 50 CFR 665.4, when an ACL for any stock or stock complex is projected to be reached, based on best available information, NMFS will restrict fishing for that stock or stock complex in Federal waters around the applicable U.S. EEZ to prevent the ACL from being exceeded. The restriction may include, but is not limited to closure of the fishery, closure of specific areas, or restriction in effort. However, in-season restrictions are not possible for any precious coral or crustacean fishery at this time because catch statistics are generally not available until at least six months after the data has been collected (see Section 2.3 for more details on data collection). For this reason, only a post-season AM is possible. Specifically, after the end of each fishing year, if NMFS and the Council determine that the average catch from the most recent three-year period exceeds the specified ACL, NMFS would reduce the ACL in the subsequent fishing years by the amount of the overage. Prior to implementing a reduced ACL, NMFS would conduct additional environmental analyses, if necessary, and the public would have the opportunity to provide input and comment on the reduced ACL specification at that time. If a fishery exceeds an ACL more than once in a

---

<sup>2</sup> NMFS prepared a separate EA for the spiny lobster fisheries of the western Pacific because in 2015 the Council used a new method to set ABCs and ACLs that was better than using the 75th-percentile of catch. The effects of those specifications are considered together with the current proposed specifications, other ACL specifications and other actions by others and NMFS, as required under NEPA.

<sup>3</sup> Catch data for crustacean and precious coral fisheries in each island area are collected at the lowest taxonomic level possible by state, territorial, and commonwealth fishery management agencies in American Samoa, the CNMI, Guam, and Hawaii. The data are then expanded using algorithms developed by NMFS Pacific Islands Fisheries Science Center (PIFSC), Western Pacific Fisheries Information Network (WPacFIN) to generate estimates of total catches from both commercial and non-commercial sectors, except in Hawaii where total catch is based only on catch reported by the commercial fishing sector, as required under State law.

four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

### **1.3 Decision Made After Considering Public Input**

NMFS considered public comments on the proposed action and alternatives, and decided to specify ACLs and AMs for crustacean and precious coral stocks and stock complexes in American Samoa, the CNMI, Guam, and Hawaii for fishing years 2016 through 2018, in accordance with the Council's recommendations. NMFS received no comments during the public comment period for the proposed specification (82 FR 5517, January 18, 2017).

### **1.4 Public Involvement**

The current proposed ACLs and AMs for Pacific Island crustacean and precious corals in American Samoa, the CNMI, Guam, and Hawaii, including ABC recommendations were considered in public meetings in 2014. At its 160<sup>th</sup> meeting, the Council considered and discussed issues relevant to the ACLs and AMs, including the ABC recommendations of the 116<sup>th</sup> SSC. The 116<sup>th</sup> SSC and the 160<sup>th</sup> Council meetings were held June 17-19, 2014, and June 25-27, 2014, respectively. Both meetings were open to the public and advertised through notices in the *Federal Register* (79 FR 31310, June 2, 2014), and on the Council's website. The public had an opportunity to comment at the meetings on the proposed ACL specifications and AMs and no public comment was provided at either meeting.

Prior to 2014, the public had been provided several opportunities to have input on previous years' ACLs and AMs for Pacific Island precious coral and crustacean fisheries. The 108<sup>th</sup> SSC and the 152<sup>nd</sup> Council meetings were held October 17-19, 2011, and October 19-22, 2011, respectively. Both meetings were open to the public and advertised through notices in the *Federal Register* (76 FR 60004; September 28, 2011) and on the Council's website. The public had an opportunity to comment at the meetings on the proposed ACL specifications and AMs and no public comment addressed this topic at either meeting.

NMFS provided the public with an opportunity to review and comment on a draft EA for proposed ACL specifications and AMs for crustacean and precious coral fisheries in the Pacific Islands for 2012 and 2013. No comments were received and the EA was finalized in December 2011 (NMFS 2011).

NMFS has provided the public with opportunities to comment on proposed ACL specifications and AMs over the past 4 years. No public comments have been received on the proposed ACL specifications or AMs during rulemaking.

NMFS sought public comment on the proposed rule and draft EA for the proposed ACL specifications and AMs for crustacean<sup>4</sup> and precious coral fisheries of the Pacific Island for fishing years 2016 through 2018 (82 FR 5517, January 18, 2017). NMFS received no comments.

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<sup>4</sup> Spiny lobster ACLs and AMs are not included in this EA; they are evaluated in a separate EA



## 2 Description of the Alternatives

The alternatives considered in this document are a range of annual catch limits (ACLs) for crustacean and precious coral MUS caught in these fisheries in American Samoa, Guam, the CNMI and Hawaii. Although the estimate of the overfishing limit (OFL) and calculation of the acceptable biological catch (ABC) are part of the ACL mechanism, the establishment of these reference points is not part of the proposed Federal action because OFL is unknown, and, has not been determined for any crustacean or precious coral stock or stock complex. Additionally, the development of ABCs is not part of the Federal action, but a summary of their development by the Council's Scientific and Statistical Committee (SSC) is described in this section for informational purposes. ABCs were previously calculated by the Council's SSC at its 116<sup>th</sup> meeting, in accordance with the approved ACL mechanism described in the FEPs and implementing Federal regulations at 50 CFR 665.4, and in consideration of the best available scientific, commercial, and other information. In accordance with the Magnuson-Stevens Act and the ACL mechanism described in all western Pacific FEPs, the Council's ACL recommendation may not exceed the ABC recommended by the Council's SSC.

Table 2 summarizes the ACL alternatives considered for crustacean and precious coral fisheries in American Samoa, Guam, CNMI and Hawaii, including the most recent landing data, where available. Alternative 2 is the preferred alternative for all FEP fisheries and would result in NMFS specifying ACLs that are equal to the fishing level recommendation of the Council.

### *Features common to all alternatives*

Pursuant to 50 CFR 665.4, when an ACL for any stock or stock complex is projected to be reached, based on best available information, NMFS will restrict fishing for that stock or stock complex in Federal waters around the applicable U.S. EEZ to prevent the ACL from being exceeded. The restriction may include, but is not limited to closure of the fishery, closure of specific areas or restriction in effort (76 FR 37286, June 27, 2011). However, in-season restrictions are not being recommended by the Council for any fishery at this time because catch statistics are generally not available until at least six months after the data has been collected (see Section 2.3 for more details on data collection). For these reasons, NMFS would apply a moving 3-yr average catch to evaluate fishery performance against the proposed ACLs. Specifically, NMFS and the Council will use the average catch during fishing year 2014, 2015, and 2016 to evaluate fishery performance against the appropriate 2016 ACL. At the end of each fishing year, the Council will review catches relative to each ACL. If NMFS and the Council determine the three-year average catch for the fishery exceeds the specified ACL, NMFS and the Council will reduce the ACL for that fishery by the amount of the overage in the subsequent year (80 FR 52415, August 31, 2015). Additionally, as a performance measure specified in each FEP, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Each alternative also assumes continuation of all existing Federal and local resource management laws and regulations.



**Table 2. Summary of the ACL Alternatives for Crustacean and Precious Coral Fisheries**

| Fishery                           | Alternative 1 | Alternative 2                             | Alternative 3    | Most Recent Annual<br>Average Landings<br>(Years) <sup>1</sup> |
|-----------------------------------|---------------|-------------------------------------------|------------------|----------------------------------------------------------------|
|                                   | No Action     | Council<br>Recommended ACL<br>(Preferred) | ACL = 90% of ABC |                                                                |
| HAWAII                            |               |                                           |                  |                                                                |
| Deepwater Shrimp                  | No ACL        | 250,773 lb                                | 225,695 lb       | 22,892 lb (2011-2015)                                          |
| Slipper Lobster                   | No ACL        | 280 lb                                    | 252 lb           | 0 lb (2014)                                                    |
| Kona Crab                         | No ACL        | 27,600 lb                                 | 24,840 lb        | 2,921 lb (2015)                                                |
| Auau Channel Black Coral          | 5,000 kg*     | 2,500 kg                                  | 6,750 lb         | 1,840 lb (2011-2015)                                           |
| Makapuu Bed Pink/Bamboo Coral     | 2,000/500 kg* | 1,000/250 kg                              | 1,229/233 kg     | 0                                                              |
| 180 Fathom Bank Pink/Bamboo Coral | 222/56 kg**   | 222/56 kg                                 | 273/51 kg        | 0                                                              |
| Brooks Bank Pink/Bamboo Coral     | 444/111 kg**  | 444/111 kg                                | 546/104 kg       | 0                                                              |
| Kaena Point Bed Pink/Bamboo Coral | 67/17 kg**    | 67/17 kg                                  | 82/15 kg         | 0                                                              |
| Keahole Bed Pink/Bamboo Coral     | 67/17 kg**    | 67/17 kg                                  | 82/15 kg         | 0                                                              |
| Precious Coral Exploratory Area   | 1000 kg**     | 1000 kg                                   | 900 kg           | 0                                                              |
| AMERICAN SAMOA                    |               |                                           |                  |                                                                |
| Deepwater Shrimp                  | No ACL        | 80,000 lb                                 | 72,000 lb        | 0                                                              |
| Slipper Lobster                   | No ACL        | 30 lb                                     | 27 lb            | Unknown                                                        |
| Kona Crab                         | No ACL        | 3,200 lb                                  | 2,880 lb         | 0                                                              |
| Black Coral                       | No ACL        | 790 lb                                    | 711 lb           | 0                                                              |
| Precious Coral Exploratory Area   | 1,000 kg**    | 1,000 kg                                  | 900 kg           | 0                                                              |
| CNMI                              |               |                                           |                  |                                                                |
| Deepwater Shrimp                  | No ACL        | 275,570 lb                                | 248,018 lb       | 0                                                              |
| Slipper Lobster                   | No ACL        | 60 lb                                     | 54 lb            | 165 lb (2009)                                                  |
| Kona Crab                         | No ACL        | 6,300 lb                                  | 5,670 lb         | 0                                                              |
| Black Coral                       | No ACL        | 2,100 lb                                  | 1,890 lb         | 0                                                              |
| Precious Coral Exploratory Area   | 1,000 kg**    | 1,000 kg                                  | 900 kg           | 0                                                              |
| GUAM                              |               |                                           |                  |                                                                |
| Deepwater Shrimp                  | No ACL        | 48,488 lb                                 | 43,639 lb        | 0                                                              |
| Slipper Lobster                   | No ACL        | 20 lb                                     | 18 lb            | 0                                                              |
| Kona Crab                         | No ACL        | 1,900 lb                                  | 1,729 lb         | 0                                                              |
| Black Coral                       | No ACL        | 700 lb                                    | 630 lb           | 0                                                              |
| Precious Coral Exploratory Area   | 1,000 kg**    | 1,000 kg                                  | 900 kg           | 0                                                              |

<sup>1</sup>Catch reported to local marine resource management agencies through their respective data collection programs.

\*Represents the current harvest quota that can be taken over the course of two consecutive fishing years.

\*\*Represents the current annual harvest quota that can be taken annually.

## **2.1 Development of the Alternatives for Crustaceans – Deepwater Shrimp**

Deepwater shrimp managed under the FEPs for Hawaii, American Samoa and the Mariana Archipelago (including Guam and the CNMI) include all species of the genus *Heterocarpus* and occur primarily at depths of between 350 m and 1,200 m. Also referred to as “pandalid shrimp” or “smooth nylon shrimp,” they are harvested by traps made from steel, wire, and/or plastic with conical entrances that allow the shrimp to get into the trap, but not out. Trap lines are marked with flags and spaced out at approximately 30 meters apart. The traps are left out overnight to fish and collected the next day (King 1993).

In the Pacific Islands Region, deepwater shrimp fisheries have operated intermittently, including some operations in Hawaii that have operated occasionally since the 1960s. Other places in the region, such as Guam, have attempted a small-scale fishery for deepwater shrimp in the 1970s. The CNMI also had a deepwater shrimp fishery during the mid-1990s, around Saipan and Tinian. In general, these operations have consisted of from one to four vessels and have been rather sporadic. Gear loss, a short product shelf life, and history of inconsistent product quality have led to fluctuating market demand. Also, known fishing areas tend to be limited and subject to reduced catch rates following large initial harvests. Vessels generally leave the fishery for two to five years while the biomass increases enough to make the fishery profitable again.

In accordance with Federal regulations, any vessel used to fish for deepwater shrimp or lobsters in the U.S. EEZ must obtain a Federal permit and submit catch logbooks to NMFS within 72 hours of landing. Crustacean Permit Area 1 includes the EEZ around the Northwestern Hawaiian Islands (NWHI). Crustacean Permit Area 2 includes the EEZ around the main Hawaiian Islands (MHI). Crustacean Permit Area 3 includes the EEZ around American Samoa. Crustacean Permit Area 4 includes the EEZ around the U.S. Pacific Remote Island Areas. Crustacean Permit Area 5 includes the EEZ around Guam and the CNMI.

Comprehensive information on target, non-target stocks, bycatch, protected species, and conservation and management measures for deepwater shrimp fisheries can be found in the American Samoa Archipelago FEP (WPFMC 2009a), the Hawaii Archipelago FEP (WPFMC 2009b), and the Mariana Archipelago FEP (WPFMC 2009c). Additionally, Amendment 13 to the Fishery Management Plan for Crustacean Fisheries of the Western Pacific provides detailed fishery descriptions including ecology and life history information for deepwater shrimps of the western Pacific (WPFMC 2008).

The SSC and Council developed the ABC and ACL recommendations for deepwater shrimp MUS in accordance with the Magnuson-Stevens Act and Federal regulations at 50 CFR §665.4 that implement the ACL specification mechanism of the FEPs described in Section 1. The following section summarizes the data, methods, and procedures considered in SSC and Council deliberations as described more fully in the Council’s first ACL and AM specification (WPFMC 2011). A full report of the 116<sup>th</sup> SSC and 160<sup>th</sup> Council deliberations can be found on the Council website at: [www.wpcouncil.org](http://www.wpcouncil.org).

### **2.1.1 Hawaii Deepwater Shrimp ACL Alternatives**

In Hawaii, an intermittent deepwater shrimp fishery began in 1967 (Tagami and Ralston 1988) and continues to vary from year to year with an average of three vessels reporting the catch of deepwater shrimp to the State of Hawaii. Vessels ranged in size from 7.5 to 40 m in length, though the number of smaller vessels increased as larger vessels left the fishery (Tagami and Barrows 1988). Between 1982 and 2005, the cumulative (23-year) landings of *Heterocarpus laevigatus* amounted to over 1.0 million pounds, while during the same time period, *Heterocarpus ensifer* landings totaled over 20,000 pounds. There are currently no Federal crustacean permits issued for deepwater shrimp harvest in Hawaii.

Table 3 summarizes total landings and average annual landings for both species of deepwater shrimp in the main Hawaiian Islands (MHI) for three decadal periods, 1982-1989, 1990-1999, 2000-2010, and the most recent five-year period (2011 – 2015). Landing information is grouped into multi-year bins to protect confidential fishery data as there may have been fewer than three participants in the fishery during certain years. Therefore, individual years in which less than three vessels participated in the fishery cannot be reported.

**Table 3. Total and Average Annual Landings of Hawaii Deepwater Shrimp (1982–2015)**

| <b>Years (Grouped)*</b> | <b>Total Landings (lb)</b> | <b>Average Annual Landings (lb)</b> |
|-------------------------|----------------------------|-------------------------------------|
| 1982–1989 (8 yrs.)      | 320,195                    | 40,024                              |
| 1990–1999 (10 yrs.)     | 881,548                    | 88,155                              |
| 2000–2010 (11 yrs.)     | 206,176                    | 18,743                              |
| 2011–2015 (5 yrs.)      | 114,461                    | 22,892                              |

\*Landing information grouped to protect confidential fishery data.

Source: Landings data from (HDAR 2016) State of Hawaii, Dept. of Land and Natural Resources Division of Aquatic Resources.

### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for deepwater shrimp in Hawaii.

### ***SSC's Calculation of ABC***

The most current estimate of maximum sustainable yield (MSY) for the deepwater shrimp stock complex in Hawaii is 125 mt/yr or 275,575 lb/yr (Tagami and Ralston 1988). At 116<sup>th</sup> SSC meeting, the SSC determined that the Hawaii deepwater shrimp stock complex can be regarded as Tier 4 because MSY is known, but there is no current harvest. Therefore, consistent with the Tier 4 ABC control rule described in the FEP of the Hawaiian Archipelago, the SSC recommended the ABC be set equal to 0.91\*MSY. As explained in the FEP of the Hawaii Archipelago, the application of this control rule would result in a fishing mortality rate of 0.70  $F_{MSY}$  which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty.

In calculating the ABC, the SSC applied the value for exploitable biomass (271.4 mt/yr or 598,328 lb/yr) as estimated by Ralston and Tagami (1992) instead of the MSY estimated by Tagami and Ralston (1988), and calculated an ABC of 544,479 lb which the SSC then rounded

down to 544,000 lb. Because the SSC used the value for exploitable biomass in the Tier 4 ABC control rule calculation, the SSC-recommended ABC of 544,000 lb, which exceeds the MSY estimate of 125 mt/yr or 275,575 lb/yr. Therefore, consistent with the intent of the SSC's recommendation, NMFS is making a technical correction to the ABC calculation by applying the correct MSY value of 125 mt/ yr or 275,575 lb/yr into the Tier 4 ABC control rule which results in a corrected ABC of 250,773 lb.

### ***Council ACL Recommendation***

At its 152<sup>nd</sup> meeting held October 17 – 19, 2011, the Council recommended setting the ACL for the Hawaii deepwater shrimp stock complex as equal to the ABC, which, as re-calculated by NMFS, is 250,773 lb. In recommending the ACL, the Council considered the average annual landings for the three approximately 10-year periods as shown in Table 3. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty as described in the FEP of the Hawaii Archipelago, because average annual landings within each of three approximately 10-year periods are substantially lower than the MSY of 125 mt/yr (275,575 lb/yr) estimated by Ralston and Tagami (1988). Therefore, while setting the ACL equal to the ABC does not provide for consideration of management uncertainty, it is highly unlikely that catch would ever approach ACL based on the historical performance of the Hawaii deepwater shrimp fishery, and it is unlikely that the Hawaii deepwater shrimp stock complex would experience overfishing during the 2012 or 2013 fishing years. The Council recommended the same ACL for fishing years 2012 – 2015 and catch has never exceeded the ACL. The Council reaffirmed this ACL recommendation for the 2016 – 2018 fishing years at its 160<sup>th</sup> meeting held June 25 – 27, 2014, in Honolulu, Hawaii.

#### **2.1.1.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the Hawaii deepwater shrimp stock complex and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or provisions of the FEP of the Hawaii Archipelago which require ACLs to be specified for all stocks and stock complexes in the deepwater shrimp fishery. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.1.1.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for the Hawaii deepwater shrimp stock complex would be set equal to the ACL recommended by the Council or 250,773 lb. This ACL is equal to the ABC and is 91% of the estimated annual MSY of 275,575 lb/yr. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

### **2.1.1.3 Alternative 3: Specify ACL at 90% of ABC**

Under this alternative, the ACL for Hawaii deepwater shrimp stock complex would be set at 90% of the 250,773 lb ABC, or 225,695 lb. This ACL would be 82% of the annual MSY estimate of 275,575 lb/yr (Tagami and Ralston 1988). The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council’s recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

### **2.1.2 American Samoa Deepwater Shrimp ACL Alternatives**

No fishing for deepwater shrimp has ever been reported around American Samoa and no Federal permits have ever been issued. However, in 1987, PIFSC fishery scientists conducted sampling at 10 shrimp trapping stations at depths ranging between 200 and 510 fathoms around American Samoa (Moffitt and Polovina 1987). Large pyramid single set traps were used and at least some *Heterocarpus* were present in every trap haul. Unpublished results from the cruise showed that deepwater shrimp were found at every trapping station and may be more abundant in some places than others. Additionally, depletion trapping surveys were conducted in Western Samoa (near Apia) which yielded 0.6 kg of deepwater shrimp per trap (King 1980, King 1984). Other trapping studies have been conducted in other Pacific Islands including Hawaii, the Marianas, Guam, Tonga, Fiji, Vanuatu, New Caledonia, French Polynesia and the Kiribati.

#### ***NMFS/Council Estimation of OFL***

There is no estimate of OFL for deepwater shrimp in American Samoa.

#### ***SSC’s Calculation of ABC***

At its 116<sup>th</sup> SSC, the SSC developed a proxy for estimating MSY for the American Samoa deepwater shrimp stock complex based on the product of an equilibrium sustainable yield estimate for deepwater shrimps and an estimate of the available deepwater shrimp habitat based on an estimate of the amount (area) of substrate that lies between 600 and 800 m deep.

Based on the trapping studies conducted in the Pacific Islands, King (1986) provides a potential equilibrium sustainable yield estimate for deepwater shrimps in the Pacific Islands of 200 kg/km<sup>2</sup> per year. The equilibrium yield is estimated as the ratio of yield-per-unexploited biomass (Y/Bo) multiplied by the unexploited biomass estimated from the depletion experiments described in King (1986). Additionally, King (1988) estimates American Samoa contains approximately 200 km<sup>2</sup> of available deepwater shrimp habitat area, which includes substrates between 600 and 800 m in depth, though this may be an underestimate because of the incomplete coverage in the depth range of interest and because some banks and seamounts have yet to be mapped sufficiently to

provide an accurate area estimate (Michael Parke, NMFS PIFSC, *pers. comm.*; Robert O’Conner, NMFS PIRO, *pers. comm.*).

Multiplying the King (1986) equilibrium sustainable yield estimate of 200 kg/km<sup>2</sup> by the King (1988) estimate of 200 km<sup>2</sup> of deepwater shrimp habitat for the Territory, the SSC calculated a potential MSY proxy for deepwater shrimp in American Samoa of 40,000 kg/yr or approximately 88,000 lb/yr. The SSC determined that American Samoa deep water shrimp can be regarded as Tier 4 because an MSY proxy can be calculated, but there is no current harvest. Therefore, consistent with the Tier 4 ABC control rule described in the American Samoa FEP, which requires ABC be set equal to 0.91\*MSY, the SSC calculated ABC to be 80,000 lb. As explained in the American Samoa FEP, the application of this control rule would result in a fishing mortality rate of 0.70 F<sub>MSY</sub>, which would maximize yield while minimizing fishery impacts to biomass, and account for scientific uncertainty.

### ***Council ACL Recommendation***

At its 152nd meeting held October 19-22, 2011, in Honolulu, Hawaii, the Council recommended setting ACL for American Samoa deepwater shrimp stock complex equal to the SSC recommended ABC of 80,000 lb. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty, as described in the American Samoa FEP, because no fishing for deepwater shrimp has ever been reported around American Samoa and none was expected to occur in 2012 or 2013. Therefore, it is highly unlikely that catch would approach the ACL any time in the foreseeable future, and it is unlikely that the American Samoa deepwater shrimp stock complex would experience overfishing during the 2012 or 2013 fishing years. The Council recommended the same ACL for fishing years 2012 – 2015 and catch has never exceeded the ACL. The Council reaffirmed this ACL recommendation for the 2016 – 2018 fishing years at its 160th meeting held June 25 – 27, 2014.

#### **2.1.2.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the American Samoa deepwater shrimp stock complex and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the American Samoa FEP, which requires ACLs to be specified for all stocks and stock complexes in the fishery. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.1.2.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for the American Samoa deepwater shrimp stock complex would be set equal to the ACL recommended by the Council or 80,000 lb. This ACL is equal to the ABC recommended by the SSC and is 91% of the estimated MSY proxy of 88,000 lb/yr. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that



caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

### **2.1.2.3 Alternative 3: Specify ACL at 90% of ABC**

Under this alternative, the ACL for American Samoa deepwater shrimp stock complex would be set at 90% of the 80,000 lb ABC recommended by the SSC or 72,000 lb. This ACL would be 81% of the estimated MSY proxy of 88,000 lb. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

### **2.1.3 CNMI Deepwater Shrimp ACL Alternatives**

A directed fishery for deepwater shrimp in the CNMI began in mid-1994, but lasted only two years. One of two companies involved stopped fishing in mid-1995, after fishing a total of 193 days. Between May 1994 and February 1996, approximately 27,000 lb of deepwater shrimp were landed in the CNMI. Of these, more than 97 percent were *Heterocarpus laevis*. The remainder of the catch was *Heterocarpus ensifer* (WPFMC 2008). Small amounts of catch were reported in 2001, 2005, and 2006 as local fishermen explored re-invigorating the deepwater shrimp fishery; however the landings cannot be publicly reported to protect fishery data confidentiality. No shrimp catches have been reported recently. There are currently no Federal crustacean permits issued for deepwater shrimp harvest in the CNMI.

#### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for deepwater shrimp in the CNMI.

#### ***SSC's Calculation of ABC***

Based on an equilibrium yield assessment conducted by NMFS Southwest Fisheries Science Center in 1987, the most current estimate of maximum sustainable yield (MSY) for the deepwater shrimp stock complex in the Mariana Archipelago is 161.5 mt/yr (Moffitt and Polovina 1987). The assessment identified *Heterocarpus ensifer*, *H. laevis*, and *H. longirostris* as the major components of catch in the Mariana Archipelago. The assessment also estimated sustainable yield for each individual island, bank and seamount in the archipelago (Table 4). Note that commercial fishing is prohibited in waters of the Islands Unit of the Marianas Trench Marine National Monument.

**Table 4. Equilibrium yield for Heterocarpus shrimps in the Mariana Archipelago by location.**

| <b>Bank Area (CNMI)</b>                 | <b>Yield (mt/yr)</b> |
|-----------------------------------------|----------------------|
| Maug*                                   | 0.9                  |
| Asuncion*                               | 1.5                  |
| Agrihan                                 | 3.0                  |
| Pagan                                   | 4.3                  |
| Alamagan                                | 3.0                  |
| Guguan                                  | 1.7                  |
| Sarigan                                 | 0.8                  |
| Anatahan                                | 3.1                  |
| 38 Fathom                               | 1.7                  |
| Esmeralda                               | 0.3                  |
| Farallon de Medinilla                   | 10.6                 |
| Saipan                                  | 54.1                 |
| Tinian                                  | 16.3                 |
| Aguijan                                 | 7.8                  |
| Rota                                    | 24.7                 |
| Bank C                                  | 0.7                  |
| Bank D                                  | 0.9                  |
| Pathfinder                              | 0.9                  |
| Arakane                                 | 0.5                  |
| Bank A                                  | 0.6                  |
| <b>CNMI Total</b>                       | <b>137.4</b>         |
|                                         |                      |
| <b>Bank Area (Guam)</b>                 | <b>Yield (mt/yr)</b> |
| Guam Island                             | 3.9                  |
| Galvez and Santa Rosa                   | 20.2                 |
| <b>Guam Total</b>                       | <b>24.1</b>          |
| <b>Archipelagic Total (CNMI + Guam)</b> | <b>161.5</b>         |

\* - banks which are in the Islands Unit of the Marianas Trench Marine National Monument and are not open to commercial fishing.

Source: Adapted from Moffitt and Polovina (1987)

At its 116<sup>th</sup> meeting, the SSC determined that the CNMI deepwater shrimp stock complex can be regarded as a Tier 4 stock complex because an MSY is known, but there is no current harvest. Therefore, consistent with the Tier 4 ABC control rule described in the Mariana Archipelago FEP, the SSC recommended the  $ABC = 0.91 \times MSY$ . As explained in the Mariana FEP, the application of this control rule would result in a fishing mortality rate of  $0.70 F_{MSY}$ , which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty. Applying the Tier 4 ABC control rule to the CNMI deepwater shrimp MSY estimate of 137.4



mt/yr (302,830 lb), as provided for in Moffitt and Polovina (1987) and listed in Table 4, yields an ABC of 125 mt or 275,575 lb.<sup>5</sup>

### ***Council ACL Recommendation***

At its 152nd meeting held October 19-22, 2011, the Council recommended setting the ACL for the CNMI deepwater shrimp stock complex equal to the ABC or 275,575 lb. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP because there have been no reported landings of deepwater shrimp for the past five years and none is expected to occur in 2012 or 2013. Therefore, it is highly unlikely that catch would approach the ACL anytime in the foreseeable future, and it is unlikely that the CNMI deepwater shrimp stock complex would experience overfishing during the 2012 or 2013 fishing years. The Council recommended the same ACL for fishing years 2012 – 2015 and catch has never exceeded the ACL. The Council reaffirmed this ACL for the 2016 – 2018 fishing years at its 160th meeting held June 25 – 27, 2014.

#### **2.1.3.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the CNMI deepwater shrimp stock complex and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the Mariana Archipelago FEP which require ACLs to be specified for all stocks and stock complexes in the fishery. Alternative 1 serves as the baseline for the environmental effects analysis. .

#### **2.1.3.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for the CNMI deepwater shrimp stock complex would be set equal to the ACL recommended by the Council or 275,575 lb. This ACL is equal to the ABC recommended by the SSC and is 91% of the MSY of 302,830 lb/yr (137.4 mt/yr) estimated by Moffitt and Polovina (1987). The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

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<sup>5</sup> Note that this is a corrected ABC. At its 116<sup>th</sup> meeting, the SSC applied an MSY estimate of 133.8 mt/yr (294,975 lb/yr) for CNMI deepwater shrimp, resulting in an ABC of 268,000 lb. However, the MSY estimate used by the SSC is the result of a technical error in the interpretation of Moffitt and Polovina (1987) who calculate the MSY for deepwater shrimp in the CNMI as 137.4 mt/yr as shown in Table 4.

### **2.1.3.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for the CNMI deepwater shrimp stock complex would be set at 90% of the 275,575 lb ABC recommended by the SSC or 248,018 lb. This ACL is 82% of the MSY of 302,830 lb/yr (137.4 mt/yr) estimated by Moffitt and Polovina (1987). The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

### **2.1.4 Guam Deepwater Shrimp ACL Alternatives**

A small-scale fishery for deepwater shrimp occurred in the 1970s, but ended shortly thereafter. No fishing or landings have been reported since. There are currently no Federal crustacean permits issued for deepwater shrimp harvest in Guam and no recent shrimp harvests have been reported. Based on an equilibrium yield assessment conducted by NMFS Southwest Fisheries Science Center in 1987 (Moffitt and Polovina 1987), the most current estimate of MSY for the deepwater shrimp stock complex in Guam, including the offshore banks of Galvez and Santa Rosa, is 24.1 mt/yr or 53,116 lb/yr (Table 4).<sup>6</sup>

#### ***SSC's Calculation of ABC***

At its 116<sup>th</sup> meeting, the SSC determined that the Guam deepwater shrimp stock complex can be regarded as Tier 4 because an MSY is known, but there is no current harvest. Therefore, consistent with the Tier 4 ABC control rule described in the Mariana Archipelago FEP, the SSC recommended  $ABC = 0.91 * MSY$ . As explained in the Mariana FEP, the application of this ABC control rule would result in a fishing mortality rate of  $0.70 F_{MSY}$ , which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty. Applying the Tier 4 ABC control rule to the MSY estimate of 24.1 mt/yr, as provided for in Moffitt and Polovina (1987) and listed in Table 4, yields an ABC of 22 mt or 48,488 lb.

#### ***Council ACL Recommendation***

At its 152nd meeting held October 19–22, 2011, the Council recommended setting the ACL for the Guam deepwater shrimp stock complex equal to the ABC or 48,488 lb. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP because there have been

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<sup>6</sup> Note that this is a corrected ABC. At its 116<sup>th</sup> meeting, the SSC applied an MSY estimate of 27.7 mt/yr (61,067 lb/yr) for Guam deepwater shrimp, resulting in an ABC of 268,000 lb. However, the MSY estimate used by the SSC is the result of a technical error in the interpretation of Moffitt and Polovina (1987) who calculate the MSY for deepwater shrimp in Guam as 24.1 mt/yr as shown in Table 4.

no reported landing of deepwater shrimp fishing since the 1970s and none is expected to occur in 2012 or 2013. Therefore, it is highly unlikely that catch would approach the ACL anytime in the foreseeable future and it is unlikely that the Guam deepwater shrimp stock complex would experience overfishing during the 2012 or 2013 fishing years. The Council recommended the same ACL for fishing years 2012 – 2015 and catch has never exceeded the ACL. The Council reaffirmed this ACL recommendation for the 2016 – 2018 fishing years at its 160th meeting held June 25 – 27, 2014.

#### **2.1.4.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the Guam deepwater shrimp stock complex and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the FEP of the Mariana Archipelago which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.1.4.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for Guam deepwater shrimp stock complex would be set equal to the ACL recommended by the Council or 48,488 lb. This ACL is equal to the ABC recommended by the SSC and is 91% of the MSY of 53,116 lb/yr (24.1 mt/yr) estimated by Moffitt and Polovina (1987). The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

#### **2.1.4.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for the Guam deepwater shrimp stock complex would be set at 90% of the 48,488 lb ABC recommended by the SSC or 43,639 lb. This ACL is 82% of the MSY of 53,116 lb (24.1 mt/yr) estimated by Moffitt and Polovina (1987). The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

## 2.2 Development of the Alternatives for Crustaceans ACLs - Slipper Lobster

Lobsters are harvested on a small scale throughout the inhabited islands of the Pacific Islands Region and are comprised primarily of species belonging to the families Palinuridae (spiny lobsters) and Scyllaridae (slipper lobsters). The FEPs for the American Samoa Archipelago, the Mariana Archipelago, and the Hawaii Archipelago include two species of spiny lobster (*Panulirus marginatus* and *P. penicillatus*), and all species of slipper lobsters belonging to the family Scyllaridae as management unit species.

Generally, adult lobsters are typically found on rocky substrates in association with coral reef ecosystems that provide shelter as well as a diverse and abundant supply of food items. Some species can be found on rocky substrates in well-protected areas, in crevices and under rocks, while others inhabit the rocky shelters in the windward surf zones of oceanic reefs.

In 1999, the Council developed and NMFS approved essential fish habitat (EFH) designations for adult and juvenile lobsters (as well as Kona crab) as the bottom habitat from the shoreline to a depth of 100 m or 0-50 fathoms (see section 3.4 for more information about EFH designations). This EFH designation corresponds to the definition of coral reef ecosystem in the FEPs for American Samoa, the Mariana Archipelago (including Guam and the CNMI) and Hawaii. Table 5 lists the estimate area of coral reef ecosystem habitat in the main Hawaiian Islands, American Samoa, Guam and the CNMI as reported in Hunter (1995) and WPFMC (2001).

**Table 5. Estimated Coral Reef Habitat in the Pacific Islands Region\***

| Island Area           | Area of Coral Reef Ecosystem Habitat<br>(0-100 m) in km <sup>2</sup> |
|-----------------------|----------------------------------------------------------------------|
| Main Hawaiian Islands | 2,535                                                                |
| American Samoa        | 296                                                                  |
| Guam                  | 179                                                                  |
| CNMI                  | 579                                                                  |

\*Coral reef habitat, as defined in this table, is based on the definition in western Pacific regional fishery ecosystem plans and includes “bottom habitat from the shoreline to a depth of 100 m (0-50 fathoms).”

Source: Hunter (1995); WPFMC (2001)

Comprehensive information on target, non-target stocks, bycatch, protected species and conservation and management measures for lobster fisheries can be found in the American Samoa Archipelago FEP (WPFMC 2009a), the Hawaii Archipelago FEP (WPFMC 2009b) and the Mariana Archipelago FEP (WPFMC 2009c).

The SSC and Council developed the ABC and ACL recommendations for slipper lobsters in accordance with the Magnuson-Stevens Act and Federal regulations at 50 CFR §665.4 that implement the ACL specification mechanism of the FEPs described in Section 1. The following section summarizes the data, methods, and procedures considered in SSC and Council deliberations as described in the Council’s ACL specification document (WPFMC 2011). A full report of the 116<sup>th</sup> SSC and 160<sup>th</sup> Council meeting deliberations can be found on the Council website at: [www.wpcouncil.org](http://www.wpcouncil.org). ACL specifications and AMs for spiny lobsters were considered

in a separate EA beginning in 2015. As a result, ACLs and AMs for spiny lobster fisheries will not be covered in this EA.

### 2.2.1 Hawaii Slipper Lobster ACL Alternatives

In Hawaii, fisheries for lobsters target the two species of spiny lobster and several species of slipper lobsters, although two species, the common slipper lobster (*Scyllarides squammosus*) and the ridgeback slipper lobster (*Scyllarides haanii*) are the principle species harvested. Gear types used in Hawaii's lobster fisheries include traps, nets and hand harvest, with the latter being the preferred method in recent years and accounting for nearly 80 percent of reported landings between 1994 and 2004 (Kelly and Messer, 2005).

Between 1966 and 2010, slipper lobster landings ranged from about 0-2,395 lb/year with between 4 and 12 commercial participants. There are currently no Federal crustacean permits issued for lobsters in the MHI. Table 6 summarizes the reported commercial landing of slipper lobster landings between 1966 and 2010.

There is no information on the amount of non-commercial slipper lobster harvest in the MHI. Some non-commercial slipper lobster harvest is noted from shore-based creel census and telephone intercept surveys.

**Table 6. Annual reported commercial landings of slipper lobsters in the main Hawaiian Islands (1966-2015)**

| Fishing Year | Slipper Lobster Total Landings (lb) |
|--------------|-------------------------------------|
| 1966         | 0                                   |
| 1967         | 0                                   |
| 1968         | 0                                   |
| 1969         | 105                                 |
| 1970         | 0                                   |
| 1971         | 89                                  |
| 1972         | 0                                   |
| 1973         | 0                                   |
| 1974         | 100                                 |
| 1975         | 100                                 |
| 1976         | 47                                  |
| 1977         | 0                                   |
| 1978         | 160                                 |
| 1979         | 129                                 |
| 1980         | 119                                 |
| 1981         | 277                                 |
| 1982         | 152                                 |
| 1983         | 85                                  |
| 1984         | 687                                 |
| 1985         | 1,878                               |

| <b>Fishing Year</b> | <b>Slipper Lobster Total Landings (lb)</b> |
|---------------------|--------------------------------------------|
| 1986                | 2,395                                      |
| 1987                | 287                                        |
| 1988                | 416                                        |
| 1989                | 498                                        |
| 1990                | 34                                         |
| 1991                | 160                                        |
| 1992                | 66                                         |
| 1993                | 42                                         |
| 1994                | 45                                         |
| 1995                | 97                                         |
| 1996                | 765                                        |
| 1997                | 387                                        |
| 1998                | 917                                        |
| 1999                | 107                                        |
| 2000                | 192                                        |
| 2001                | 114                                        |
| 2002                | 58                                         |
| 2003                | 40                                         |
| 2004                | 36                                         |
| 2005                | 0                                          |
| 2006                | 0                                          |
| 2007                | 70                                         |
| 2008                | 78                                         |
| 2009                | 102                                        |
| 2010                | 10                                         |
| 2011                | 5                                          |
| 2012                | 24                                         |
| 2013                | 67                                         |
| 2014                | 141                                        |
| 2015                | 0                                          |

Source: WPFMC 2011 and WPFMC 2016.

### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for slipper lobsters in Hawaii.

### ***SSC's Calculation of ABC***

There is no MSY estimate for slipper lobsters in Hawaii.<sup>7</sup> At the 116<sup>th</sup> SSC meeting, the SSC recommended that, for species with no MSY estimates, the ABC be set in accordance with the

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<sup>7</sup> Amendment 1 to the Fishery Management Plan for Crustacean Fisheries of the Western Pacific Region (WPFMC 1983) provides an estimate of optimum yield for MHI lobsters as being 15-30,000 lobsters annually. However, the basis for this estimate is unknown. Using an estimate of 2 lb/lobster (Kelly and Messer, 2005), an OY of 15-30,000

Tier 5 ABC control rule as described in the FEP of the Hawaii Archipelago. See Section 1 for a description of the Council’s default ABC control rule for Tier 5 data poor stocks.

In defining “Recent Catch” to apply in the ABC control rule, the SSC recommended using the 75<sup>th</sup> percentile of the long term catch history for MHI slipper lobster as the definition of “Recent Catch.” The 75<sup>th</sup> percentile is the value of an array (in this case, the amount of catch in terms of pounds) below which 75% of the observations may be found. This is a non-parametric approach, that is, a distribution-free method and does not rely on assumptions that the data are drawn from a given probability distribution. Referring to discussions at the 107<sup>th</sup> SSC meeting, the SSC noted that the insular fishery catch vs. time-series data usually display considerable inter-annual variability; therefore, non-parametric measures are a better way to summarize such data compared to averages (Chambers et al. 1983, Cleveland 1993).

The SSC noted that the inter-quartile range (25-75th percentile) is a standard non-parametric measure that may be used to summarize data with considerable inter-annual variability, and determined that using the 75<sup>th</sup> percentile of long-term catch for Tier 5 stocks was more appropriate than the median long-term catch (or 50<sup>th</sup> percentile) as described in the Tier 5 control rule because using the 50<sup>th</sup> percentile is likely to result in ABC being attained 50% of the time.

Based on this approach and rationale, the SSC recommended the ABC for slipper lobster in the MHI be set based on 1 x the 75<sup>th</sup> percentile of the long term catch history (Figure 2). Specifically, the SSC set the ABC for slipper lobsters at 280 lb.

The SSC determined a multiplier of 1 was warranted in both calculations of ABC because there are numerous state regulations to conserve lobster populations in both the MHI and the NWHI, including size limits (Hawaii Administrative Rule Title 13, Subtitle 4, Chapter 89 §13-89-1), and numerous restricted fishing areas including Fishery Management Areas, Marine Life Conservation Districts, State Marine Refuges and Natural Area Reserves.

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lobsters would yield between 30,000 and 60,000 pounds of lobsters annually. The SSC did not rely on this data in setting ABC.

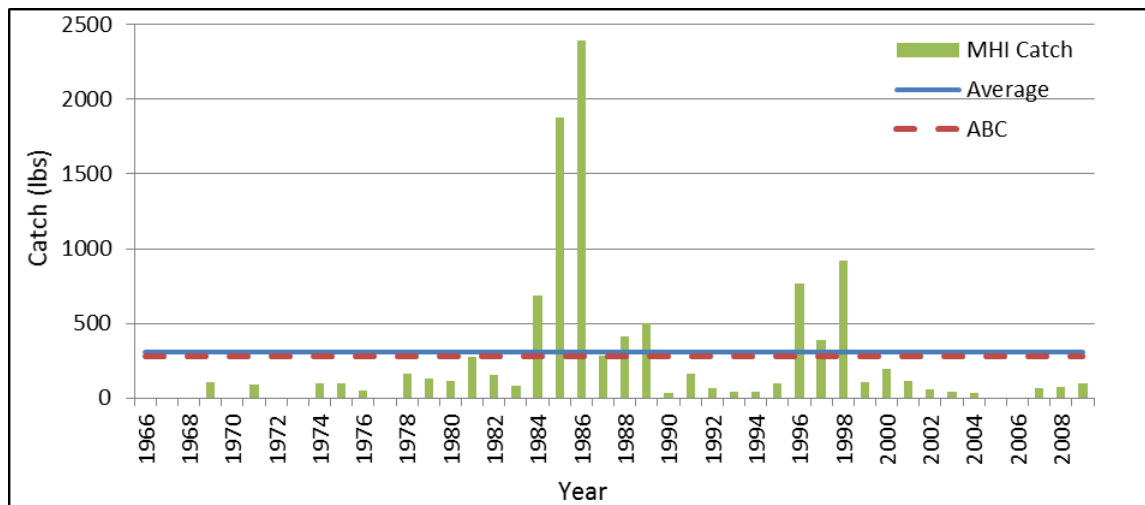


**Figure 2. Average reported commercial landings of slipper lobster in the MHI (1966-2008) compared to the recommended acceptable biological catch (ABC)**

Source: WPFMC 2011

### ***Council ACL Recommendation***

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council recommended setting the ACL for MHI slipper lobster stock complex equal to the SSC recommended ABC of 280 lb. The Council did not recommend reducing the slipper lobster ACL from the ABC for social, economic, ecological considerations or management uncertainty because there are numerous regulations implemented by the State of Hawaii that limit lobster harvest and provide protection to lobster populations. The Council recommended the same ACL for fishing years 2012 – 2015 and catch has never exceeded the ACL. The Council reaffirmed this ACL recommendation for the 2016 – 2018 fishing years at its 160th meeting held June 25 – 27, 2014.

#### **2.2.1.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the Hawaii slipper lobster stock complex and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the FEP of the Hawaii Archipelago, which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.2.1.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for the Hawaii slipper lobster stock complex would be set equal to the ACL recommended by the Council which is 280 lb. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS



would implement the Council’s recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

### **2.2.1.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACLs for Hawaii slipper lobster stock complex would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 252 lb. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council’s recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

## **2.2.2 American Samoa Slipper Lobster ACL Alternatives**

According to landings records, slipper lobsters in American Samoa are not exploited. However, an SSC member from American Samoa reported at the 116<sup>th</sup> SSC meeting, that some slipper lobsters are harvested but the catch is not identified to the species level in the DMWR fishery’s monitoring creel survey programs. There are currently no Federal crustacean permits issued for lobster harvest in American Samoa and most of the harvest is believed to be from territorial waters.

### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for slipper lobsters in American Samoa.

### ***SSC’s Calculation of ABC***

There is no MSY estimate for slipper lobsters in American Samoa. Additionally, there is no catch information and, therefore, this precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating an ABC for the American Samoa slipper lobster stock complex.

First, SSC recognized that essential fish habitat (EFH) designation for juvenile and adult slipper lobsters in American Samoa included all bottom habitat from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that American Samoa contains approximately 296 km<sup>2</sup> of lobster EFH as shown in Table 5. The SSC then developed an estimate of slipper lobster density based on the slipper lobster density estimated for Hawaii (the only area that has specifically documented harvesting of slipper lobster). To do this, the SSC applied the 75<sup>th</sup> percentile of slipper lobster catch from the main Hawaiian Islands (MHI) which is 280 lb, and a MHI lobster EFH area of 2,535 km<sup>2</sup>, and calculated that there are approximately 0.11 spiny lobsters per km<sup>2</sup> of EFH in the MHI. Using this spiny lobster density as a proxy for slipper

lobsters, and applying the ratio of 0.11 lobsters per EFH area to American Samoa, the SSC calculated the ABC for American Samoa slipper lobster stock complex to be 33 lb.

American Samoa Slipper Lobster ABC Proxy Equation:

$$(280 \text{ lb lobsters} / 2,535 \text{ km}^2) * 296 \text{ km}^2 = 33 \text{ lbs}$$

Although the SSC expressed concern about undocumented slipper lobster landings, it did note that the species is a small proportion of total lobster landings. The SSC also noted that American Samoa regulations prohibit the harvest of berried females (i.e., female lobsters with eggs) for both species (American Samoa Administrative Code, Title 24, Chapter 9, V. 24.0935 and 24.0936) and the extensive protected areas on Tutuila and in the Rose Atoll Monument. An additional regulation is the prohibition of the use of spears or snagging devices to harvest lobsters (American Samoa Administrative Code, Title 24, Chapter 9, V. 24.0935).

***Council ACL Recommendation***

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council recommended setting the ACLs for the American Samoa slipper lobster stock complex equal to the SSC-recommended ABC of 30 lb. The Council did not recommend reducing the ACLs from the ABCs in consideration of social, economic, ecological considerations or management uncertainty as described in the American Samoa FEP. While setting the ACLs equal to the ABCs allows for no precaution in the fishery, the Council noted there is currently only a small commercial fishery occurring in territorial waters, thus the Council does not expect the continued harvest to adversely impact lobster populations. The Council also noted that numerous regulations are already in place in American Samoa territorial waters that provide protection to the lobster stock populations.

**2.2.2.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the American Samoa slipper lobster stock complex and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the FEPs, which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

**2.2.2.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for American Samoa's slipper lobster stock complex would be set equal to the ACL recommended by the Council, which is 30 lb. This is equal to the ABC recommended by the SSC. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that

stock complex in the subsequent fishing year, or other measures, as appropriate. These are the same ACL and AM as in the past four fishing years.

### **2.2.2.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for American Samoa's slipper lobster stock complex would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 27 lb. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

## **2.2.3 CNMI Slipper Lobster ACL Alternatives**

The CNMI lobster fishery primarily targets spiny lobsters which are harvested by hand, with scuba or by free diving. This fishery occurs almost exclusively inside of three nautical miles of the inhabited southern islands of Saipan, Tinian and Rota although, anecdotal information indicates that in the northern islands on the reef surrounding Farallon de Medinilla, bottomfish fishermen anchored overnight occasionally dive for lobsters (WPFMC 2011; NMFS and WPFMC 2009). Slipper lobster catches have only recently been reported within the past several years with catches of 7 lb, 371 lb and 165 lb reported in 2007, 2008 and 2009 (WPacFIN unpublished data). There are currently no Federal crustacean permits issued for lobster harvest in the CNMI.

### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for slipper lobsters in the Mariana Archipelago.

### ***SSC's Calculation of ABC***

There is no MSY estimate for slipper lobsters in the CNMI. Additionally, there are only three years of available catch information and, therefore, this precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating an ABC for the CNMI slipper lobster stock complex.

First, SSC recognized that essential fish habitat (EFH) designation for juvenile and adult slipper lobsters in the CNMI included all bottom habitat from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that the CNMI contains approximately 579 km<sup>2</sup> of lobster EFH as shown in Table 5. The SSC then developed an estimate of slipper lobster density based on the slipper lobster density estimated for Hawaii (the only area that has specifically documented harvesting of slipper lobster). To do this, the SSC applied the 75<sup>th</sup> percentile of slipper lobster catch from the MHI (which is 280 lb), and a MHI lobster EFH area

of 2,535 km<sup>2</sup>, and calculated that there are approximately 0.11 spiny lobsters per km<sup>2</sup> of EFH in the MHI. Using this spiny lobster density as a proxy for slipper lobsters, and applying the ratio of 0.11 lobsters per EFH area to the CNMI, the SSC calculated the ABC for the CNMI slipper lobster stock complex to be 64 lb, but rounded the ABC downward to 60 lb.

CNMI Slipper Lobster ABC Proxy Equation:

$$(280 \text{ lb slipper lobsters}/2,535 \text{ km}^2) * 579 \text{ km}^2 \text{ (estimated EFH)} = 64 \text{ lb}$$

Additional sources of assurance that overfishing is not occurring for slipper lobsters in the CNMI, there is a significant reservoir of biomass in the uninhabited islands and monument, a closed area of shallow reef off Farallon de Medinilla that provides habitat for lobsters, and territorial regulations that provide protection to lobsters less than 3 inches, berried females, as well as prohibit any harvest mechanism other than by hand (DFW Fishing Regulations, Part 3, Section 50.1).

### ***Council ACL Recommendation***

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council recommended setting ACL for the CNMI slipper lobster stock complex equal to the SSC- recommended ABC, which is 60 lb. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP. While setting ACL equal to ABC allows for no precaution in the fishery, the Council noted there is currently only a small commercial fishery occurring in CNMI waters. The Council also noted that numerous regulations are already in place in CNMI territorial waters that provide protection to the lobster stock populations.

#### **2.2.3.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the CNMI slipper lobster stock complex and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the Mariana Archipelago FEP, which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.2.3.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for the CNMI's slipper lobster stock complex would be set equal to the ACL recommended by the Council, which is 60 lb. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward

adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate. These are the same ACL and AM as in the past 4 fishing years.

### **2.2.3.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for the CNMI's slipper lobster stock complexes would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 54 lb. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate. This is a 6 lb reduction from the past 4 years.

## **2.2.4 Guam Slipper Lobster ACL Alternatives**

Little is known about Guam's crustacean fisheries. Most fishing for crustaceans around Guam occurs in territorial waters in a subsistence or recreational context. There are no documented landings of slipper lobsters in Guam. Additionally, there are currently no Federal crustacean permits issued for lobster harvest in Guam.

### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for slipper lobsters in Guam.

### ***SSC's Calculation of ABC***

There is no MSY estimate for slipper lobsters in Guam. Additionally, there is no catch information and, therefore, this precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating the ABC for the Guam slipper lobster stock complex.

First, the SSC recognized that essential fish habitat (EFH) designation for juvenile and adult slipper lobsters in Guam included all bottom habitat from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that Guam contains approximately 179 km<sup>2</sup> of lobster EFH as shown in Table 5. The SSC then developed an estimate of slipper lobster density based on the slipper lobster density estimated for Hawaii (the only area that has specifically documented harvesting of slipper lobster). To do this, the SSC applied the 75<sup>th</sup> percentile of slipper lobster catch from the MHI (which is 280 lb), and a MHI lobster EFH area of 2,535 km<sup>2</sup>, and calculated that there are approximately 0.11 spiny lobsters per km<sup>2</sup> of EFH in the MHI. Using this spiny lobster density as a proxy for slipper lobsters, and applying the ratio of 0.11 lobsters per EFH area in Guam, the SSC calculated the ABC for the Guam slipper lobster stock complex to be 20 lb.

### Guam Slipper Lobster ABC Proxy Equation:

$$(280 \text{ lb slipper lobsters} / 2,535 \text{ km}^2 \text{ (EFH in Hawaii)}) * 179 \text{ km}^2 \text{ (EFH in Guam)} = 20 \text{ lbs}$$

The SSC determined a multiplier of 1 was warranted for slipper lobsters because of the various Guam territorial laws that aid in maintaining the slipper lobster biomass, including commercial harvest size restrictions and a prohibition on berried females (9 G.A.R. §12401). Additionally, Guam implemented measures for personal harvest of slipper lobsters, including no taking of berried females, size restrictions, and gear restrictions (9 G.A.R. §12402).

### ***Council ACL Recommendation***

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council recommended setting the ACL for the Guam slipper lobster stock complex equal to the SSC- recommended ABC of 20 lb. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP. While setting the ACL equal to ABC allows for no precaution in the fishery, the Council noted there is currently only a small commercial fishery occurring in Guam waters. The Council also noted that numerous regulations are already in place in Guam territorial waters that provide protection to the lobster stock populations.

#### **2.2.4.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the Guam slipper lobster stock complex and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs, which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.2.4.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for Guam's slipper lobster stock complex would be set equal to the ACL recommended by the Council which is 20 lb. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate. These are the same ACL and AM as in the past 4 fishing years.

#### **2.2.4.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for Guam's slipper lobster stock complex would be set at 90% of the ABC recommended by the SSC. This would result in ACLs of 2,430 lb and 18 lb,

respectively. The ACL would be specified annually for fishing years 2016–2018. As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council’s recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate.

## **2.3 Alternatives for Crustaceans - Kona Crab ACLs and AMs**

Kona crab (*Ranina ranina*), sometimes referred to as the “spanner crab” or “frog crab,” is the only species within its genus and is commercially harvested over much of its range in the equatorial Pacific. Currently, among the U.S. Pacific Island areas, Kona crab fishing only occurs in Hawaii. The fishery is relatively small with around 26–50 participants annually in recent years (Table 8). Fishing for Kona crab is conducted by setting strings of baited circular shaped nets on sandy bottom habitats for an average soak time of one hour (Kennelly and Craig 1989). Nets are set during day-long trips from small boats from 10-12 m in length (Brown 1985). The net frames are built from ½ cm wire approximately 1 meter across. This frame is then covered in 1-2 layers of small gauge mesh netting which entangles the legs or claws of the crabs. There is some variation in size and type of material used to construct tangle nets (Onizuka 1972; Kennelly and Craig 1989). Upon retrieval, crabs are untangled and the nets reset.

Very little is known about the life history of Kona crab. The crabs are dioecious (i.e., the species has separate male and female individuals) and displays sexual dimorphism, with males growing to a much larger size than females (Uchida 1986). Fishermen are readily able to distinguish the sexes of adult crabs.

### ***Current Federal and state fishery regulations for Kona crab fishery***

Currently, there are no Federal permits or reporting requirements for Kona crab harvests in the EEZ around Hawaii or other Pacific Island areas. In Hawaii, fishermen are required to have a State of Hawaii Commercial Marine License (CMLs) to harvest Kona crab for commercial purposes. This allows the Council, NMFS and the State of Hawaii to monitor commercial catches. Annual landings records are available in Hawaii from 1950 through 2015 (Table 8). As of 2006, the State of Hawaii prohibits retention of female crabs. The State has also established a minimum size for male crabs of 4 inches (carapace length). Female crabs and undersized male crabs must be returned to the ocean if they are caught in nets.

#### **2.3.1 Hawaii Kona Crab ACL and AM Alternatives**

What follows is a chronological account of ACL and AM recommendations for Hawaii Kona crab.



### ***Development of the Council’s original recommendation for Hawaii Kona crab ACLs and AMs in 2012–2013***

At the 108<sup>th</sup> SSC meeting from October 17–19, 2011, the SSC recommended that, for species with no MSY estimates, the ABC be set in accordance with the Tier 5 ABC control rule as described in the Hawaii Archipelago FEP. See Section 1 for a description of the Council’s default ABC control rule for Tier 5 data poor stocks. In defining “Recent Catch” to apply in the ABC control rule, the SSC recommended using the 75<sup>th</sup> percentile of the available catch history for Kona crab as the definition of “Recent Catch.” At the time the available catch history included data from 1950-2008. Based on this approach, the SSC recommended the ABC for the Kona crab fishery in Hawaii be set based on 1 x the 75<sup>th</sup> percentile of the long term catch history (Figure 3). Specifically, the SSC calculated the ABC for Kona crab to be 27,560 lb, but rounded ABC upward to 27,600 lb.

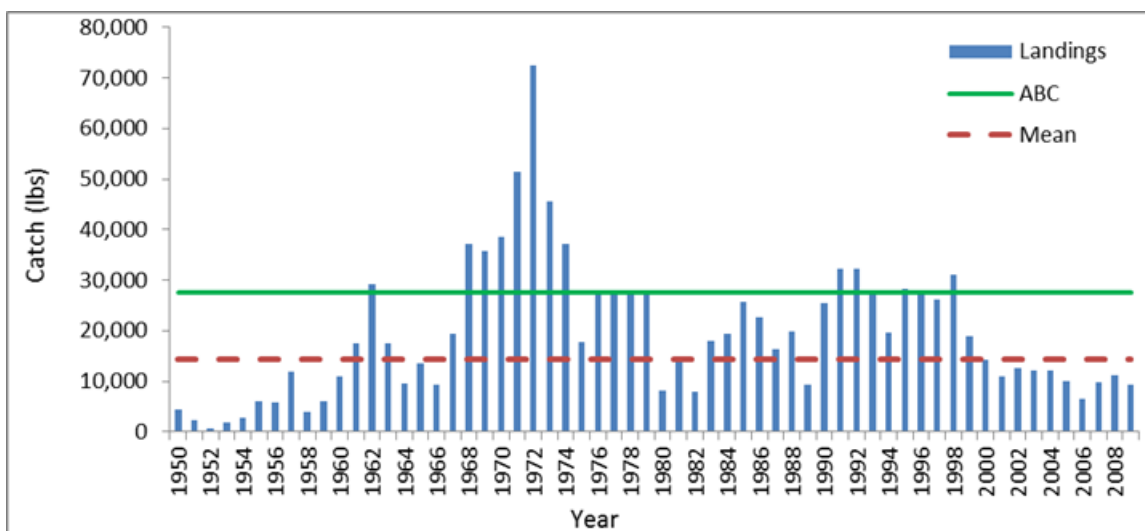


**Figure 3. Average catch of Kona crab in the MHI (1950-2008) compared to ABC**

Source: WPFMC (2011)

The SSC determined a multiplier of 1 was warranted for Hawaii Kona crab because there is no long-term decline in harvest over the last 30 years and there are numerous Hawaii state regulations to conserve Kona crab resources including restrictions on taking of female Kona crab (Hawaii Revised Statutes §188-58.5), and minimum size restrictions, seasonal closures (May-August), and gear restrictions (e.g. no spearing Kona crab, minimum net mesh size) (Hawaii Administrative Rule Title 13, Subtitle 4, Chapter 89 §13-95-52).

**Table 7. History of ACL and AM recommendations for Hawaii Kona crab**

| Year | Council Recommended ACL | NMFS Implemented AM | Total Catch (lb) | # of CML holders |
|------|-------------------------|---------------------|------------------|------------------|
| 2011 | N/A                     | N/A                 | 10,883           | 51               |



| Year   | Council Recommended ACL | NMFS Implemented AM | Total Catch (lb) | # of CML holders |
|--------|-------------------------|---------------------|------------------|------------------|
| 2012*  | 27,600                  | Post-season review  | 8,404            | 42               |
| 2013   | 27,600                  | Post-season review  | 9,625            | 29               |
| 2014   | 27,600                  | Post-season review  | 3,067            | 30               |
| 2015   | 27,600                  | Post-season review  | 2,332            | 26               |
| 2016** | 27,600                  | Post-season review  |                  |                  |
| 2017** | 27,600                  | Post-season review  |                  |                  |
| 2018** | 27,600                  | Post-season review  |                  |                  |

\* 2012 is the first year the fishery was subject to ACLs/AMs. \*\* Proposed ACLs and AMs

### ***Development of the Council's 2014 recommendation for Hawaii Kona crab ACLs and AMs for fishing years 2015–2018***

At the 116th SSC meeting from June 17–19, 2014 and the 160<sup>th</sup> Council meeting from June 25–27, 2014, the Council and its advisory body developed 2015–2018 ABC and ACL recommendations for the Hawaii Kona crab fishery in accordance with the Magnuson-Stevens Act and Federal regulations at 50 CFR §665.4. The following section summarizes the data, methods, and procedures considered in SSC and Council deliberations. A full report of the 116<sup>th</sup> SSC and 160<sup>th</sup> Council deliberations can be found on the Council website at: [www.wpcouncil.org](http://www.wpcouncil.org).

The Council and the SSC considered any new information since the 2011 EA prior to making a recommendation for the 2015–2018 ACLs in 2014. The SSC recommended that the ABCs of the fishing year 2014 be rolled over for fishing year 2015 to 2018 for species/species complexes that have no new scientific information, no new catch data, and for which catches in the past years did not exceed the ACL, which included Kona crab.

According to the SSC in their final report of the 116<sup>th</sup> SSC meeting: “Regarding Hawaii Kona crab, although there are some new catch data available, re-calculating the ABC using the Tier 5 ABC control rule (i.e., ABC=75th percentile of catch history) would result in a ratchet-down effect since the recent catches are below the ACLs. The same ratchet-down effect would occur in re-calculating ABC for these species in American Samoa, Guam and the CNMI using a catch per area of habitat ratio, based on updated Hawaii data. The SSC further recommends that these MUS be designated as ecosystem components and that monitoring be improved in case a commercial fishery develops.”

Considering the SSC's advice, in June 2014, the Council recommended that the Hawaii Kona crab ACLs and AMs for fishing years 2015 through 2018 remain the same as 2014 (WPFMC 2014). The Council developed their ACL and AM recommendations according to the process described in the FEP of the Hawaii Archipelago and Federal regulations at 50 CFR 665.4.

*Development of the Council's 2015 recommendation for Hawaii Kona crab ACLs and AMs for fishing years 2016–2018*

In 2015, the Council recommended AMs for the Hawaii Kona crab fishery that were subsequently implemented by NMFS (80 FR 52415, August 31, 2015). Specifically, under the current AMs, NMFS and the Council compare the estimated stock or stock complex's running three-year average catch to the ACL. For example, in 2015, NMFS and the Council used the average landings of Kona crab reported in 2013, 2014, and 2015 to compare fishery performance against the 2015 ACL. For the 2016 fishing year, NMFS and the Council would use the average catch of fishing years 2014, 2015, and 2016 to evaluate fishery performance against the 2016 ACL. A similar comparison would be made for fishing years 2017 and 2018.

***Recent and historical fishery performance***

Participation in the fishery varies from year to year. Over the past 15 years, the number of CML holders in the Hawaii Kona crab fishery has steadily declined from 85 commercial fishermen in 2000, to a low of 26 fishermen in 2015. In the last three years, there were 30 or fewer CML holders participating in the fishery (see Table 8). A substantial amount (30–75%) of Hawaii Kona crab catches are from the EEZ or Federal waters (NMFS 2011).

**Table 8. Annual reported commercial landing of Kona crab in the MHI (1950-2015)**

| <b>Fishing Year</b> | <b>Number of Fishery Participants (CML holders)</b> | <b>Kona Crab Total Landing (lb)</b> |
|---------------------|-----------------------------------------------------|-------------------------------------|
| 1950                | 10                                                  | 5,984                               |
| 1951                | 17                                                  | 3,440                               |
| 1952                | 12                                                  | 1,209                               |
| 1953                | 10                                                  | 1,564                               |
| 1954                | 14                                                  | 2,047                               |
| 1955                | 14                                                  | 3,926                               |
| 1956                | 28                                                  | 5,781                               |
| 1957                | 26                                                  | 11,195                              |
| 1958                | 23                                                  | 8,761                               |
| 1959                | 20                                                  | 4,259                               |
| 1960                | 17                                                  | 9,430                               |
| 1961                | 15                                                  | 15,288                              |
| 1962                | 19                                                  | 30,409                              |
| 1963                | 26                                                  | 21,019                              |
| 1964                | 28                                                  | 12,688                              |
| 1965                | 26                                                  | 11,421                              |
| 1966                | 22                                                  | 10,033                              |

| <b>Fishing Year</b> | <b>Number of Fishery Participants (CML holders)</b> | <b>Kona Crab Total Landing (lb)</b> |
|---------------------|-----------------------------------------------------|-------------------------------------|
| 1967                | 30                                                  | 17,444                              |
| 1968                | 25                                                  | 26,419                              |
| 1969                | 29                                                  | 35,955                              |
| 1970                | 30                                                  | 35,042                              |
| 1971                | 40                                                  | 43,576                              |
| 1972                | 41                                                  | 69,331                              |
| 1973                | 32                                                  | 62,515                              |
| 1974                | 49                                                  | 40,552                              |
| 1975                | 59                                                  | 24,616                              |
| 1976                | 59                                                  | 26,577                              |
| 1977                | 55                                                  | 23,168                              |
| 1978                | 61                                                  | 31,675                              |
| 1979                | 54                                                  | 28,976                              |
| 1980                | 42                                                  | 10,390                              |
| 1981                | 50                                                  | 17,858                              |
| 1982                | 52                                                  | 8,625                               |
| 1983                | 53                                                  | 11,206                              |
| 1984                | 68                                                  | 17,216                              |
| 1985                | 75                                                  | 21,918                              |
| 1986                | 83                                                  | 27,598                              |
| 1987                | 73                                                  | 22,131                              |
| 1988                | 50                                                  | 17,750                              |
| 1989                | 35                                                  | 13,116                              |
| 1990                | 39                                                  | 18,810                              |
| 1991                | 46                                                  | 23,641                              |
| 1992                | 73                                                  | 36,714                              |
| 1993                | 67                                                  | 25,894                              |
| 1994                | 71                                                  | 24,040                              |
| 1995                | 77                                                  | 22,866                              |
| 1996                | 88                                                  | 30,595                              |
| 1997                | 89                                                  | 29,033                              |
| 1998                | 87                                                  | 29,210                              |
| 1999                | 92                                                  | 25,500                              |
| 2000                | 85                                                  | 17,070                              |
| 2001                | 62                                                  | 10,128                              |
| 2002                | 64                                                  | 11,912                              |
| 2003                | 52                                                  | 12,669                              |
| 2004                | 51                                                  | 12,785                              |
| 2005                | 51                                                  | 11,904                              |
| 2006                | 39                                                  | 9,399                               |
| 2007                | 33                                                  | 5,690                               |
| 2008                | 37                                                  | 13,305                              |
| 2009                | 44                                                  | 7,987                               |

| <b>Fishing Year</b> | <b>Number of Fishery Participants (CML holders)</b> | <b>Kona Crab Total Landing (lb)</b> |
|---------------------|-----------------------------------------------------|-------------------------------------|
| 2010                | 40                                                  | 11,807                              |
| 2011                | 51                                                  | 10,883                              |
| 2012                | 42                                                  | 8,404                               |
| 2013                | 29                                                  | 9,625                               |
| 2014                | 30                                                  | 3,067                               |
| 2015                | 26                                                  | 2,332                               |

Source: Landings data from (HDAR 2016) State of Hawaii, Dept. of Land and Natural Resources Division of Aquatic Resources.

***New information on the fishery – a stock assessment of Hawaii Kona Crab (Thomas et al. 2015)***

Thomas et al. (2015) prepared a stock assessment for the Hawaii-based Kona crab fishery. The stock assessment used data from 1948–2009. Thomas et al. (2015) standardized commercial Kona crab catch per unit effort data (CPUE) for fishing years 1948–2009 using a generalized linear model (GLM). In order to account for different management regimes during the historical time frame, the authors divided the data among three periods: 1948–1998 (unregulated crab fishery); 1998–2006 (no-take of crabs during bottomfish fishing trips); and 2006–2009 (male-crab only fishery). The authors then applied the GLM CPUE results and landings information into a generalized production model (GPM) to estimate stock abundance, fishing mortality, and biomass.

Despite having data extending back to 1948, the authors only used commercial landings data from 1970 through 2006 since they believed that fishermen underreported landings by as much as 50 percent before 1970. Additionally, the fishery switched to a male-only retention fishery in 2006, as a result of new regulations passed by the Hawaii Division of Aquatic Resources (<http://dlnr.hawaii.gov/dar/fishing/fishing-regulations/marine-invertebrates/>). Effort data used in Thomas et al. (2015) did not include any recreational fishery landings information.

Based on the results of the model runs, Thomas et al. (2015) concluded that Hawaii Kona crab stocks had reached an overfished status in 2006, and were likely still overfished in 2010. Further, Thomas et al. (2015) produced biomass projections for 2010–2030 based on their GPM. They produced biomass estimates under three fishing scenarios. They assumed constant annual commercial landings (males and females combined) of zero lb, 7,000 lb, and 8,000 lb. At a zero-pound harvest rate, the authors predicted that Kona crab stocks would recover from overfished levels (<50 percent of  $B_{MSY}$ ) after 2015. At a 7,000-pound annual commercial harvest rate, the authors estimated that Kona crab biomass would increase above 50 percent of  $B_{MSY}$  by 2030, but explained that there was a chance that stock biomass could decline to zero lb by 2020. At an 8,000-pound harvest rate, the authors predicted that the Hawaii Kona crab stock biomass could reach zero lb by 2020. In their discussion, Thomas et al. (2015) acknowledge that their 2010–2030 stock status projections do not account for the effects of a male-only fishery (after September 2006) and, as a result, the projections are associated with a high degree of uncertainty.

Thomas et al. (2015) also describe that a lack of recreational landings information introduces a significant amount of uncertainty into their stock assessment. The authors caution that male-only crustacean fisheries may not benefit stocks and cite several examples where male-only crustacean fisheries did not increase stock productivity. For example, the authors speculated that release of female crabs could be associated with increased mortality of female crabs. Further, the authors provided details of Kona crab biology that could indicate the potential for stock productivity declines as a result of fisheries removing large males from the population. Thomas et al. (2015) also provides information about how large-scale environmental changes (e.g. Pacific Decadal Oscillation, El Nino) may affect crustacean stock productivity. Finally, Thomas et al. (2015) provide evidence of localized stock depletion and correlate stock abundance negatively with proximity to large human population centers. The authors provide evidence that Kona crab populations in harder to access fishing grounds (e.g., Penguin Bank, coral reef areas) show less evidence of exploitation (i.e., larger crabs).

### ***CIE Review of the Kona Crab Stock Assessment (Hall 2015)***

In December 2015, a reviewer from the Center for Independent Experts (CIE) reviewed Thomas et al. (2015). Hall (2015) provided NMFS and, therefore, the Council, with useful analyses and critiques of the data and methodology used in Thomas et al. (2015).

Hall (2015) concurred with Thomas et al.'s (2015) conclusion that based on the data and models used, Hawaii Kona crab stocks had declined below 50 percent of  $B_{MSY}$  (i.e., the stock was overfished in 2006). Furthermore, Hall concurred with the conclusion that the stocks probably had not recovered above 50 percent of  $B_{MSY}$  by 2010. Hall (2015) agreed that the overall methodology in Thomas et al. (2015) was sound, but cautioned that managers need to consider quantifiable and unquantifiable uncertainties in the data and methodologies if using Thomas et al. (2015) for management purposes.

Hall et al. (2015) cite several data gaps and uncertainties with Thomas et al.'s 2015 stock assessment including:

- No information on Hawaii Kona crab stock structure (i.e., there is a lack of information on interrelatedness of subpopulations);
- How the authors resolve data discrepancies and accounted for discarded information introduces errors into the conclusions;
- No assessment of the accuracy of the landings data (introduces errors into the conclusions);
- No reliable information exists for recreational fishery landings;
- No estimates of discard biomass;
- Models used by the authors did not consider discard mortality rates;
- The GPM could not estimate stock status commercial landings data from 2007 through 2010, making the 2010–2030 stock projections unreliable; and
- No fishery-independent data exists for the Hawaii Kona crab fishery to use for stock assessments.

Hall (2015) evaluated the methods used by Thomas et al. (2015) to calculate standardized CPUE and assess the Hawaii Kona crab stock. Overall, Hall (2015) found that Thomas et al. (2015)

used sound methods for producing standardized CPUEs and assessing stocks from 1970–2006. One minor criticism in Hall (2015) was that a GLM did not account for differences among individual fishermen’s CPUEs, which, in small fisheries such as the Hawaii Kona crab fishery, can greatly affect CPUE estimates, and suggested that a mixed-effects model would better account for differing CPUEs among individual fishermen. Although considered by Hall to be a minor problem, this can result in unfounded conclusions.

To estimate stock sizes in fishing years 2010–2030, Thomas et al. (2015) applied male-only commercial landings information (2007–2009) to their GPM, which is inappropriate because the model assumes male and female harvest of Kona crabs. The effects on crab stocks of a male-only Kona crab fishery differ greatly from the effects of a keep-all fishery. According to Hall (2015), applying post-2006 commercial Kona crab landings data to the GPM in Thomas et al. (2015) did not produce credible results (Hall 2015). Hall further pointed out that using male-only commercial landings data for the 2007–2009 period may underestimate stock productivity because Thomas et al. (2015) developed their model assuming higher female mortality rates than may be occurring during this time period.

#### ***PIFSC response to Kona crab stock assessment and CIE review (Appendix C)***

After reviewing the Thomas et al. (2015) stock assessment and the CIE review by Hall (2015), and acting upon the request from the Council, NMFS requested additional review from PIFSC. As described in Appendix C, PIFSC confirmed that reported commercial landings from 2007–2009 only represent landings of male Kona crabs. PIFSC confirmed that the production model used by Thomas et al. does not account for mortality associated with discarded females. PIFSC further confirmed that no reliable information exists on female catch rates, discards, or mortality rates. PIFSC explained that disentangling female crabs from nets may cause injuries and lead to high female discard mortality rates. While the PIFSC review echoed concerns similar to Hall (2015), it also noted that the stock assessment provided useful scientific information about stock status within the last decade. PIFSC agreed with other reviewers that further work is needed to provide advice on the current status of the population in more recent years.

#### ***Recent fishery information available to NMFS and the Council since the Thomas et al. (2015) stock assessment***

Based on the most recent data available, fishermen in Hawaii reported commercial Kona crab landings (males only) ranging from 2,332 to 11,807 lb from 2009 through 2015 (Table 8). Based on the table, fewer than 50 fishery participants are typically active in the commercial Kona crab fishery in Hawaii and catches vary from year to year. None of the annual reported landings exceeded the ACL (27,600 lb) during this period. Hawaii Kona crab landings the last five years have averaged 6,862 lb, well below the recent and proposed ACL of 27,600 lb.

Commercial catches in 2008–2013 met or exceeded the Kona crab catch mortality thresholds (8,000 lb male and female crabs) that Thomas et al. (2015) predicted would cause the Hawaii Kona crab stock to collapse in 2020, if fished consistently at that level. We note that the projection is not validated in the observed fishery landings, although both the amount of participants and landings were down in 2014 and 2015 (Table 8). Both Hall (2015) and NMFS

PIFSC note that the stock projections beyond 2006 in Thomas et al. (2015) involve high degrees of uncertainty, and both expert reviews concluded that the stock projections beyond 2006 probably do not accurately describe current Hawaii Kona crab stock size or structure. Both Hall (2015) and PIFSC conclude that managers need more current and specific information to clarify current Hawaii Kona crab stock status since the accuracy of Thomas et al. (2015) projections beyond 2006 (10 years ago) are inaccurate because they don't account for harvest of males only, female crab survival upon release (a better stock status outcome) or female mortality upon release (a worse stock status outcome), and because early estimates of production may have been artificially inflated.

At the 122<sup>nd</sup> Meeting of the Council's Scientific and Statistical Committee (SSC) from March 8–10, 2016, PIFSC scientists summarized the results of the CIE review. NMFS reported that while the CIE reviewer concluded that the basic approach was justified, he noted that there had been significant management strategy change that now governs the Kona crab fishery and that the non-commercial catch had not been estimated or considered in the assessment. The CIE reviewer supported the conclusion that based on the criteria before him, it appears the Kona crab stock had been overfished in 2006 and that there were many uncertainties about the current status of the stock. PIFSC and the CIE reviewer expressed concern about the impacts of the 2006 Hawaii State regulation establishing a prohibition on retention of female Kona crabs since little is known about sex ratios and how they might bias the stock assessment and what the impact might be from post-release mortality of females due to injury or predation. PIFSC is planning to study these issues and complete a benchmark stock assessment for Hawaii Kona crab in 2018. After hearing the presentation, the SSC did not recommend a modification to the Hawaii Kona crab ACL.

### ***Council Consideration of Kona Crab Stock Assessment***

At its 165<sup>th</sup> meeting, the Council considered the 2015 stock assessment, the CIE review, the PIFSC response to the CIE review, and the report of the 122 SSC. Based on this information, the Council did not find that the 2015 stock assessment by Thomas et al. contained reliable information upon which to modify its 2016-2018 Hawaii Kona crab ACL recommendations made at the 160<sup>th</sup> Council meeting. The Council did, however, recommend additional funding support to research post-release survival of Kona crab and methods for improving survival.

Without a current biomass estimate, neither the Council nor NMFS could determine fishery management parameters (e.g., maximum sustainable yield MSY) and, therefore, the Council recommended Hawaii Kona crab fishery should remain classified as a Tier 5 (data poor) fishery and the ABC control rule should be used to determine appropriate ACLs. Using the Tier 5 approach, the Council recommended ACL is to be equal to the acceptable biological catch (ABC) set by the Council's SSC in accordance with the Tier 5 ABC control rule as described in the Fishery Ecosystem Plan for the Hawaii Archipelago (77 FR 6019, February 7, 2012).



***NMFS conclusion upon consideration of new information, CIE review, Council recommendations, and PIFSC input***

NMFS has considered all of the new information about the Hawaii Kona crab fishery. NMFS recognizes that, while there are data gaps and methodological concerns with the 2015 stock assessment, it does contain, as noted by PIFSC, useful scientific information on the status of the stock over the last decade. NMFS notes that the stock assessment, although flawed, should be considered when setting an ACL. However, because the Council did not account for this information with other relevant information in recommending the 2016 Hawaii Kona crab ACL, NMFS will not set an ACL for this stock in 2016, and, instead, will direct the Council to review the available information again at its March 2017 meeting and work with its Scientific and Statistical Committee, as well as PIFSC, to consider all the information in order to set a biological catch and annual catch limit for the stock consistent with the MSA for fishing year 2017.

**2.3.1.1 Alternative 1: No Action**

Under this alternative, NMFS would not specify an ACL for Hawaii Kona crab and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the FEPs, which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

**2.3.1.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

***Council ACL Recommendation***

Under this alternative, NMFS would specify an ACL and establish AMs for the Hawaii Kona crab stock for the 2016 fishing year which runs from January 1 through December 31. The proposed ACL would be 27,600 lb for Hawaii Kona crab, the same ACL that was previously proposed and specified in fishing years 2012–2015. Each fishing year, catches of Hawaii Kona crab would be counted towards the ACL for the stock based on catch data collected by local resource management agencies through their respective fishery monitoring programs, and by NMFS through Federal logbook reporting. Under this alternative, NMFS expected to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

**2.3.1.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for Hawaii Kona crab would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 24,840 lb.

Under this alternative, NMFS expected to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.



### **2.3.2 American Samoa Kona Crab ACL Alternatives**

There is no record of any fishery for Kona crab in American Samoa. However, due to their documented presence in the territory, Kona crab is included in the crustacean management unit of the American Samoa FEP. Currently, there are no Federal permit requirements for Kona crab in the EEZ around American Samoa. The fishery is subject to an ACL and AMs.

#### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for Kona crab in American Samoa.

#### ***SSC's Calculation of ABC***

There is no MSY estimate for Kona crab in American Samoa. Additionally, the lack of catch information precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating the ABC for Kona crab in American Samoa.

First, the SSC recognized that the essential fish habitat (EFH) designation for juvenile and adult Kona crab in American Samoa includes all bottom habitats from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that American Samoa contains approximately 296 km<sup>2</sup> of Kona crab EFH as shown in Table 5. Applying the 75<sup>th</sup> percentile of Kona crab catch from the MHI (which is 27,600 lb), and using the MHI Kona crab estimated EFH area of 2,535 km<sup>2</sup>, the SSC determined that this would result in 10.88 Kona crabs per km<sup>2</sup> of EFH in the MHI. Applying the ratio of 10.87 Kona crabs per EFH area in American Samoa, the SSC calculated the ABC for American Samoa Kona crab to be 3,222 lb, but rounded ABC downward to 3,200 lb.

American Samoa Kona Crab ABC Proxy Equation:

$$(27,600 \text{ lb Kona crab} / 2,535 \text{ km}^2 \text{ estimated Kona crab EFH in Hawaii}) * 296 \text{ km}^2 \text{ (estimated American Samoa Kona crab EFH)} = 3,222 \text{ lb}$$

#### ***Council ACL Recommendation***

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council recommended setting the ACL for American Samoa Kona crab equal to the SSC recommended ABCs of 3,200 lb. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the American Samoa Archipelago FEP. The Council recommended the ACL for fishing years 2015–2018. The Council also recommended the same AM be extended through 2018.

#### **2.3.2.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for American Samoa Kona crab and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

### **2.3.2.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for the American Samoa Kona crab fishery would be set equal to the ACL recommended by the Council which is 3,200 lb. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

### **2.3.2.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for the American Samoa Kona crab fishery would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 2,880 lb. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

### **2.3.3 CNMI Kona Crab ACL Alternatives**

There is no record of any fishery for Kona crab in the CNMI. However, due to their documented presence, they are included in the crustacean management unit of the Mariana Archipelago FEP. Currently, there are no Federal permit requirements for Kona crab in the EEZ around the CNMI.

#### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for Kona crab in the CNMI.

#### ***SSC's Calculation of ABC***

There is no MSY estimate for Kona crab in the CNMI. Additionally, the lack of catch information precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating the ABC for the Kona crab fishery in the CNMI.

First, the SSC recognized that essential fish habitat (EFH) designation for juvenile and adult Kona crab in the CNMI includes all bottom habitats from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that the CNMI contains approximately 579 km<sup>2</sup> of Kona crab EFH as shown in Table 5. Applying the 75<sup>th</sup> percentile of Kona crab catch from the MHI which is 27,600 lb, and an estimated MHI Kona crab EFH area of 2,535 km<sup>2</sup>, the SSC determined that this would result in 10.88 Kona crabs per km<sup>2</sup> of EFH in the MHI. Applying the ratio of 10.88 Kona crabs per EFH area in the CNMI, the SSC calculated the ABC for the CNMI Kona crab to be 6,303 lb, but rounded the ABC downward to 6,300 lb.

CNMI Kona crab ABC Proxy Equation:

$$(27,600 \text{ lb Kona crab} / 2,535 \text{ km}^2 \text{ estimated Kona Crab EFH in Hawaii}) * 579 \text{ km}^2 \text{ (estimated Kona crab EFH in the CNMI)} = 6,303 \text{ lb}$$

### ***Council ACL Recommendation***

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council recommended setting the ACL for the CNMI Kona crab fishery equal to the SSC-recommended ABC of 6,300 lb. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP. The Council recommended the ACL for fishing years 2015–2018. The Council also recommended the same AM be extended through 2018.

#### **2.3.3.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the CNMI Kona crab fishery and AMs would not be necessary. However, this alternative would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.3.3.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for the CNMI Kona crab fishery would be set equal to the ACL recommended by the Council which is 6,300 lb. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.3.3.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for the CNMI Kona crab fishery would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 5,670 lb. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

### **2.3.4 Guam Kona Crab ACL Alternatives**

There is no record of any fishery for Kona crab in Guam. However, due to their documented presence, they are included in the crustacean management unit of the Mariana Archipelago FEP. Currently, there are no Federal permit requirements for Kona crab in the EEZ around the Guam.

### ***NMFS/Council Estimation of OFL***

There is no OFL estimate for Kona crab in Guam.

### ***SSC's Calculation of ABC***

There is no MSY estimate for Kona crab in Guam. Additionally, the lack of catch information precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating the ABC for the Kona crab fishery.

First, SSC recognized that essential fish habitat (EFH) designation for juvenile and adult Kona crab in Guam included all bottom habitats from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that Guam contains approximately 179 km<sup>2</sup> of Kona crab EFH as shown in Table 5. Applying the 75<sup>th</sup> percentile of Kona crab catch from the MHI, which is 27,600 lb, and an estimated MHI Kona crab EFH area of 2,535 km<sup>2</sup>, the SSC determined that this would result in 10.88 Kona crabs per km<sup>2</sup> of EFH in the MHI. Applying the ratio of 10.88 Kona crabs per EFH to the estimated Kona crab EFH area in Guam, the SSC calculated the ABC for the Guam Kona crab fishery to be 1,948 lb, but rounded ABC downward to 1,900 lb.

Guam Kona crab ABC Proxy Equation:

$$(27,600 \text{ lb Kona crab in Hawaii fishery} / 2,535 \text{ km}^2 \text{ estimated Hawaii Kona crab EFH}) * 179 \text{ km}^2 \\ (\text{estimated Guam Kona crab EFH}) = 1,948 \text{ lb}$$

### ***Council ACL Recommendation***

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council recommended setting the ACL for the Guam Kona crab fishery equal to the SSC-recommended ABC of 1,900 lb. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP. The Council recommended the ACL for fishing years 2015–2018. The Council also recommended the same AM be extended through 2018.

#### **2.3.4.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the Guam Kona crab fishery and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.3.4.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for the Guam Kona crab fishery would be set equal to the ACL recommended by the Council which is 1,900 lb. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

### 2.3.4.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for the Guam Kona crab fishery would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 1,729 lb. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

## 2.4 Development of the Alternatives for Precious Corals

Precious corals managed under the FEPs for Hawaii, American Samoa and the Mariana Archipelago (including Guam and the CNMI) include three species of black coral belonging to the genus *Antipathes*, three species of pink coral belonging to the genus *Corallium*, and several species of gold and bamboo corals. Pink, gold and bamboo corals are typically found at depth ranges between 350 to 1,500 m, while black coral occurs at considerably shallower depths around 100 m. All species are found on solid substrate and are slow growing, with low rates of mortality and recruitment. Table 9 lists the common and scientific names of all western Pacific precious coral management unit species.

**Table 9. Western Pacific Precious Coral Management Unit Species**

| Common Name   | Scientific Name                                                                                 |
|---------------|-------------------------------------------------------------------------------------------------|
| Black corals  | <i>Antipathes dichotoma</i> <sup>1</sup> , <i>Antipathes grandis</i> , <i>Antipathes ulex</i>   |
| Pink corals   | <i>Corallium secundum</i> , <i>Corallium regale</i> , <i>Corallium laauense</i>                 |
| Bamboo corals | <i>Lepidisis olapa</i> , <i>Acanella</i> sp.                                                    |
| Gold corals   | <i>Gerardia</i> sp., <i>Callogorgia gilberti</i> , <i>Narella</i> sp., <i>Calyptrophora</i> sp. |

<sup>1</sup> *Antipathes dichotoma* was recently renamed *Antipathes griggi* by the scientific community

Each FEP treats precious coral beds as distinct management units. Classification of beds include: Established (appraisal of the MSY are reasonably precise), Conditional (optimum yields estimated on the basis of bed characteristics relative to established beds), Refugia (set aside for baseline studies and possible reproductive reserves), or Exploratory (unexplored portions of the EEZ). Federal regulations require permit and logbook reporting for each category of coral bed and beds are subject to harvest quotas which may be taken on an annual or biennial basis as shown in Table 10. Additionally, regulations allow only the use of selective gear methods to harvest precious corals and further limit harvest through minimum size restrictions on pink coral and bamboo coral. Currently, a moratorium on gold coral harvest is in place throughout the Pacific Islands through June 30, 2018, due to uncertainty in estimates of age and growth parameters (78 FR 32181, May 29, 2013). Additionally, fishing is prohibited at the Westpac Bed due to its status as a refugium. These prohibitions serve as the functional equivalent of an ACL of zero. The fishing year for precious corals begins on July 1 and ends June 30, the following year.

Precious corals are not being harvested in any island area except in the MHI where the fishery is limited to black coral harvests in the Auau channel. Fewer than three participants are currently active in the Hawaii black coral fishery; therefore, fishery information is confidential and can only be reported in aggregate years, except for years during which there have been three or more participants. Fishing for other precious corals (pink, bamboo, and gold) is not currently conducted in Hawaii. One company used two one-man submersibles to survey and harvest pink

and gold corals at depths between 400 and 500 meters in the MHI during 1999 and 2001; however, they did not continue their operations after that time and the actual harvests cannot be reported here to protect the confidentiality of the proprietary fishery information (WPFMC 2009b).

**Table 10. Current harvest quotas for precious coral permit areas**

| <b>Name of Bed</b>                                                                                            | <b>Type of Bed</b> | <b>Harvest Quota (kg)</b>                                 | <b>Harvest Timeframe</b> |
|---------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------|--------------------------|
| Auau Channel (MHI)                                                                                            | Established        | Black – 5,000                                             | 2                        |
| Makapuu bed (MHI)                                                                                             | Established        | Pink – 2,000                                              | 2                        |
|                                                                                                               |                    | Gold (zero)                                               |                          |
|                                                                                                               |                    | Bamboo – 500                                              |                          |
| 180 Fathom Bank (NWHI)                                                                                        | Conditional        | Pink – 222                                                | 1                        |
|                                                                                                               |                    | Gold (zero)                                               |                          |
|                                                                                                               |                    | Bamboo – 56                                               |                          |
| Brooks Bank (NWHI)                                                                                            | Conditional        | Pink – 444                                                | 1                        |
|                                                                                                               |                    | Gold (zero)                                               |                          |
|                                                                                                               |                    | Bamboo – 111                                              |                          |
| Kaena Point                                                                                                   | Conditional        | Pink – 67                                                 | 1                        |
|                                                                                                               |                    | Gold (zero)                                               |                          |
|                                                                                                               |                    | Bamboo – 17                                               |                          |
| Keahole Point                                                                                                 | Conditional        | Pink – 67                                                 | 1                        |
|                                                                                                               |                    | Gold (zero)                                               |                          |
|                                                                                                               |                    | Bamboo – 17                                               |                          |
| Westpac                                                                                                       | Refugia            | All (zero)                                                | 1                        |
| U.S. EEZ around American Samoa, Guam, the CNMI and Hawaii other than Established, Conditional or Refugia beds | Exploratory Area   | 1,000 per area (all species combined, except black coral) | 1                        |

Comprehensive information on target, non-target stocks, bycatch, protected species and conservation and management measures for precious coral fisheries can be found in the American Samoa Archipelago FEP (WPFMC 2009a), the Hawaii Archipelago FEP (WPFMC 2009b) and the Mariana Archipelago FEP (WPFMC 2009c).

The SSC and Council developed the ABC and ACL recommendations for precious corals in accordance with the Magnuson-Stevens Act and Federal regulations at 50 CFR §665.4 that implement the ACL specification mechanism of the FEPs described in Section 1. The following section summarizes the data, methods, and procedures considered in SSC and Council deliberations as described in the Council’s ACL specification document (WPFMC 2011). A full report of the 116<sup>th</sup> SSC and 160<sup>th</sup> Council deliberations can be found on the Council website at: [www.wpcouncil.org](http://www.wpcouncil.org).

## 2.4.1 Hawaii Precious Corals ACL Alternatives

### 2.4.1.1 Black Coral – Auau Channel Established Bed

The ongoing collection of black coral from depths of 30–100 meters by scuba divers has continued in Hawaii since black coral beds were discovered off of Lahaina, Maui, in the late 1950s, although harvest levels have fluctuated with changes in demand. Since 1980, virtually all of the black coral harvested around the Hawaiian Islands has been taken by hand from a bed located in the Auau Channel. Most of the harvest has come from State of Hawaii waters; however, a portion of the black coral bed in the Auau Channel is located in the EEZ.

The current harvest quota for black coral in the Auau Channel is 5,000 kg (11,000 lb) which may be taken during any part of a two year fishing year cycle. Landings, almost exclusively from State waters, have been reported for black coral between 1982 and 2015; however, annual landings data cannot be reported because of the low number of active participants (fewer than three).

Table 11 summarizes total landings and average annual landings for black corals in the MHI for three decadal periods, 1982-1989, 1990-1999, and 2000-2010. Landing information is summarized in roughly 10 year intervals to protect confidentiality as fewer than three vessels participated in the fishery during most years. The data present landings from both inshore and offshore areas. For the most recent ten-year period for which data is available and allowed to be reported, 2000-2010, approximately 5,587 lb of black coral were landed annually. There are no Federal permits issued for black coral harvest in the Auau Channel and all of the recent harvest is occurring in State waters.

**Table 11. Total and Average Annual Landings of Black Coral in Hawaii (1982-2010)**

| <b>Years (Grouped)</b> | <b>Total Landing (lb) / year (average)</b> |
|------------------------|--------------------------------------------|
| 1982-1989              | 1,084                                      |
| 1990-1999              | 2,868                                      |
| 2000-2010              | 5,587                                      |

Source: Hawaii Division of Aquatic Resources (in WPFMC 2011)

#### ***NMFS/Council Estimation of OFL for Black Coral – Auau Channel Established Bed***

There is no estimate of OFL provided for any black coral in Hawaii.

#### ***SSC's Calculation of ABC for Black Coral – Auau Channel Established Bed***

The most current estimate of MSY for black coral in the Auau Channel is provided by Grigg (2004) which is 3,750 kg/yr (8,250 lb/yr). Based on this estimate, the current harvest quota for black coral in the Auau Channel is 5,000 kg (11,000 lb) which may be taken during any part of a two year fishing year cycle.

At 116<sup>th</sup> SSC meeting, the SSC considered the MSY estimate provided by Grigg (2004) including the current status of participation in the fishery, and average annual landings for 2000-2010 relative to the existing biennial harvest quota of 5,000 kg (11,000 lb). The SSC determined that the black coral fishery in the MHI can be regarded as Tier 4 because MSY is known, but

there is little harvest. Therefore, consistent with the Tier 4 ABC control rule described in the FEP of the Hawaii Archipelago which requires the ABC be set equal to  $0.91 \times \text{MSY}$ , the SSC calculated ABC to be 3,413 kg/yr (7,508 lb/yr) and rounded the ABC downward to 7,500 lb). As explained in the FEP of the Hawaii Archipelago, the application of this control rule would result in a fishing mortality rate of  $0.70 F_{\text{MSY}}$ , which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty.

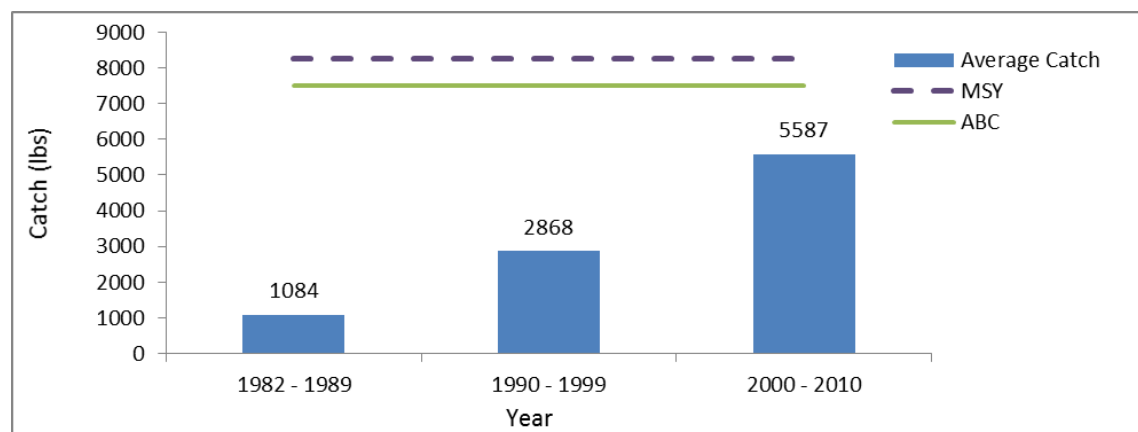


**Figure 4. Average annual catch of black coral in the MHI (1982-2010) compared to the SSC-recommended acceptable biological catch (ABC) Source: WPFMC 2011**

#### ***Council ACL Recommendation for Black Coral – Auau Channel Established Bed***

At its 160<sup>th</sup> meeting held June 25-27, 2014, the Council considered the SSC-recommended ABC of 7,500 lb/yr; however, the Council ultimately recommended maintaining the current harvest quota of 5,000 kg (11,000 lb) as the ACL. The Council further noted that while the current harvest quota may be taken over a two-year period, ACLs must be specified annually. Therefore, the Council recommended the ACL for the Hawaii black coral fishery in the Auau Channel Bed be set at 2,500 kg/yr or 5,500 lb/yr for fishing years 2015 through 2018. The ACL is thus 2,000 lb lower than SSC recommended ABC and 100 lb lower than average annual harvest of black coral from the Auau Channel Bed for the period 2000-2010 of approximately 5,600 lb shown in Table 11.

##### **2.4.1.1.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for the black coral fishery in the Auau Channel of the MHI, and AMs would not be necessary. While the implementing regulations of the FEP of the Hawaii Archipelago already provide for a harvest quota of 5,000 kg (11,000 lb) that may be taken over a two year period, this management system would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.



#### 2.4.1.1.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, the ACL for the black coral fishery in the Auau Channel, MHI, would be set equal to the ACL recommended by the Council, which is 2,500 kg (5,500 lb). This ACL would be equal to the current harvest quota if it were to be applied on an annual basis and is 2,000 lb lower than the SSC-recommended ABC of 7,500 lb (3,413 kg/yr). NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### 2.4.1.1.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for the black coral fishery in the Auau Channel would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 6,750 lb (3,068 kg). This ACL would be 1,250 lb higher than the harvest quota of 2,500 kg (5,500 lb per year) if it were to be applied on an annual basis. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### 2.4.1.2 Pink, Gold Coral, and Bamboo Coral – Established Bed and Conditional Beds

Fishing for other precious corals (pink, bamboo and gold) is not currently conducted in Hawaii. One company used two one-man submersibles to survey and harvest pink and gold corals at depths between 400 and 500 meters in the MHI during 1999 and 2001; however, they did not continue their operations after that time and the actual harvests cannot be reported here in order to protect confidential information (WPFMC 2009b).

Estimates of MSY, including a description of calculation methods for pink, bamboo and gold coral at the Makapuu Established Bed, are provided in the FEP of the Hawaii Archipelago (WPFMC 2009b) and summarized in Table 12.

**Table 12. MSY Estimates for Precious Corals in the Makapuu Bed**

| Species (common name)            | MSY (kg/yr) | Method of calculation                     |
|----------------------------------|-------------|-------------------------------------------|
| <i>Corallium secundum</i> (pink) | 1,185       | Beverton and Holt Cohort production model |
| <i>Corallium secundum</i> (pink) | 1,148       | Gulland model                             |
| <i>Gerardia</i> spp. (gold)      | 313         | Gulland model                             |
| <i>Lepidisis olapa</i> (bamboo)  | 285         | Gulland model                             |

Source: WPFMC 2009b

Due to ecological considerations, MSY estimates were reduced for ecological considerations and thus, the rounded down MSY estimates or optimum yields (OY) for Makapuu Bed pink coral, gold coral and bamboo coral were set at 1,000 kg/yr, 300 kg/yr and 250 kg/yr, respectively (WPFMC 2009a). Additionally, as stated previously, a moratorium on gold coral harvest is currently in place throughout the Pacific Islands through June 30, 2018.

While OYs for pink and bamboo corals were specified on an annual basis, the Makapuu Bed harvest quotas listed in Table 10 are expressed as a two-year quota because it was considered economically disadvantageous to utilize the expensive specialized equipment required for selective harvesting of precious coral for only part of each year on only one coral bed. The more flexible biennial schedule allows the quota to be taken during any part of a two year period and makes it easier for harvesters to deploy in other areas once the two-year Makapuu Bed quota has been met (WPFMC 2009b).

Harvest quotas for pink, bamboo and gold coral at Hawaii's four Conditional Beds have been extrapolated based on bed size as compared with that of the Makapuu Established Bed using the following formula described in the FEP of the Hawaii Archipelago (WPFMC 2009b).

$$\frac{\text{MSY for Makapuu Bed}}{\text{Area of Makapuu Bed}} = \frac{\text{MSY for Conditional Bed}}{\text{Area of Conditional Bed}}$$

Framework Amendment 1 to the Fishery Management Plan for Precious Coral Fisheries of the Western Pacific Region (WPFMC (2001) estimates the area of the Makapuu Established Bed as 3.60 km<sup>2</sup>. For the Conditional Beds, WPFMC (2001) estimates the areas as follows: 180 Fathom Bank (0.8 km<sup>2</sup>), Brooks Bank (1.6 km<sup>2</sup>), and Kaena Point and Keahole Point (0.24 km<sup>2</sup>). Based on rounded down MSY (or OY) of 1,000 kg/yr for pink coral and 250 kg/yr for a bamboo coral at the Makapuu bed, and applying the formula above, WPFMC (2001) estimates OY for all Conditional beds as shown in Table 13 which are the harvest quotas listed in Table 10, except for pink and bamboo coral at Makapuu where the quota was doubled to 2,000 kg and may be taken over two year period.

**Table 13. Estimated area and OY for pink and bamboo coral in Established and Conditional beds**

| Bed                           | Pink Coral OY                                |                        |            | Bamboo Coral OY                            |                        |          |
|-------------------------------|----------------------------------------------|------------------------|------------|--------------------------------------------|------------------------|----------|
| Makapuu Established Bed       | $\frac{1,000 \text{ kg}}{3.60 \text{ km}^2}$ | x 3.60 km <sup>2</sup> | = 1,000 kg | $\frac{250 \text{ kg}}{3.60 \text{ km}^2}$ | x 3.60 km <sup>2</sup> | = 250 kg |
| 180 Fathom Conditional Bed    | $\frac{1,000 \text{ kg}}{3.60 \text{ km}^2}$ | x 0.8 km <sup>2</sup>  | = 222 kg   | $\frac{250 \text{ kg}}{3.60 \text{ km}^2}$ | x 0.8 km <sup>2</sup>  | = 56 kg  |
| Brooks Bank Conditional Bed   | $\frac{1,000 \text{ kg}}{3.60 \text{ km}^2}$ | x 1.6 km <sup>2</sup>  | = 444 kg   | $\frac{250 \text{ kg}}{3.60 \text{ km}^2}$ | x 1.6 km <sup>2</sup>  | = 111 kg |
| Kaena Point Conditional Bed   | $\frac{1,000 \text{ kg}}{3.60 \text{ km}^2}$ | x 0.24 km <sup>2</sup> | = 67 kg    | $\frac{250 \text{ kg}}{3.60 \text{ km}^2}$ | x 0.24 km <sup>2</sup> | = 17 kg  |
| Keahole Point Conditional Bed | $\frac{1,000 \text{ kg}}{3.60 \text{ km}^2}$ | x 0.24 km <sup>2</sup> | = 67 kg    | $\frac{250 \text{ kg}}{3.60 \text{ km}^2}$ | x 0.24 km <sup>2</sup> | = 17 kg  |

### ***NMFS/Council Estimation of OFL for Pink, Bamboo and Gold Corals – Established Bed and Conditional Beds***

There is no estimate of OFL provided for pink, bamboo or gold coral in Hawaii.

### ***SSC's Calculation of ABC for Pink, Bamboo and Gold Corals – Established Bed and Conditional Beds***

In calculating ABC for pink coral at the Makapuu Established Bed, at its 116<sup>th</sup> meeting the SSC relied on a revised estimate of MSY for pink coral reported in Grigg (2002). Specifically, Grigg (2002) estimated an MSY for pink coral at the Makapuu bed of 1,500 kg/year which is 30% greater than the initial MSYs shown in Table 14, and 50% higher than the current OY and of 1,000 kg/yr. In calculating ABC for bamboo coral at the Makapuu Established bed, the SSC relied on the initial MSY estimate of 285 kg/yr and not the OY of 250 kg/yr which was used to specify the existing harvest quota.

The SSC then applied these MSY values into the formula provided above to extrapolate an MSY proxy for pink coral and bamboo coral at the four Conditional Beds (180 Fathom Bank, Brooks Bank, Kaena Point and Keahole Point). However, the SSC did not use the true size of the bed areas to apply in this formula as it was unaware of these values at the time.

Instead, for each bed, the SSC used the estimated size of the permit area provided in 50 CFR 665. Specifically, the regulations define the permit areas for Makapuu Bed, 180 Fathom Bank, and Brooks Bank to include the area within 2 nm of a specified point. Based on the formula,  $\text{Area} = \pi r^2$ , the SSC determined the area for these three precious coral beds to be approximately 12.57 nm<sup>2</sup> whereas, WPFMC (2001) defines the true area of these beds to be 3.60 km<sup>2</sup>, 0.8 km<sup>2</sup>, and 1.6 km<sup>2</sup>, respectively. Additionally, the regulations define the size of the permit areas for Kaena and Keahole Points to include the area within 0.5 nm of a specified point. Applying the formula,  $\text{Area} = \pi r^2$ , the SSC determined the bed areas for Kaena and Keahole precious coral beds to be 0.79 nm<sup>2</sup> whereas, WPFMC (2001), defines the true area for both Keahole and Kaena as 0.24 km<sup>2</sup>. Table 14 provides the results of the SSC's MSY proxy calculations.

**Table 14. SSC's MSY proxies for pink and bamboo coral at Established and Conditional Beds**

| <b>Bed</b>                  | <b>Pink Coral</b>                                                                          | <b>Bamboo Coral</b>                                                                    |
|-----------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Makapuu Established Bed     | $\frac{1,500 \text{ kg}}{12.57 \text{ nm}^2} \times 12.57 \text{ nm}^2 = 1,500 \text{ kg}$ | $\frac{285 \text{ kg}}{12.57 \text{ nm}^2} \times 12.57 \text{ nm}^2 = 285 \text{ kg}$ |
| 180 Fathom Conditional Bed  | $\frac{1,500 \text{ kg}}{12.57 \text{ nm}^2} \times 12.57 \text{ nm}^2 = 1,500 \text{ kg}$ | $\frac{285 \text{ kg}}{12.57 \text{ nm}^2} \times 12.57 \text{ nm}^2 = 285 \text{ kg}$ |
| Brooks Bank Conditional Bed | $\frac{1,500 \text{ kg}}{12.57 \text{ nm}^2} \times 12.57 \text{ nm}^2 = 1,500 \text{ kg}$ | $\frac{285 \text{ kg}}{12.57 \text{ nm}^2} \times 12.57 \text{ nm}^2 = 285 \text{ kg}$ |
| Kaena Point Conditional Bed | $\frac{1,500 \text{ kg}}{12.57 \text{ nm}^2} \times 0.79 \text{ nm}^2 = 94 \text{ kg}$     | $\frac{285 \text{ kg}}{12.57 \text{ nm}^2} \times 0.79 \text{ nm}^2 = 18 \text{ kg}$   |

| <b>Bed</b>                       | <b>Pink Coral</b>                                                                      | <b>Bamboo Coral</b>                                                                  |
|----------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Keahole Point<br>Conditional Bed | $\frac{1,500 \text{ kg}}{12.57 \text{ nm}^2} \times 0.79 \text{ nm}^2 = 94 \text{ kg}$ | $\frac{285 \text{ kg}}{12.57 \text{ nm}^2} \times 0.79 \text{ nm}^2 = 18 \text{ kg}$ |

The SSC then determined that deepwater precious coral fishery for pink and bamboo corals in the MHI can be regarded as Tier 4 because the MSY/MSY proxy is known, but there is no harvest. Therefore, consistent with the Tier 4 control rule described in the FEP of the Hawaii Archipelago which requires ABC be set equal to  $0.91 \times \text{MSY}$ , the SSC calculated ABC as shown in Table 15.

**Table 15. SSC recommended ABCs for pink and bamboo coral at Established and Conditional Beds**

| <b>Bed</b>                       | <b>Pink Coral</b> |                       | <b>Bamboo Coral</b> |                       |
|----------------------------------|-------------------|-----------------------|---------------------|-----------------------|
|                                  | <i>MSY Proxy</i>  | <i>ABC = 0.91*MSY</i> | <i>MSY Proxy</i>    | <i>ABC = 0.91*MSY</i> |
| Makapuu<br>Established Bed       | 1,500 kg          | 1,400 kg              | 285 kg              | 260 kg                |
| 180 Fathom<br>Conditional Bed    | 1,500 kg          | 1,400 kg              | 285 kg              | 260 kg                |
| Brooks Bank<br>Conditional Bed   | 1,500 kg          | 1,400 kg              | 285 kg              | 260 kg                |
| Kaena Point<br>Conditional Bed   | 94 kg             | 85 kg                 | 18 kg               | 16 kg                 |
| Keahole Point<br>Conditional Bed | 94 kg             | 85 kg                 | 18 kg               | 16 kg                 |

However, because the SSC did not use the actual size of each bed in its calculation of MSY proxies, the values represented in Table 15 above may not be the best available scientific information. For this reason, NMFS has recalculated MSY proxies consistent with the intent of the SSC's recommendation using the actual size of each bed and described by WPFMC (2001). Table 16 provides the results of the corrected MSY proxy calculations conducted by the NMFS.

**Table 16. NMFS's corrected MSY proxies for pink and bamboo coral at Established and Conditional Beds**

| <b>Bed</b>                     | <b>Pink Coral</b>                            |                            |                      | <b>Bamboo Coral</b>                        |                            |                    |
|--------------------------------|----------------------------------------------|----------------------------|----------------------|--------------------------------------------|----------------------------|--------------------|
| Makapuu<br>Established Bed     | $\frac{1,500 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 3.60 \text{ km}^2$ | $= 1,500 \text{ kg}$ | $\frac{285 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 3.60 \text{ km}^2$ | $= 285 \text{ kg}$ |
| 180 Fathom<br>Conditional Bed  | $\frac{1,500 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 0.8 \text{ km}^2$  | $= 333 \text{ kg}$   | $\frac{285 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 0.8 \text{ km}^2$  | $= 63 \text{ kg}$  |
| Brooks Bank<br>Conditional Bed | $\frac{1,500 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 1.6 \text{ km}^2$  | $= 667 \text{ kg}$   | $\frac{285 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 1.6 \text{ km}^2$  | $= 127 \text{ kg}$ |
| Kaena Point<br>Conditional Bed | $\frac{1,500 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 0.24 \text{ km}^2$ | $= 100 \text{ kg}$   | $\frac{285 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 0.24 \text{ km}^2$ | $= 19 \text{ kg}$  |
| Keahole Point                  | $\frac{1,500 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 0.24 \text{ km}^2$ | $= 100 \text{ kg}$   | $\frac{285 \text{ kg}}{3.60 \text{ km}^2}$ | $\times 0.24 \text{ km}^2$ | $= 19 \text{ kg}$  |

| Bed             | Pink Coral | Bamboo Coral         |  |  |
|-----------------|------------|----------------------|--|--|
| Conditional Bed |            | 3.60 km <sup>2</sup> |  |  |

Additionally, consistent with the SSC's recommendation, NMFS also re-applied the Tier 4 control rule to the corrected MSY proxy values shown in Table 16 above and re-calculated the ABCs for Hawaii pink and bamboo corals in the Established and Conditional Beds as shown in Table 17.

**Table 17. NMFS recalculated ABCs for pink and bamboo coral at Established and Conditional Beds**

| Bed                           | Pink Coral |                | Bamboo Coral |                |
|-------------------------------|------------|----------------|--------------|----------------|
|                               | MSY Proxy  | ABC = 0.91*MSY | MSY Proxy    | ABC = 0.91*MSY |
| Makapuu Established Bed       | 1,500 kg   | 1,365 kg       | 285 kg       | 259 kg         |
| 180 Fathom Conditional Bed    | 333 kg     | 303 kg         | 63 kg        | 57 kg          |
| Brooks Bank Conditional Bed   | 667 kg     | 607 kg         | 127 kg       | 116 kg         |
| Kaena Point Conditional Bed   | 100 kg     | 91 kg          | 19 kg        | 17 kg          |
| Keahole Point Conditional Bed | 100 kg     | 91 kg          | 19 kg        | 17 kg          |

***Council ACL Recommendation for Pink, Bamboo and Gold Corals – Established Bed and Conditional Beds***

At its 160th meeting held June 25-27, 2014, the Council considered the SSC' recommended ABC shown in Table 17, but recommended maintaining the current harvest quotas as provided in Table 10, as they did not see a need to increase catch limits given no activity in the fishery for the past decade. The Council further noted that while the current harvest quota of 2,000 kg of pink coral and 500 kg of bamboo coral at Makapuu may be taken over a two year timeframe, ACLs must be specified annually. Therefore, the Council recommended ACL for pink coral and bamboo coral at Makapuu be set at one half of the current two year quota and recommended ACL for these species be set at 1,000 kg/yr and 250 kg/yr, respectively. The harvest quotas for pink and bamboo coral at all other beds are annual, thus the recommended ACL remain identical to the current harvest quotas as presently shown in Table 10. Table 18 provides the Council's recommended ACLs for pink and bamboo coral at Established and Conditional Beds in relation to the NMFS-corrected ABC.<sup>8</sup>

<sup>8</sup> Currently, a moratorium on gold coral harvest is in place throughout the western Pacific through June 30, 2018 (78 FR 32181, May 29, 2013). Additionally, fishing is prohibited at Westpac Bed due to its status as a refugium. These prohibitions serve as functional equivalent of an ACL of zero.

**Table 18. NMFS corrected ABC and Council recommended ACL for pink and bamboo coral at Established and Conditional Beds**

| <b>Bed</b>                       | <b>Pink Coral<br/>ABC<br/>(0.91*MSY)</b> | <b>Council<br/>Recommended<br/>ACL</b> | <b>Bamboo Coral<br/>ABC<br/>(0.91*MSY)</b> | <b>Council<br/>Recommended<br/>ACL</b> |
|----------------------------------|------------------------------------------|----------------------------------------|--------------------------------------------|----------------------------------------|
| Makapuu<br>Established Bed       | 1,365 kg                                 | 1,000 kg                               | 259 kg                                     | 250 kg                                 |
| 180 Fathom<br>Conditional Bed    | 303 kg                                   | 222 kg                                 | 57 kg                                      | 56 kg                                  |
| Brooks Bank<br>Conditional Bed   | 607 kg                                   | 444 kg                                 | 116 kg                                     | 111 kg                                 |
| Kaena Point<br>Conditional Bed   | 91 kg                                    | 67 kg                                  | 17 kg                                      | 17 kg                                  |
| Keahole Point<br>Conditional Bed | 91 kg                                    | 67 kg                                  | 17 kg                                      | 17 kg                                  |

#### **2.4.1.2.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for pink or bamboo coral in any Established or Conditional Bed and AMs would not be necessary. While the implementing regulations of the FEP of the Hawaii Archipelago already provide for a bank specific harvest quotas as listed in Table 10, this management system would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Additionally, the moratorium on harvesting gold coral would remain in place through June 30, 2018. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.4.1.2.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACLs for pink or bamboo coral in Established and Conditional Beds would be set equal to the ACLs recommended by the Council which are equal to the current harvest quotas as shown in Table 10. As previously noted, the current harvest quota for pink of 2,000 kg and the current harvest quota for bamboo coral of 500 kg at the Makapuu Bed may be taken over a two year timeframe. Therefore, to comply with the ACL requirement, the Council recommended the ACLs for pink coral and bamboo coral at the Makapuu Bed be set at one half of the current two year quota and recommended the ACL for these species be set at 1,000 kg/yr and 250 kg/yr, respectively. Like Alternative 1 the moratorium on harvesting gold coral would remain in place through June 30, 2018 and would serve as the functional equivalent of an ACL of zero. Each of the proposed ACLs is lower than the ABCs as recalculated by NMFS and shown in Table 17. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation, or new information is provided that would result in a change to the ACL.

### ***Council Recommended AM***

Pursuant to 50 CFR 665.4, when an ACL for any stock or stock complex is projected to be reached, based on best available information, NMFS would restrict fishing for that stock or stock complex in Federal waters around the applicable U.S. EEZ to prevent the ACL from being exceeded. The restriction may include, would not be limited to closure of the fishery, closure of specific areas or restriction in effort (76 FR 37286, June 27, 2011). However, in-season restrictions are not possible for the pink or bamboo coral fishery at this time because catch statistics are generally not available until at least six months after the data has been collected (see Section 2.3 of the 2011 EA (NMFS 2011) for more details on data collection). For this reason, NMFS proposes to implement the Council's recommended AM which requires the Council to conduct a post-season accounting of the annual catch of the pink or bamboo coral fishery as soon as possible after the catch data for the most recent year is available, compute the average of the past 3 years' catch, and evaluate the average relative to its ACL. This is the same AM NMFS specified for the pink or bamboo coral fishery in 2015 (80 FR 52415, August 31, 2015). If the three-year running average landings of the pink or bamboo coral fishery exceed the specified ACL in a fishing year, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage.

Under the AMs, NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock or stock complex in the subsequent fishing year, or other measures, as appropriate. Additionally, as a performance measure specified in the FEP of the Hawaii Archipelago, if the ACL is exceeded more than once in a four year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

#### **2.4.1.2.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACLs for pink and bamboo corals in Established and Conditional Beds would be set at 90% of their ABC values. Like Alternative 1 the moratorium on harvesting gold coral would remain in place through June 30, 2018 and would serve as the functional equivalent of an ACL of zero. Table 19 shows the ACL values for each bed under this alternative relative to their ABC values. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

**Table 19. ACLs at 90% of ABC for pink and bamboo coral at Established and Conditional Beds**

| <b>Bed</b>                    | <b>Pink Coral<br/>ABC</b> | <b>Proposed ACL at<br/>90% of ABC</b> | <b>Bamboo Coral<br/>ABC</b> | <b>Proposed ACL<br/>at<br/>90% of ABC</b> |
|-------------------------------|---------------------------|---------------------------------------|-----------------------------|-------------------------------------------|
| Makapuu<br>Established Bed    | 1,365 kg                  | 1,229 kg                              | 259 kg                      | 233 kg                                    |
| 180 Fathom<br>Conditional Bed | 303 kg                    | 273 kg                                | 57 kg                       | 51 kg                                     |
| Brooks Bank                   | 607 kg                    | 546 kg                                | 116 kg                      | 104 kg                                    |



| <b>Bed</b>                       | <b>Pink Coral<br/>ABC</b> | <b>Proposed ACL at<br/>90% of ABC</b> | <b>Bamboo Coral<br/>ABC</b> | <b>Proposed ACL<br/>at<br/>90% of ABC</b> |
|----------------------------------|---------------------------|---------------------------------------|-----------------------------|-------------------------------------------|
| Conditional Bed                  |                           |                                       |                             |                                           |
| Kaena Point<br>Conditional Bed   | 91 kg                     | 82 kg                                 | 17 kg                       | 15 kg                                     |
| Keahole Point<br>Conditional Bed | 91 kg                     | 82 kg                                 | 17 kg                       | 15 kg                                     |

#### **2.4.1.3 Pink, Gold and Bamboo Corals in the Hawaii Exploratory Area**

Hawaii Exploratory areas (denoted as X-P-H) include coral beds, other than Established, Conditional or Refugia Beds within the EEZ. Currently there is a 1,000 kg limit for all deep water precious corals combined (all species except black coral) in the Hawaii Exploratory Area. The limit of 1,000 kg/year was determined with the goal of reducing the risk of overfishing a newly discovered bed while at the same time being large enough to provide economic incentive for fishers to engage in exploratory fishing (WPFMC 1979). There was no statistical basis for determining the limit, but instead it was based on Council judgment that 1,000 kg/yr should be sufficient incentive for exploratory fishing while posing little risk of overfishing (WPFMC 1979). The 1,000 kg/yr harvest quota in Hawaii represents about one-third of the estimated MSY for the precious coral species in all Established and Conditional beds while being large enough to offer an economic incentive for exploration (WPFMC 1979). Two fishing expeditions for precious corals occurred in the Hawaii Exploratory Area in the mid- to late 1980s (WPFMC 2009b). However, no activity has occurred since then. In 2011, NMFS issued two Federal permits for fishing in the Hawaii Exploratory Area (X-P-HI); however, no trips have been made.

#### ***NMFS/Council Estimation of OFL***

There is no estimate of OFL provided for precious corals the Exploratory Area around Hawaii.

#### ***SSC's Calculation of ABC***

At its 116<sup>th</sup> meeting, the SSC recommended ABC be maintained at the current annual harvest quota of 1,000 kg/yr for pink and bamboo corals in the Hawaii Exploratory Area, and further recommended that this ABC be applicable to the EEZ around Hawaii.

#### ***Council ACL Recommendation***

At its 160th meeting held June 25-27, 2014, the Council considered the SSC' recommended ABC and recommended maintaining the current harvest quota of 1,000 kg/yr for pink, and bamboo corals in the Exploratory Area around Hawaii. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018.



#### **2.4.1.3.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for pink, bamboo and gold coral for the Exploratory Area around Hawaii and AMs would not be necessary. While the implementing regulations of the FEP of the Hawaii Archipelago already provide for 1,000 kg/yr harvest quota for all precious corals (except black coral) in the Hawaii Exploratory Area, this management system would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2018.

#### **2.4.1.3.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the pink and bamboo coral ACLs in the Hawaii Exploratory Area would be set equal to the 1,000 kg/yr ACL recommended by the Council. This ACL would be equal to the current harvest quotas and is equal to the SSC recommended ABC. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018 and would serve as the functional equivalent of an ACL of zero. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.1.3.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the pink and bamboo coral ACLs in the Hawaii Exploratory Area would be set at 90% of the ABC recommended by the SSC resulting in an ACL of 900 kg. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018 and would serve as the functional equivalent of an ACL of zero. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

### **2.4.2 American Samoa Precious Corals ACL Alternatives**

#### **2.4.2.1 Black Coral in American Samoa**

There has never been a black coral fishery in American Samoa and no information on the species' presence or distribution in the territory. However, they are included in the management unit of the American Samoa FEP as it is reasonable that they may be found there. Federal permits are not required to harvest black coral in American Samoa.

#### ***NMFS/Council Estimation of OFL***

There is no estimate of OFL provided for black coral in American Samoa.

### ***SSC Calculation of ABC***

There is no estimate of MSY for black coral in American Samoa. Additionally, there is no catch information available which precludes the use of the Tier 5 Control Rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating ABC for American Samoa black coral.

The MSY proxy was based on comparing available black coral habitat in Auau Channel of the MHI (Auau Channel, 241.7 nmi<sup>2</sup>) and Hawaii's coastline length (653 nm) to the coastline length of American Samoa (69 nm). Using this ratio allowed NMFS to estimate the potential available area for black coral habitat in American Samoa (25.5 nmi<sup>2</sup>).

$$\text{American Samoa black coral habitat proxy Equation:} \\ (241.7 \text{ nmi}^2 / 653 \text{ nmi}) * 69 \text{ nm} = 25.5 \text{ nmi}^2$$

The ratio of Hawaii black coral MSY (8,250 lbs) and habitat area in Hawaii (241.7 nmi<sup>2</sup>) was then compared to potential habitat area in American Samoa, resulting in a potential MSY proxy of 872 lbs.

$$\text{American Samoa black coral MSY proxy equation:} \\ (8250 \text{ lbs} / 241.7 \text{ nmi}^2) * 25.5 \text{ nmi}^2 = 872 \text{ lbs}$$

This crude estimation does not take into account differences in available shelf habitat. For example, American Samoa does not have the shelf area afforded by Penguin Banks in Hawaii, which includes the Auau Channel. Thus, this MSY is likely an overestimation. The SSC then determined that the black coral fishery in American Samoa can be regarded as Tier 4 because MSY/MSY proxy is known, but there is no harvest. Therefore, consistent with the Tier 4 control rule described in the American Samoa FEP which requires the ABC be set equal to 0.91\*MSY, the SSC calculated the black coral ABC as 794 lbs and rounded this value down to 790 lbs.

#### **2.4.2.1.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for black corals in American Samoa and AMs would not be necessary. However, this would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.4.2.1.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for black corals in American Samoa equal to the 790 lb ACL recommended by the Council which is equal to the SSC's recommended ABC. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.2.1.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for black corals in American Samoa would be set at 90% of the ABC recommended by the SSC. This would result in a black coral ACL of 711 lb. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.2.2 Pink, Gold and Bamboo Coral in the American Samoa Exploratory Area**

Exploratory areas (X-P-AS) include the EEZ around American Samoa, as there are no known precious coral beds in the Territory. However, precious coral MUS are known to exist in the American Samoa EEZ, thus a fishery could possibly develop. The American Samoa Exploratory Area (X-P-AS) has a 1,000 kg/year limit of all species combined except black coral. The limit of 1,000 kg/year was developed with the goal of reducing the risk of overfishing a newly discovered bed while at the same time being large enough to provide economic incentive to engage in exploratory fishing (WPFMC 1979). There was no statistical basis for determining the limit, but instead was based on Council judgment that 1,000 kg/year should be sufficient incentive for exploratory fishing while posing little risk to overfishing (WPFMC 1979). No Federal permit has ever been issued for precious coral fishing in the American Samoa Exploratory Area (X-P-AS).

#### ***NMFS/Council Estimation of OFL***

There is no estimate of OFL provided for precious corals the exploratory area around American Samoa.

#### ***SSC's Calculation of ABC***

At its 116<sup>th</sup> meeting, the SSC recommended the American Samoa black coral ABC be maintained at the current annual harvest quota of 1,000 kg/yr.

#### ***Council ACL Recommendation***

At its 160th meeting held June 25-27, 2014, the Council considered the SSC-recommended ABC and recommended maintaining the current harvest quota of 1,000 kg/yr for black corals harvested from the Exploratory Area around American Samoa. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018.

#### **2.4.2.2.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for pink, bamboo and gold coral for the exploratory area around American Samoa and AMs would not be necessary. While the implementing regulations of the American Samoa FEP already provide for 1,000 kg/yr harvest quota for all precious corals (except black coral) in the American Samoa Exploratory Area, this management system would not comply with the Magnuson-Stevens Act or the provisions of the

FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2018.

#### **2.4.2.2.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACLs for pink and bamboo corals in the American Samoa Exploratory Area would be set equal to the 1,000 kg/yr ACL recommended by the Council. This ACL would be equal to the current harvest quotas and is equal to the SSC-recommended ABC. Like Alternative 1, gold coral would continue to be subject to a fishing moratorium until June 30, 2018 and would serve as the functional equivalent of an ACL of zero. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.2.2.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for pink and bamboo corals in the American Samoa Exploratory Area would be set at 90% of the ABC recommended by the SSC resulting in an ACL of 900 kg. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018 and would serve as the functional equivalent of an ACL of zero. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

### **2.4.3 CNMI Precious Corals ACL Alternatives**

#### **2.4.3.1 Black Coral in the CNMI**

There has never been a black coral fishery in the CNMI and no information on the species' presence or distribution in the Commonwealth. However, black corals are included in the management unit of the Mariana Archipelago FEP as it is reasonable that they may be found there. Federal permits are not required to harvest black coral in the CNMI.

#### ***NMFS/Council Estimation of OFL***

There is no estimate of OFL provided for black corals in the CNMI.

#### ***SSC Calculation of ABC***

There is no estimate of MSY for black corals in the CNMI. Additionally, there is no catch information available and this precludes the use of the Tier 5 Control Rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating the ABC for CNMI black coral.

The CNMI black coral MSY proxy was based on comparing available black coral habitat in Auau Channel of the MHI (Auau Channel, 241.7 nmi<sup>2</sup>) and Hawaii's coastline length (653 nm) to the coastline length of the CNMI (179 nm). Using this ratio allowed NMFS to estimate the potential available area for black coral habitat in the CNMI (66.3 nmi<sup>2</sup>).

$$\text{CNMI black coral habitat proxy equation:} \\ (241.7 \text{ nmi}^2 / 653 \text{ nmi}) * 179 \text{ nm} = 66.3 \text{ nmi}^2$$

The ratio of Hawaii black coral MSY (8,250 lbs) and habitat area in Hawaii (241.7 nmi<sup>2</sup>) was then compared to potential habitat area in the CNMI, resulting in a potential MSY proxy of 2,261 lb.

$$\text{CNMI black coral MSY proxy equation:} \\ (8,250 \text{ lb} / 241.7 \text{ nmi}^2) * 66.3 \text{ nmi}^2 = 2,261 \text{ lb}$$

This crude estimation does not take into account differences in available shelf habitat. For example, the CNMI does not have the shelf area afforded by Penguin Banks in Hawaii, which includes the Auau Channel. Thus, this MSY is likely an overestimation. The SSC then determined that the black coral fishery in the CNMI can be regarded as Tier 4 because MSY/MSY proxy is known, but there is no harvest. Therefore, consistent with the Tier 4 control rule described in the Mariana Archipelago FEP which requires the ABC be set equal to 0.91\*MSY, the SSC calculated the CNMI black coral ABC as 2,058 lb and rounded this value up to 2,100 lb.

#### **2.4.3.1.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for black coral in the CNMI and AMs would not be necessary. However, this would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.4.3.1.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for black corals in the CNMI would be equal to the 2,100 lb ACL recommended by the Council which is equal to the SSC's recommended ABC. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.3.1.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for black corals in the CNMI would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 1,890 lb.

#### **2.4.3.2 Pink, Gold and Bamboo Coral in the CNMI Exploratory Area**

The CNMI Exploratory Area (X-P-CNMI) includes the EEZ around the CNMI, as there are no known precious coral beds in the Commonwealth. However, precious coral MUS are known to exist there and there has been a report of pink corals being harvested prior to World War II (WPFMC 2009c).

The CNMI Exploratory Area (X-P-CNMI) has a 1,000 kg/year limit of all deepwater precious coral species combined except black coral. The limit of 1,000 kg/year was developed with the goal of reducing the risk of overfishing a newly discovered bed, while at the same time being large enough to provide economic incentive to engage in exploratory fishing (WPFMC 1979). There was no statistical basis for determining the limit, but instead was based on Council judgment that 1,000 kg/year should be sufficient incentive for exploratory fishing while posing little risk to overfishing (WPFMC 1979). No Federal permit has ever been issued for precious coral fishing in the CNMI Exploratory Area (X-P-CNMI).

### ***NMFS/Council Estimation of OFL***

There is no estimate of OFL provided for precious corals the Exploratory Area around the CNMI.

### ***SSC's Calculation of ABC***

At its 116<sup>th</sup> meeting, the SSC recommended the CNMI pink and bamboo coral ABCs be maintained at the current annual harvest quota of 1,000 kg/yr.

### ***Council ACL Recommendation***

At its 160th meeting held June 25-27, 2014, the Council considered the SSC-recommended ABC and recommended maintaining the current harvest quota of 1,000 kg/yr for pink and bamboo corals in the Exploratory Area around the CNMI. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018.

#### **2.4.3.2.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for pink, bamboo and gold coral for the exploratory area around the CNMI and AMs would not be necessary. While the implementing regulations of the Mariana Archipelago FEP already provide for 1,000 kg/yr harvest quota for all precious corals (except black coral) in the CNMI exploratory area, this management system would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2018.

#### **2.4.3.2.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACLs for pink and bamboo corals in the CNMI Exploratory Area would be set equal to the 1,000 kg/yr ACL recommended by the Council. This ACL would be equal to the current harvest quotas and is equal to the SSC-recommended ABC. Like Alternative 1, gold coral would continue to be subject to a fishing moratorium until June 30, 2018 and would serve as the functional equivalent of an ACL of zero. NMFS expects to specify the same ACL

for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.3.2.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACLs for pink and bamboo corals in the CNMI Exploratory Area would be set at 90% of the ABC recommended by the SSC resulting in an ACL of 900 kg. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018 and would serve as the functional equivalent of an ACL of zero. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

### **2.4.4 Guam Precious Corals ACL Alternatives**

#### **2.4.4.1 Black Coral in Guam**

There has never been a black coral fishery in Guam and no information on the species' presence or distribution in the Territory. However, black corals are included in the management unit of the Mariana Archipelago FEP as it is reasonable that they may be found there. Federal permits are not required to harvest precious coral in Guam.

#### ***NMFS/Council Estimation of OFL***

There is no estimate of OFL provided for black corals in Guam.

#### ***SSC Calculation of ABC***

There is no estimate of MSY for black corals in Guam. Additionally, there is no catch information available, and this precludes the use of the Tier 5 Control Rule. Therefore, the SSC at its 116<sup>th</sup> meeting developed a proxy for calculating the ABC for Guam black corals.

The MSY proxy was based on comparing available black coral habitat in Auau Channel of the MHI (Auau Channel, 241.7 nmi<sup>2</sup>) and Hawaii's coastline length (653 nm) to the coastline length of the Guam (58 nm). Using this ratio allowed NMFS to estimate the potential available area for black coral habitat in Guam (21.5 nmi<sup>2</sup>).

$$\begin{aligned} &\text{Guam estimated black coral habitat equation:} \\ &(241.7 \text{ nmi}^2 / 653 \text{ nmi}) * 58 \text{ nm} = 21.5 \text{ nmi}^2 \end{aligned}$$

The ratio of Hawaii black coral MSY (8,250 lb) and habitat area in Hawaii (241.7 nmi<sup>2</sup>) was then compared to potential habitat area in Guam, resulting in a potential MSY proxy of 733 lb.

$$\begin{aligned} &\text{Guam black coral MSY proxy equation:} \\ &(8,250 \text{ lb} / 241.7 \text{ nmi}^2) * 21.5 \text{ nmi}^2 = 733 \text{ lb} \end{aligned}$$



This crude estimation does not take into account differences in available shelf habitat. For example, Guam does not have the shelf area afforded by Penguin Banks in Hawaii, which includes the Auau Channel. Thus, this MSY is likely an overestimation. The SSC then determined that the black coral fishery in Guam can be regarded as Tier 4 because MSY/MSY proxy is known, but there is no harvest. Therefore, consistent with the Tier 4 control rule described in the Mariana Archipelago FEP which requires the ABC be set equal to  $0.91 \times \text{MSY}$ , the SSC calculated the Guam black coral ABC as 667 lb and rounded this value up to 700 lbs.

#### **2.4.4.1.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for black corals in Guam and AMs would not be necessary. However, this would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis.

#### **2.4.4.1.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for black corals in Guam would be equal to the 700 lb ACL recommended by the Council which is equal to the SSC's recommended ABC. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.4.1.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for black corals in Guam would be set at 90% of the ABC recommended by the SSC. This would result in a black coral ACL of 630 lb. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.4.2 Pink, Gold and Bamboo Corals in the Guam Exploratory Area**

The Guam Exploratory Area (X-P-Guam) includes EEZ waters around Guam, as there are no known precious coral beds in the Territory. However, precious coral MUS are known to exist there and have been collected in government surveys (WPFMC 2009c). The Guam Exploratory Area has a 1,000 kg/year limit for all species combined except black coral. The limit of 1,000 kg/year was developed with the goal of reducing the risk of overfishing a newly discovered bed, while at the same time being large enough to provide economic incentive to engage in exploratory fishing (WPFMC 1979). There was no statistical basis for determining the limit, but instead, it was based on Council judgment that 1,000 kg/year should be sufficient incentive for exploratory fishing while posing little risk to overfishing (WPFMC 1979). No Federal permit has ever been issued for precious coral fishing in the Guam Exploratory Area (X-P-Guam).



### ***NMFS/Council Estimation of OFL***

There is no estimate of OFL provided for pink, bamboo, and gold corals the Exploratory Area around Guam.

### ***SSC's Calculation of ABC***

At its 116<sup>th</sup> meeting, the SSC recommended the pink and bamboo corals ABCs be maintained at the current annual harvest quotas of 1,000 kg/yr.

### ***Council ACL Recommendation***

At its 160th meeting held June 25-27, 2014, the Council considered the SSC-recommended ABC and recommended maintaining the current harvest quota of 1,000 kg/yr for pink and bamboo corals harvested in the Exploratory Area around Guam. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018.

#### **2.4.4.2.1 Alternative 1: No Management Action**

Under this alternative, NMFS would not specify an ACL for pink, bamboo and gold coral for the Exploratory Area around Guam and AMs would not be necessary. While the implementing regulations of the Mariana Archipelago FEP already provide for a 1,000 kg/yr harvest quota for all precious corals (except black coral) in the Guam Exploratory Area, this management system would not comply with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental effects analysis. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2018.

#### **2.4.4.2.2 Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, the ACL for pink and bamboo corals harvested from the Guam Exploratory Area would be set equal to the 1,000 kg/yr ACL recommended by the Council. This ACL would be equal to the current harvest quotas and is equal to the SSC recommended ABC. Like Alternative 1, gold coral would continue to be subject to a fishing moratorium until June 30, 2018 and would serve as the functional equivalent of an ACL of zero. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

#### **2.4.4.2.3 Alternative 3: ACL equal to 90% of ABC**

Under this alternative, the ACL for pink and bamboo corals harvested from the Guam Exploratory Area would be set at 90% of the ABC recommended by the SSC resulting in an ACL of 900 kg. Gold coral would continue to be subject to a fishing moratorium until June 30, 2018 and would serve as the functional equivalent of an ACL of zero. NMFS expects to specify the same ACL for fishing years 2017 and 2018, unless the Council modifies its recommendation or new information is provided that would result in a change to the annual catch limit.

Under the AMs, NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock or stock complex in the subsequent fishing year, or other measures, as appropriate. Additionally, as a performance measure specified in the FEP of the Mariana Archipelago, if the ACL is exceeded more than once in a four year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

## **2.5 Alternatives Not Considered in Detail**

### **2.5.1 Specification of ACLs for PRIA Crustaceans and Precious Corals**

Although required by the PRIA FEP, ACLs would not be specified for any crustacean or precious coral MUS in the PRIA because commercial fishing is prohibited by Presidential Proclamation 8336, which established the Pacific Remote Island Marine National Monument (74 FR 1565, January 12, 2009). There is no crustacean or precious coral habitat beyond the monument boundaries in any PRIA EEZ. ACLs for non-commercial crustacean and precious coral fisheries within the boundaries of the PRIA monument may be developed in the future through a separate action in accordance with Proclamation 8336, if the Secretary of Commerce determines non-commercial fishing can be allowed and managed as a sustainable activity. Therefore, until such determination is made and there is a need to consider this further, NMFS does not intend to specify ACLs for precious corals or crustacean fisheries within the PRIA. This is the functional equivalent of an ACL of zero for all crustacean and precious coral MUS in the PRIA.

### **2.5.2 Specification of ACLs for Gold Coral in Hawaii Established and Conditional Beds**

Currently, a moratorium on gold coral harvest is in effect throughout the Pacific Islands through June 30, 2018, due to uncertainty in estimates of the age and growth (78 FR 32181, May 29, 2013). Therefore, ACLs will not be specified for gold coral in any established or conditional bed in Hawaii as the current moratorium serves as a functional equivalent of an ACL of zero. While the proposed action would specify a limit of 1,000 kg for all deepwater precious corals combined (except black coral) in the exploratory areas around American Samoa, Guam, the the CNMI and Hawaii, the current moratorium would preclude the harvest of gold coral in the exploratory areas through June 30, 2018. Additionally, due to its status as a refugium, the harvest of all precious corals is prohibited at Westpac Bed. Therefore, NMFS does not propose to specify an ACL for any precious coral within the Westpac Bed because the existing prohibition already serves as a functional equivalent of an ACL of zero.

### **2.5.3 Specification of In-Season AMs**

To prevent ACLs from being exceeded, Federal regulations implementing western Pacific FEPs in 50 CFR 665.4 state that when any ACL is projected to be reached, the Regional Administrator shall inform permit holders that fishing for that stock will be restricted on a specified date. Restrictions may include, but are not limited to, closing the fishery, closing specific areas, changing bag limits, or otherwise restricting effort or catch. However, near-real time processing of catch information is not possible in any Pacific Island crustacean or precious coral fishery.

Therefore, in-season AMs to prevent an ACL from being exceeded (e.g., fishery closures in Federal waters) are not possible at this time.

While Federal permit and reporting requirements have been implemented for lobster, deepwater shrimp, and precious coral fisheries in Federal waters throughout the U.S. Pacific Islands, there have been few if any permitted vessels for these fisheries in the past decade. When permits were issued, no fishing was conducted. Additionally, any catch that is reported from these fisheries comes primarily from non-Federal waters. Therefore, NMFS will continue to rely primarily on the fishery data collection programs administered by the respective local resource management agencies to obtain catch and effort data for crustacean and precious coral fisheries in the Pacific Islands. However, these agencies presently do not have the personnel or resources to process catch data in near-real time, and so fisheries statistics are generally not available until at least six months after the data has been collected. While the State of Hawaii has the capability to monitor and track the catch of seven preferentially-targeted bottomfish species (i.e., Deep 7 bottomfish) in near real time towards their specified catch limits, additional resources would be required to extend these capabilities to crustacean and precious coral fisheries. Significant resources would also be required to support the establishment of near-real time in-season monitoring capabilities in American Samoa, Guam and the CNMI. Until resources are made available, only AMs that consist of non-in-season management measures are being recommended at this time.

### **3 Affected Environment and Potential Effects of the Alternatives**

This section describes the affected fisheries and fishery resources, other biological and physical resources, and potential effects implementing the alternatives would have on these resources. Climate change and environmental justice are considered, along with potential impacts to fishing communities, special marine areas and other resources, and fishery administration and enforcement.

#### ***Overview of Existing Fishery Monitoring***

##### Overview of fishery data collection systems in American Samoa, Guam and the CNMI

In American Samoa, the CNMI and Guam, local resource management agencies, with assistance from NMFS PIFSC Western Pacific Fisheries Information Network (WPacFIN), collect fisheries information through three primary fisheries monitoring programs. They include: 1) the boat-based creel survey program, (2) the shore-based creel survey program, and (3) the commercial purchase system or trip ticket invoice program.

##### *Boat-based creel survey program*

The boat-based creel survey program collects catch, effort, and participation data on offshore fishing activities conducted by commercial, recreational, subsistence and charter fishing vessels. Surveys are conducted at boat ports or ramps, and data collection consists of two main components - participation counts (trips) and fisher interviews. Survey days are randomly selected and the number of survey days range from 3-8 per month. Surveys are stratified by

week-days, weekend-days and day- and night-time. Data expansion algorithms are applied by NMFS WPacFIN to estimate 100% “coverage” and are based on port, type of day, and fishing method (Impact Assessment, 2008).

#### *Shore-based creel survey program*

The shore-based creel survey program was established to randomly sample inshore fishing trip information and consists of two components - participation counts and fishers interviews. Participation counts are based on a ‘bus route’ method, with predefined stopping points and time constraints. Survey days are randomly selected, and range from 2-4 times per week. Data expansion algorithms are applied by NMFS WPacFIN to estimate 100% “coverage” and are based on island region, type of day and fishing method (Impact Assessment, 2008). The shore-based creel surveys cover fishing by persons engaged in commercial, recreational, and subsistence fishing activities.

#### *Commercial purchase system*

The commercial purchase system or “trip ticket invoice” monitor fish sold locally and collects information submitted by vendors (fish dealers, hotels and restaurants) who purchase fish directly from fishers. Each invoice usually compiles daily trip landings. Only American Samoa has mandatory requirements for vendors to submit invoice reports, the other islands have voluntary programs (Impact Assessment, 2008).

#### Overview of fishery data collection systems in Hawaii

In Hawaii, the majority of fisheries information is collected from the commercial fishing sector through a mandatory license and monthly reporting system administered by the State of Hawaii. Under State law, anyone who takes marine life for commercial purposes is required to obtain a commercial marine license (CML) and submit a catch report (popularly known as a “C3” form) on a monthly basis. Required information collected includes day fished, area fished, fishing method used, hours fished per method, and species caught (number/pounds caught and released).

Recreational catch information for finfish is also opportunistically collected through the Hawaii Marine Recreational Fishing Survey (HMRFS) and annual catch amounts are reported through NMFS Marine Fisheries Statistics Survey (MRFSS) at <http://www.st.nmfs.noaa.gov/st1/index.html>. It should be noted that because this survey only includes finfish, no information on crustaceans or precious corals is captured by this survey. A 2006 review of MRFSS by the National Resource Council (NRC) noted that the catch estimation method was not correctly matched with the catch sampling survey design, leading to potential bias in the estimates of finfish catch. In consideration of this finding, the Council in 2006 recommended that MRFSS catch estimates not be used as a basis for management or allocation decisions.

Except for HMRFS data, NMFS WPacFIN obtains all crustacean and precious coral fisheries information in the Pacific Islands, where available, in accordance with cooperative agreements with the State, territorial and Commonwealth fisheries agencies in American Samoa, the CNMI,

Guam, and Hawaii and provides access to this data on their website <http://www.pifsc.noaa.gov/wpacfin>. Generally, complete data for catches during a calendar year are not available until at least 6 months after the year has ended.

### *Federal Permit and Reporting Requirements*

#### Pacific Island Crustacean Fisheries

Any vessel used to fish for deepwater shrimp or lobsters in Federal waters around American Samoa, the CNMI, Guam and Hawaii must obtain a Federal permit and submit catch logbooks to NMFS within 72 hours of landing. Crustacean Permit Area 1 includes the EEZ around the Northwestern Hawaiian Islands. Crustacean Permit Area 2 includes the EEZ around the main Hawaiian Islands. Crustacean Permit Area 3 includes the EEZ around American Samoa. Crustacean Permit Area 4 includes the EEZ around the U.S. Pacific Remote Island Areas. Crustacean Permit Area 5 includes the EEZ around Guam and the CNMI.

Federal permits are not required to harvest Kona crab in any Pacific Island area at this time. The affected permit areas for the proposed action are Crustacean Permit Areas 2, 3, and 5.

#### Pacific Island Precious Coral Fisheries

Any vessel used to fish for black, bamboo, pink, red or gold corals in Federal waters around American Samoa, CNMI, Guam and Hawaii must obtain a Federal permit and submit catch logbooks to NMFS within 72 hours of landing. Permits are required for each category of coral bed as follows: American Samoa Exploratory Area (X-P-AS) includes all coral beds in the EEZ around American Samoa. Guam Exploratory Area (X-P-G) includes all coral beds in the EEZ around Guam. CNMI Exploratory Area (X-P-CNMI) includes all coral beds in the EEZ around the CNMI.

In Hawaii, there are three categories of beds: Established, Conditional and Exploratory. Permits are required for harvesting black coral at the Established Auau Channel bed. Permits are also required to harvest pink and bamboo coral at the Established Makapuu Bed. A permit is required to fish for pink and bamboo corals at each of the following Conditional Beds: 180 Fathom, Brooks Bank, Keahole Point and Kaena Point. Finally, a permit is required to fish for pink and bamboo coral in the Hawaii Exploratory Area (X-P-HI) which includes all coral beds other than Established, Conditional and Refugia (no fishing is allowed at any Refugia Bed) in the EEZ around Hawaii.

#### Recreational Fisheries

In 2008, NMFS established the National Saltwater Angler Registry Program as part of the Marine Recreational Information Program to improve recreational fisheries information nationwide (73 FR 79705, December 30, 2008). This program requires all recreational fishers in Federal waters that are not otherwise permitted (e.g., through a State CML license, or another Federal permit) to obtain a permit and report catches to NMFS.

### 3.1 Crustaceans – Deepwater Shrimp Fisheries

Adult deepwater shrimp species of the genus *Heterocarpus* have been reported throughout tropical waters of the Pacific including Hawaii (Clark 1972; Struhsaker and Aasted 1974; Dailey and Ralston 1986; Gooding et al. 1988; Tagami and Barrows 1988; Moffitt and Parrish 1992; Ralston and Tagami 1992; Polovina 1993), Guam (Wilder 1977), Western Samoa (King 1980), and the Northern Mariana Islands (Moffitt 1983; Ralston 1986). They are generally found in benthic deepwater habitats between 200-900 meters in depth, primarily on the steep outer reef slopes that surround the islands and deepwater banks. However, because they are found at such deep depths, accurate descriptions and characterization of preferred habitats are difficult to obtain and virtually non-existent in the scientific literature.

The distribution of these species tends to be stratified by depth with each species occupying different but often overlapping depths (Ralston 1986). Eight species belonging to the genus *Heterocarpus* (*Heterocarpus ensifer*, *H. laevigatus*, *H. sibogae*, *H. gibbosus*, *H. lepidus*, *H. dorsalis*, *H. tricarinatus* and *H. longirostris*) have been reported from the Western Pacific Region, although *Heterocarpus ensifer* and *H. laevigatus* have been the primary focus of fishery operations and research surveys.

Unlike shallow-water penaeid shrimps, *Heterocarpus* shrimps have a lifespan in excess of a year, and some species such as *H. laevigatus* may have life spans of up to eight years (King, 1993). King suggests that the natural mortality rates of *H. laevigatus* are about 50% per year. He also reports that *H. laevigatus* matures at about 75% of its maximum size or between 4-5 years old. Observations by Dailey and Ralston (1986) suggest that *Heterocarpus* shrimps may be semelparous, i.e., reproducing only once in their lifetime then dying. This semelparity and the relatively long life spans and delayed maturity of some species suggest that *Heterocarpus* shrimps are vulnerable to over-exploitation. Known fishing areas tend to be limited and subject to reduced catch rates following initially high harvests.

Traps made from steel, wire, and/or plastic with conical entrances that allow the shrimp to get into the trap, but not out, are used in the Pacific Islands Region to catch deepwater shrimp. In Hawaii, shrimp trapping vessels have employed large pyramidal traps of about 2 m<sup>3</sup> in volume, setting up to 50 traps per day (Polovina 1993). A gear loss rate of 3.35% was estimated from fishing log data in Hawaii (Tagami and Barrows 1998). There is little information available on the impacts of the lost shrimp fishery traps on habitat and other species. Potential impacts of the traps could include snagging and ghost fishing. Lost traps could also provide habitat for other organisms. The Council and NMFS are aware of this issue and are monitoring the fishery to evaluate whether the impacts are substantial and need to be addressed through future management measures.

Throughout the Pacific, deepwater shrimp fisheries have been sporadic in nature for many reasons (Hastie and Saunders 1992). Gear loss has been a common problem and made many past ventures unprofitable. A second difficulty is the short product shelf life and a history of inconsistent product quality, leading to fluctuating market demand for the shrimp. Lastly, these fisheries generally experience local depletion on known fishing grounds, which leads to much



lower catch rates over time. This localized depletion appears to be short-term and the fishery returns every so often after the resource rebounds.

### **3.1.1 Hawaii Deepwater Shrimp Fishery, Affected Resources and Potential Effects**

#### **3.1.1.1 Affected Target, Non-target and Bycatch Species in Hawaii**

Within the Hawaii Archipelago, there are numerous banks and seamounts—with the majority located in the NWHI—that provide depth ranges suitable for the occurrence of deepwater shrimp. *Heterocarpus laevis* and *H. ensifer* have been reported in both the MHI and the NWHI (Gooding 1984; Dailey and Ralston 1986; Ralston and Tagami 1992; Moffitt and Parrish 1992). *H. ensifer* is believed to be the most abundant species (Struhsaker and Aasted 1974).

In the MHI, the largest bank in Federal waters is Penguin Bank, which is located to the southeast of Oahu. Trapping surveys in the MHI reported that the exploitable biomass of *H. laevis* was greatest at depths between 460 and 640 meters and negligible amounts occurred shallower than 350 meters or deeper than 830 meters (Ralston and Tagami 1992). In the NWHI, the highest catch rates for *H. laevis* were made between 500 and 800 meters while the highest catch rates for *H. ensifer* occurred between 350 and 600 meters (Gooding 1984).

Deepwater shrimp resources around Hawaii are thought sufficient only to support a limited local fishery or perhaps periodic heavy pulse fishing (Polovina 1993). Initial high catch rates appear to drop rapidly, trapping depths result in costly gear loss, and markets have not historically been large. Maximum Sustainable Yield (MSY) for deepwater shrimp was estimated for the Hawaiian Islands at 125 mt/yr or 275,575 lb/yr (Tagami and Ralston 1988).

#### ***Current impacts of the fishery: target, non-target and bycatch species* (baseline)**

Based on recent performance of the fishery between years 2000 and 2010, as shown in Table 3, the Hawaii deepwater shrimp fishery had an average annual landing of 18,743 lb of shrimp representing approximately 7% of the estimated 275,575 lb/year MSY. Currently, there is little information about bycatch associated with this fishery, and what is known comes primarily from research sampling in other Pacific island areas such as the CNMI where species such as deepwater eels (*Synaphobranchus* sp.), dogfish sharks and geryonoid crabs have been reportedly caught and discarded (WPFMC 2008). However, research findings did not report whether the bycatch was released alive or dead. Because the fishery is sporadic, NMFS is not aware of concerns about the sustainability of bycatch species in this fishery.

#### ***Potential ACLs and Effects of the Proposed Hawaii Deepwater Shrimp ACL and AMs on Target, Non-target and Bycatch Species in Hawaii***

##### Alternative 1: No Management Action

Under the no-action alternative, an ACL would not be specified for the Hawaii deepwater shrimp fishery and AMs would not be necessary. The fishery would continue to catch deepwater shrimp in the manner and at baseline levels described above and catches would continue to be monitored through fisheries monitoring programs administered by Hawaii DAR. The average level of catch

under this alternative is expected to continue as it currently has in recent years with average annual catches between 2000 and 2010 estimated to be 18,743 lb. This level of catch is approximately 7% of MSY (275,575 lb) and is sustainable. There is no information on any bycatch in the Hawaii deepwater shrimp fishery, but NMFS does not have information to indicate bycatch in the fishery is not sustainable or having an effect on biodiversity or food webs of any species. The status of Hawaii deepwater shrimp fishery bycatch would continue to be subject to ongoing discussion and review by the Council.

#### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this Alternative, NMFS would specify an ACL of 250,773 lb of deepwater shrimp caught in the Hawaii EEZ in fishing years 2016 – 2018. This ACL is equal to the ABC recommended by the Council's SSC and is 91% of MSY. Based on past fishery performance in the past decade (recent average annual catches of 18,743 lb) and shown in Table 3, this level of catch is not likely to be attained; however, monitoring would continue and all commercial catches would be reported. The ACL and AM specification would not change the conduct of the fishery in any way. Therefore, NMFS concludes the specification would not result in large or adverse effects on target or non-target stocks or on bycatch species, including should the same ACLs and AMs specifications be made in each of the subsequent 2 years.

#### Alternative 3: Specify ACL at 90% of ABC

Under this Alternative, NMFS would specify an ACL of 225,695 lb, which is 82% of MSY. This alternative is expected to have impacts similar to Alternative 2 and Alternative 1 because this level of catch is not expected to be attained, and because, with a high ACL and no in-season management measure (e.g., a fishery closure) there would be no change to the way the fishery is conducted. Monitoring would continue and all commercial catches would be reported. NMFS concludes the specification would not result in large or adverse effects on target or non-target stocks or on bycatch species, including should the same ACLs and AMs specifications be made in each of the subsequent 2 years.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affected the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year. The proposed action would not result in a fishery closure under the two action alternatives. However, the ACL and post-season review of catch relative to the ACL is designed to prevent deepwater shrimp stocks from becoming overfished. The added post season review of catch would also provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications in the future, should changes be necessary.



### **3.1.1.2 Affected Fishery Participants in Hawaii**

#### ***Overview of Hawaii's Deepwater Shrimp Fishery***

In Hawaii, an intermittent deepwater shrimp fishery began in 1967 (Tagami and Ralston 1988) and continues to vary from year to year with an average of three vessels reporting the catch of deepwater shrimp to the State of Hawaii. Table 3 provides the total and average annual reported commercial landings of deepwater shrimp in Hawaii between 1982 and 2010. Landing information is summarized in approximately 10-year groupings to protect confidential fishery information, as there may have been less than three participants in the fishery during certain years. Individual years in which less than three vessels participated in the fishery cannot be reported.

In general, the fishery is a pulse fishery in which many years see little to no participation. Within the past 10 years, the Hawaii deepwater shrimp fishery has had 10 or fewer participants in any given year. Annual landings data is confidential because the number of participants annually is often 3 or less (Table 3).

While relatively small catches of shrimp have been common in the recent past, the fishery has seen more impressive harvests. For example, landings in 1984 and 1989 were approximately 275,000 lb and 270,000 lb, respectively (WPFMC 2008). The estimated annual ex-vessel value associated with those totals was more than \$1 million each year. Currently, there are no Federal crustacean permits issued for deepwater shrimp fishing in Hawaii.

In 2009, the commercial price per pound for deepwater shrimp in Hawaii was \$1.68. Based on an average annual landing of 18,743 lb, the annual commercial value of the fishery could be \$31,488. Due to data confidentiality restrictions, information on the number of vessels that reported catch to the State of Hawaii in 2009 and the total catch cannot be reported

#### ***Potential Effects of the Proposed ACL specification and AM on Hawaii's Deepwater Shrimp Fishery Participants***

##### **Alternative 1: No Management Action**

Under the No-action Alternative, which is the baseline alternative, the Hawaii deepwater shrimp fishery would not be managed using annual catch limits, accountability measures would not be needed, and fishing would continue to be monitored by Hawaii DAR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected. A low level of fishery participation would likely occur on an intermittent basis as in the past.

##### **Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, NMFS would specify a Hawaii deepwater shrimp ACL of 250,773 lb, on an annual basis for fishing years 2016 – 2018. This ACL is equal to the ABC recommended by the Council's SSC. Between 2000 and 2010, the average annual landing of deepwater shrimp

was 18,743 lb, which is 7% of the proposed ACL. The proposed ACL specifications are substantially higher than recent commercial landings. Catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because in-season monitoring, and therefore in-season closure is not possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify a Hawaii deepwater shrimp ACL of 225,695 lb which is 90% of the ABC (250,773 lb) and 82% of MSY. An ACL at this level expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3. Based on historical landings, is not likely that the fishery would achieve the ACL under this alternative. Because in-season monitoring, and therefore in-season closure is not possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation

Regardless of which action alternative is selected, the AM for the Hawaii deepwater shrimp fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded and adversely affected deepwater shrimp stocks, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. Under the current AMs, there is no in-season management measure possible (such as a fishery closure), so fishery participants are not expected to be affected event if an ACL were to be adjusted downward. If management changes were needed, NMFS would evaluate the potential environmental impacts of such actions once details become available.

#### **3.1.1.3 Affected Protected Resources in Hawaii**

A number of protected species are documented as occurring in the waters around the Hawaiian Islands and there is the potential for interactions with the crustacean fisheries of the Hawaii Archipelago. The Hawaii crustacean fisheries have been evaluated for impacts on protected resources and are managed in compliance with the requirements of the Magnuson-Stevens Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and other applicable statutes.

#### ESA listed species and ESA review of Hawaii Crustacean Fisheries

Table 20 lists endangered or threatened species occurring in the waters around Hawaii. They include a number of whales, the Hawaiian monk seal, and five listed sea turtles. Although there is currently no critical habitat designated for ESA-listed marine species around the main Hawaiian Islands, a proposal to designate portions of the nearshore marine environment around the main Hawaiian Islands as monk seal critical habitat is currently under review.

**Table 20. Endangered and threatened marine species and seabirds occurring in the waters of the Hawaiian Archipelago**

| Common name                                  | Scientific Name                  | ESA listing status in Hawaii              | Occurrence in Hawaii                                                                                                                   |
|----------------------------------------------|----------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Listed Sea Turtles</b>                    |                                  |                                           |                                                                                                                                        |
| Green sea turtle – Central North Pacific DPS | <i>Chelonia mydas</i>            | Threatened DPS                            | Most common turtle in the Hawaiian Islands. Most nesting occurs in the northwestern Hawaiian Islands. Foraging and haulout in the MHI. |
| Hawksbill sea turtle                         | <i>Eretmochelys imbricata</i>    | Endangered                                | Small population foraging around Hawaii and low level nesting on Maui and Hawaii Islands.                                              |
| Leatherback sea turtle                       | <i>Dermochelys coriacea</i>      | Endangered                                | Not common in Hawaii.                                                                                                                  |
| Olive ridley sea turtle                      | <i>Lepidochelys olivacea</i>     | Threatened                                | Range across Pacific.                                                                                                                  |
| North Pacific loggerhead sea turtle          | <i>Caretta caretta</i>           | Endangered<br>Distinct Population Segment | Not common in Hawaii.                                                                                                                  |
| <b>Listed Marine Mammals</b>                 |                                  |                                           |                                                                                                                                        |
| Hawaiian Monk seal                           | <i>Neomonachus schauinslandi</i> | Endangered                                | Endemic tropical seal. Occurs throughout the archipelago. Population in decline.<br><br>Critical habitat established.                  |
| False Killer Whale, MHI Insular DPS          | <i>Pseudorca crassidens</i>      | Endangered                                | Rare.                                                                                                                                  |
| Blue whale                                   | <i>Balaenoptera musculus</i>     | Endangered                                | No sightings or strandings reported in Hawaii but acoustically recorded off of Oahu and Midway Atoll.                                  |
| Fin whale                                    | <i>Balaenoptera physalus</i>     | Endangered                                | Infrequent sightings in Hawaii waters.                                                                                                 |
| Sei whale                                    | <i>Balaenoptera borealis</i>     | Endangered                                | Worldwide distribution. Primarily found in cold temperate to subpolar latitudes. Rare in Hawaii.                                       |
| Sperm whale                                  | <i>Physeter macrocephalus</i>    | Endangered                                | Found in tropical to polar waters worldwide, most                                                                                      |

| Common name              | Scientific Name                     | ESA listing status in Hawaii | Occurrence in Hawaii                                                                                |
|--------------------------|-------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------|
|                          |                                     |                              | abundant cetaceans in the region. Sighted off the NWHI and the MHI.                                 |
| <b>Listed Sea Birds</b>  |                                     |                              |                                                                                                     |
| Newell's Shearwater      | <i>Puffinus auricularis newelli</i> | Threatened                   | Rare. Breeds only in colonies on the MHI where it is threatened by predators and urban development. |
| Dark-rumped petrel       | <i>Pterodroma phaeopygia</i>        | Endangered                   | Rare                                                                                                |
| Band-rumped storm-petrel | <i>Oceanodroma castro</i>           | Endangered Hawaii DPS        | Rare.                                                                                               |
| Short-tailed Albatross   | <i>Phoebastria albatrus</i>         | Endangered                   | Found on Midway in the NWHI.                                                                        |

### ***Applicable ESA Coordination – Hawaii crustacean fisheries***

Section 4.2 lists the applicable ESA consultations and other reviews that are briefly described here:

NMFS evaluated Hawaii crustacean fisheries (including deepwater shrimp fisheries) for potential impacts to ESA-listed marine species under NMFS jurisdiction and documented its conclusions in a March 13, 2008, Biological Opinion (BiOp). The BiOp concluded that Hawaii Crustacean fisheries are not likely to adversely affect ESA-listed species (see Table 33).

In a letter of concurrence covering the Fishery Management Plan (FMP) for the Crustacean Fisheries of the Western Pacific, dated April 4, 2008, NMFS determined crustacean fisheries of Hawaii that operate in accordance with regulations implementing the FMP, inclusive of the spiny and slipper lobster fisheries, deepwater shrimp fisheries, and Kona crab fishery were not likely to adversely affect ESA-listed species or habitats.

In 2009, the Council recommended, and NMFS approved, the development of five archipelagic-based fishery ecosystem plans (FEPs) including the Hawaii Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Crustacean FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for the Hawaii Archipelago.

No substantial changes to the crustacean fisheries around Hawaii have occurred since the FEP was implemented that have required further consultation.

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute "species" that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the

loggerhead sea turtles in the North Pacific Ocean, which includes waters around the Hawaii Archipelago, are a distinct population segment (DPS) that is endangered and at risk of extinction.

While the North Pacific DPS of loggerheads may be found in Federal waters in the MHI, their occurrence in Federal waters where the deepwater shrimp fishery operates is extremely rare. Additionally, there have been no reported or observed incidental take of this species in the history of the fishery. Because neither action alternative would modify operations of the Hawaii crustacean fisheries in any way, there is no additional information that would change the conclusions of the 2008 consultation that determined this fishery was not likely to adversely affect ESA-listed species or their habitats.

In 2013, NMFS re-initiated ESA consultation for Hawaii crustacean fisheries in response to the listing of the MHI insular false killer whale DPS as an endangered species under the ESA. The consultation evaluated the effects of all Hawaii crustacean fisheries on all ESA-listed species and designated critical habitat. In a letter of concurrence dated December 5, 2013, NMFS determined that the continued authorization of crustacean fisheries in the Hawaiian Archipelago may affect, but is not likely to adversely affect, endangered or threatened species or designated critical habitat. Specifically, NMFS concluded that effects of the Hawaii crustacean fisheries are expected to be insignificant, discountable or beneficial.

On August 21, 2015, NMFS designated critical habitat for the endangered Hawaiian monk seal in areas where the Hawaii Kona crab fishery fishes (80 FR 50926). Specific areas designated include sixteen occupied areas within the range of the species: ten areas in the Northwestern Hawaiian Islands and six in the MHI. These areas contain one or a combination of habitat types: preferred pupping and nursing areas, significant haul-out areas, and/or marine foraging areas, that will support conservation for the species. Specific areas designated as monk seal critical habitat in the MHI include marine habitat from the 200 m depth contour line, including the seafloor and all subsurface waters and marine habitat within 10 m of the seafloor, through the water's edge 5 m into the terrestrial environment from the shoreline between identified boundary points on the Islands of: Kaula, Niihau, Kauai, Oahu, Maui Nui (including Kahoolawe, Lanai, Maui, and Molokai), and Hawaii. In areas where critical habitat does not extend inland, the designation ends at a line that marks mean lower low water. The August 21, 2015, final rule designating monk seal critical habitat in the MHI, triggered consultation on the continuation of Crustacean fisheries in the Hawaiian Islands Archipelago. Given the generalist foraging habits of monk seals, the small number of participants in crustacean fisheries and the small area fished, potential effects to monk seals were expected to be insignificant. In a memo dated March 1, 2016, the consultation concluded with NMFS' finding that Crustacean fisheries are not likely to adversely affect the newly designated Hawaiian monk seal critical habitat, because the effects of the fisheries are expected to be discountable or insignificant.

On April 6, 2016, (81 FR 20058) NMFS published a final rule to list 11 DPS of the green sea turtle (*Chelonia mydas*) under the ESA. Based on the best available scientific and commercial data, and after considering comments on the proposed rule, NMFS determined that three DPS are endangered and eight DPS, including the Hawaiian green sea turtle (Central North Pacific DPS), are threatened. NMFS does not expect the number of green sea turtles taken in the Hawaii Crustacean fisheries to change based on the designation of the DPS. The 2016 rule supersedes

the 1978 final listing rule for green turtles and applies the existing protective regulations to the DPS. Critical habitat will be considered in future rulemaking.

On September 30, 2016, the USFWS listed the Hawaii DPS of the band-rumped storm-petrel (*Oceanodroma castro*) as an endangered seabird (81 FR 67786). The deepwater shrimp fishery has never reported interactions with this species and interactions are unlikely.

### ***Effects of alternatives on listed species.***

None of the alternatives proposed are expected to change the conduct of the deepwater shrimp fishery in any manner that would result in interactions with protected species in any manner not covered by existing consultations. The fishery is not expected to interact with recently-listed band-rumped storm petrel.

### **Marine Mammals**

Several whales, dolphins and porpoises occur in waters around Hawaii and are protected under the Marine Mammal Protection Act (MMPA. Table 21 provides a list of marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago that have the potential to interact with the Hawaii deepwater shrimp fisheries. See Section 4.3 for more information on the MMPA determination.

The deepwater shrimp fishery is not known to have the potential for a large and adverse effect on endangered insular false killer whale DPS. Although these species occur in the area the fishery operates, no reported or observed interactions have occurred. No cetacean entanglements in deepwater shrimp trap lines have been reported or observed to date around Hawaii.

**Table 21. Non-ESA-listed marine mammals occurring in Hawaii**

| <b>Non-ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago</b> |                                |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>Common Name</b>                                                                                                            | <b>Scientific Name</b>         |
| Blainville's beaked whale                                                                                                     | <i>Mesoplodon densirostris</i> |
| Bottlenose dolphin                                                                                                            | <i>Tursiops truncatus</i>      |
| Bryde's whale                                                                                                                 | <i>Balaenoptera edeni</i>      |
| Common dolphin                                                                                                                | <i>Delphinus delphis</i>       |
| Cuvier's beaked whale                                                                                                         | <i>Ziphius cavirostris</i>     |
| Dall's porpoise                                                                                                               | <i>Phocoenoides dalli</i>      |
| Dwarf sperm whale                                                                                                             | <i>Kogia sima</i>              |
| False killer whale                                                                                                            | <i>Pseudorca crassidens</i>    |
| Fraser's dolphin                                                                                                              | <i>Lagenodelphis hosei</i>     |
| Killer whale                                                                                                                  | <i>Orcinus orca</i>            |
| Humpback whale                                                                                                                | <i>Megaptera novaeangliae</i>  |
| Longman's beaked whale                                                                                                        | <i>Indopacetus pacificus</i>   |
| Melon-headed whale                                                                                                            | <i>Peponocephala electra</i>   |

| <b>Non-ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago</b> |                                   |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                                            | <b>Scientific Name</b>            |
| Minke whale                                                                                                                   | <i>Balaenoptera acutorostrata</i> |
| Pantropical spotted dolphin                                                                                                   | <i>Stenella attenuate</i>         |
| Pygmy killer whale                                                                                                            | <i>Feresa attenuata</i>           |
| Pygmy sperm whale                                                                                                             | <i>Kogia breviceps</i>            |
| Risso's dolphin                                                                                                               | <i>Grampus griseus</i>            |
| Rough-toothed dolphin                                                                                                         | <i>Steno bredanensis</i>          |
| Short-finned pilot whale                                                                                                      | <i>Globicephala macrorhynchus</i> |
| Spinner dolphin                                                                                                               | <i>Stenella longirostris</i>      |
| Spotted dolphin                                                                                                               | <i>Stenella attenuata</i>         |
| Striped dolphin                                                                                                               | <i>Stenella coeruleoalba</i>      |

Source: Council website: <http://www.wpcouncil.org>

On November 28, 2012, NMFS published a final rule to list the Hawaiian insular false killer whale as an endangered DPS under the ESA (77 FR 70915). On August 7, 2013, NMFS modified the March 13, 2008 BiOp to address the listing of the MHI insular false killer whale DPS as an endangered species under the ESA, and concluded that Hawaii crustacean fisheries are not likely to adversely affect this species.

All Hawaii crustacean fisheries, including the Hawaii lobster dive, net and trap fisheries, shrimp trap fishery and Kona crab loop net fishery are listed as a Category III fisher under Section 118 of the MMPA (81 FR 20550, April 8, 2016). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals. After reviewing the Hawaii crustacean fisheries in the 2016 List of Fisheries, NMFS concluded that all Hawaii Archipelago commercial crustacean fisheries, including the deepwater shrimp fishery, as currently conducted, will not affect marine mammals in any manner not considered or authorized by the commercial fishing take exemption under the MMPA.

### Sea Turtles

The breeding populations of Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. Additionally, the loggerhead (*Caretta caretta*) and green sea turtles (*Chelonia mydas*) in the North Pacific Ocean were recently identified as a distinct population segment and listed as endangered. The green turtle is most commonly seen in the EEZ waters. Hawksbill turtles are known to nest on the Islands of Hawaii and Maui.

### Seabirds

Seabirds found on and around Hawaii that could potentially interact with fisheries are listed in Table 22. The endangered short-tailed albatross is a migratory seabird that has nested in the NWHI and could be present in the waters of the Hawaii Archipelago. Other listed seabirds found



in the region are the endangered Hawaiian dark-rumped petrel (*Pterodroma phaeopygia*), the threatened Newell’s shearwater (*Puffinus auricularis newelli*), and the endangered band-rumped storm-petrel Hawaii DPS (*Oceanodroma castro*). Non-listed seabirds known to be present in Hawaii and commonly seen in offshore waters include the black-footed albatross (*Phoebastria nigripes*); Laysan albatross (*P. immutabilis*); wedge-tailed (*Puffinus pacificus*), sooty (*P. griseus*) and fleshfooted (*P. carneipes*) shearwaters, as well as the masked (*Sula dactylatra*), brown (*Sula leucogaster*), and red-footed (*Sula sula*) boobies (or gannets). Seabirds forage in both State and Federal waters, but are not known to and are unlikely to interact with the Hawaii crustacean fisheries. There have been no reports of adverse interactions between the Hawaii crustacean fisheries and migratory seabirds.

**Table 22. Seabirds occurring in the Hawaiian Islands**

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                                |                                                        |
|-------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------|
|                                                                                                             | Common name                    | Scientific name                                        |
| R                                                                                                           | Hawaiian dark-rumped petrel    | <i>Pterodroma phaeopygia</i> (ESA: Endangered)         |
| R                                                                                                           | Newell’s shearwater            | <i>Puffinus auricularis newelli</i> (ESA:Threatened)   |
| R                                                                                                           | Band-rumped storm-petrel       | <i>Oceanodroma castro</i> (ESA: Endangered Hawaii DPS) |
| R                                                                                                           | Short-tailed albatross         | <i>Phoebastria albatrus</i> (ESA: Endangered)          |
| R                                                                                                           | Black-footed albatross         | <i>Phoebastria nigripes</i>                            |
| R                                                                                                           | Laysan albatross               | <i>Phoebastria immutabilis</i>                         |
| R                                                                                                           | Wedge-tailed shearwater        | <i>Puffinus pacificus</i>                              |
| V                                                                                                           | Audubon’s shearwater           | <i>Puffinus lherminieri</i>                            |
| Vc                                                                                                          | Short-tailed shearwater        | <i>Puffinus tenuirostris</i> (common visitor)          |
| R                                                                                                           | Christmas shearwater           | <i>Puffinus nativitatis</i>                            |
| V                                                                                                           | Leach’s storm-petrel           | <i>Oceanodroma leucorhoa</i>                           |
| V                                                                                                           | Matsudaira’s storm-petrel      | <i>Oceanodroma matsudairae</i>                         |
| R                                                                                                           | Red-footed booby               | <i>Sula sula</i>                                       |
| R                                                                                                           | Brown booby                    | <i>Sula leucogaster</i>                                |
| R                                                                                                           | Masked booby                   | <i>Sula dactylatra</i>                                 |
| R                                                                                                           | White-tailed tropicbird        | <i>Phaethon lepturus</i>                               |
| R                                                                                                           | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>                             |
| R                                                                                                           | Great frigatebird              | <i>Fregata minor</i>                                   |
| R                                                                                                           | Sooty tern                     | <i>Onychoprion fuscatus</i>                            |
| R                                                                                                           | Brown noddy                    | <i>Anous stolidus</i>                                  |
| R                                                                                                           | Black noddy                    | <i>Anous minutus</i>                                   |
| R                                                                                                           | White tern / Common fairy-tern | <i>Gygis alba</i>                                      |

Source: WPFMC 2009c

### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in Hawaii***

None of the action alternatives would modify operations of the Hawaii deepwater shrimp fishery in any way, and therefore, none of the action alternatives would be expected to affect endangered



or threatened species or critical habitat in any manner not previously considered in applicable ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the deepwater shrimp fishery using an ACL and AM would not represent a change to fishery management that has been in place since 2012. ACLs and AMs are intended to promote long term sustainability of the fishery stock.

The current inability of in-season tracking of catch towards an ACL resulted in the Council not considering an in-season closure. Therefore, regardless of which action alternative is selected, participants in the Hawaii deepwater shrimp fishery would continue to fish as they have in recent years. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources. For the same reasons, none of the action alternatives would result in a change to effects on monk seal critical habitat.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

### **3.1.2 American Samoa Deepwater Shrimp Fishery, Affected Resources and Potential Effects**

#### **3.1.2.1 Affected Target, Non-target and Bycatch Species in American Samoa**

Because of the steepness of Tutuila and the other islands that make up American Samoa, most of the available benthic habitat is composed of fringing coral reefs, a limited reef slope, and a few offshore banks. The islands are fringed by narrow reef flats (50–500 m wide) that drop to a depth of 3 to 6 meters and descend gradually to 40 meters. From this depth, the ocean bottom drops rapidly, reaching depths of 1,000 meters within 1 to 3 kilometers from shore. The following four banks around Tutuila, that are likely areas for deepwater shrimp fishing, have been identified: Taputapu, Mataula, Leone West Banks, and Steps Point (Severance and Franco 1989).

NMFS PIFSC conducted sampling at 10 shrimp trapping stations at depths ranging between 200 and 510 fathoms around American Samoa in 1987 (NOAA Ship Townsend Cromwell cruise 87-01). The gear used was large pyramid single set traps and some *Heterocarpus* were present in every trap haul. Unpublished results from the cruise showed that deepwater shrimp may be more abundant in some places than others, but deepwater shrimp were captured in most of the trap sets (PIFSC unpublished data). There are no available estimates of MSY values for deepwater shrimp in American Samoa because of the lack of fishing and the lack of research.

## ***Potential Effects of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in American Samoa***

### Alternative 1: No Management Action

Under the no-action alternative, an ACL would not be specified for the American Samoa deepwater shrimp fishery and AMs would not be necessary. However, since there has never been a deepwater shrimp fishery in American Samoa, this alternative would have no effect on any marine resource. Catches, if they were to occur, would be collected through fisheries monitoring programs administered by American Samoa DMWR and the status of American Samoa deepwater shrimp would be subject to discussion and review.

### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 80,000 lb for American Samoa deepwater shrimp in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC. To date, there has never been a fishery for deepwater shrimp in American Samoa. If a fishery were to develop, catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because there is no in-season monitoring, and therefore no in-season closure is possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation. With no change in the fishery, the ACLs and AMs would not have large or adverse effects on target, non-target or bycatch species. The ACLs and AMs would provide a more substantial post-season review of the fishery than would occur in the no-action alternative. Over time, the management of deepwater shrimp fisheries with ACLs and AMs, including post-season review, is expected to help ensure long-term sustainability of the resources.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 72,000 lb for American Samoa deepwater shrimp in fishing years 2016 – 2018. The impacts under Alternative 3 would be identical to Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of fish that may be harvested annually where none previously existed. There is no ability to monitor catches in-season which precludes in-season management measures (such as a fishery closure); however, the post-season review of catch relative to the proposed ACL is part of the management of the fishery and is designed to prevent deepwater shrimp stocks from becoming overfished. The additional level of post season review of the catch would also an

enhanced level of management review of the fishery compared with Alternative 1, and would provide an opportunity for the Council to refine ACL and AM specifications, as needed. Over time, the management of deepwater shrimp fisheries with ACLs and AMs, including post-season review, is expected to help ensure long-term sustainability of the resources.

### **3.1.2.2 Affected Fishery Participants in American Samoa**

No fishing for deepwater shrimp has ever been reported around American Samoa and no Federal permits have ever been issued.

#### ***Potential Effects of the Proposed ACL specification and AM on American Samoa's Deepwater Shrimp Fishery Participants***

To date, there has not been a deepwater shrimp fishery in American Samoa. Therefore, there is no fishery participant that could be affected by any of the three alternatives considered. If a fishery were to occur, the ACLs and AMs proposed under alternatives 1 and 2 are expected to provide for additional management review of the fishery to promote long-term sustainability in the fishery, which by managing for a sustainable resource, would have a positive effect on fishery participants.

### **3.1.2.3 Affected Protected Resources in American Samoa**

A number of protected species are known or believed to occur in the waters around American Samoa and, therefore, they could potentially interact with the deepwater shrimp fishery. NMFS evaluated the deepwater shrimp fisheries of the Pacific Islands region for effects on protected species and manages these fisheries in compliance with the requirements of the Magnuson-Stevens Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and other applicable statutes. For the reader's interest, more detailed descriptions of these species and their life histories are found in section 3.3.4 of the FEP for the American Samoa Archipelago (WPFMC 2009a) and online on NMFS website ([http://www.fpir.noaa.gov/PRD/prd\\_index.html](http://www.fpir.noaa.gov/PRD/prd_index.html)).

#### **Listed species and ESA review of American Samoa Crustacean and Precious Coral Fisheries**

Table 23 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around American Samoa which may have the potential to interact with crustacean fisheries. They include a number of whales, five sea turtles, and a seabird species rarely found in the area. There is no critical habitat designated for ESA-listed marine species around American Samoa. The table includes information about consultations completed on the fishery.

On September 22, 2011, NMFS published a final rule determining that the world loggerhead turtle population was comprised of nine distinct population segments (DPS) (five Endangered and four Threatened). The South Pacific Ocean Loggerhead turtle DPS distribution (listed as endangered) overlaps with the EEZ around American Samoa. The DPS nests on beaches from eastern Australia to Tokelau several hundred nm north of American Samoa (NMFS 2009). There

are no records of this species nesting in American Samoa; however, loggerheads do transit the EEZ around American Samoa (Seminoff et al. 2015).

The presence of green turtles, hawksbill turtles, and olive ridley turtles in the EEZ around American Samoa is well-documented (Seminoff et al. 2015).

On April 6, 2016, NMFS and USFWS published a final rule finding that the green sea turtle is composed of 11 DPSs and proposed to replace the current range-wide listing with listing of the DPSs as threatened or endangered (81 FR 20057). The population around American Samoa is part of the Central South Pacific DPS, which is now listed as endangered.

**Table 23. Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters round the American Samoa Archipelago and consultations on the crustacean fisheries.**

| Common name                                                            | Scientific Name               | ESA listing status in American Samoa | Occurrence in American Samoa                                                                    |
|------------------------------------------------------------------------|-------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Listed Sea Turtles</b>                                              |                               |                                      |                                                                                                 |
| Green sea turtle (laumei enaena and fonu)<br>Central South Pacific DPS | <i>Chelonia mydas</i>         | Endangered DPS                       | Frequently seen. Nest at Rose Atoll. Known to migrate to feeding grounds.                       |
| Hawksbill sea turtle (laumei uga)                                      | <i>Eretmochelys imbricata</i> | Endangered                           | Frequently seen. Nest at Rose Atoll and Swain's Island.                                         |
| Leatherback sea turtle                                                 | <i>Dermochelys coriacea</i>   | Endangered                           | Very rare in American Samoa. One recovered dead in experimental longline fishing.               |
| Olive ridley sea turtle                                                | <i>Lepidochelys olivacea</i>  | Threatened                           | Uncommon in American Samoa. Three sightings.                                                    |
| South Pacific Loggerhead sea turtle                                    | <i>Caretta caretta</i>        | Endangered DPS                       | Not known to occur in American Samoa                                                            |
| <b>Listed Marine Mammals</b>                                           |                               |                                      |                                                                                                 |
| Blue whale                                                             | <i>Balaenoptera musculus</i>  | Endangered                           | No known sightings.                                                                             |
| Fin whale                                                              | <i>Balaenoptera physalus</i>  | Endangered                           | No known sightings.                                                                             |
| Humpback whale (tafolā or i'a manu)                                    | <i>Megaptera novaeangliae</i> | Endangered                           | Most common during Sept. and October. Southern humpback whales mate and calve from June – Sept. |

| Common name                                        | Scientific Name                     | ESA listing status in American Samoa | Occurrence in American Samoa                                    |
|----------------------------------------------------|-------------------------------------|--------------------------------------|-----------------------------------------------------------------|
| Sei whale                                          | <i>Balaenoptera borealis</i>        | Endangered                           | No known sightings.                                             |
| Sperm whale                                        | <i>Physeter macrocephalus</i>       | Endangered                           | Occurs around American Samoa all months except. Feb. and March. |
| <b>Listed Sea Birds</b>                            |                                     |                                      |                                                                 |
| Newell's Shearwater                                | <i>Puffinus auricularis newelli</i> | Threatened                           | Uncommon visitor                                                |
| <b>Listed Corals</b>                               |                                     |                                      |                                                                 |
| None                                               | <i>Acropora globiceps</i>           | Threatened                           | Present                                                         |
| None                                               | <i>A. jacquelineae</i>              | Threatened                           | Present                                                         |
| None                                               | <i>A. retusa</i>                    | Threatened                           | Present                                                         |
| None                                               | <i>A. speciosa</i>                  | Threatened                           | Present                                                         |
| None                                               | <i>Euphyllia paradivisa</i>         | Threatened                           | Present                                                         |
| None                                               | <i>Isopora crateriformis</i>        | Threatened                           | Present                                                         |
| <b>Listed Sharks</b>                               |                                     |                                      |                                                                 |
| Scalloped hammerhead shark (Indo-West Pacific DPS) | <i>Puffinus auricularis newelli</i> | Threatened DPS                       | Uncommon visitor                                                |

### ***Applicable ESA Coordination – American Samoa Crustacean Fisheries***

In a letter of concurrence covering the Fishery Management Plan (FMP) for the Crustacean Fisheries of the Western Pacific, dated September 28, 2007, NMFS determined crustacean fisheries of American Samoa that operate in accordance with regulations implementing the FMP, (including the spiny and slipper lobster fisheries, and potential deep-water shrimp and Kona crab fisheries) were not likely to adversely affect ESA-listed species or their habitats.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based fishery ecosystem plans (FEPs) including the American Samoa Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Crustacean Fisheries FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for American Samoa. No substantial changes to the crustacean fishery around American Samoa have occurred since the FEP was implemented that have required further consultation under the ESA.

On July 3, 2014, NMFS published a final rule that listed four distinct population segments (DPSs) of scalloped hammerhead shark under the ESA (79 FR 38213). The threatened Indo-West Pacific DPS is the only DPS that occurs around American Samoa.

On September 10, 2014, NMFS published a final rule that listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Of the 20 listed species, six may occur in American Samoa.

In a letter of concurrence covering the American Samoa FEP crustacean fisheries dated April 9, 2015, NMFS determined that continuation of the crustacean fisheries in American Samoa was not likely to adversely affect any threatened or endangered species, including the scalloped hammerhead shark and listed reef-building corals.

### Marine Mammals

Several whales, dolphins and porpoises occur in waters around American Samoa and are protected under the MMPA. Table 24 provides a list of marine mammals known to occur or reasonably expected to occur in waters around American Samoa. See Section 4.3 for more information on the MMPA determination.

**Table 24. Marine mammals known to occur or reasonably expected to occur in waters around American Samoa**

| <b>Marine mammals known to occur or reasonably expected to occur in waters around American Samoa</b> |                                   |
|------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                   | <b>Scientific Name</b>            |
| Humpback whale*<br>(tafolā or i`a manu)                                                              | <i>Megaptera novaeangliae</i>     |
| Sperm whale*                                                                                         | <i>Physeter macrocephalus</i>     |
| Blue whale*                                                                                          | <i>Balaenoptera musculus</i>      |
| Fin Whale*                                                                                           | <i>Balaenoptera physalus</i>      |
| Sei whale*                                                                                           | <i>Balaenoptera borealis</i>      |
| Blainville's beaked whale                                                                            | <i>Mesoplodon densirostris</i>    |
| Bottlenose dolphin                                                                                   | <i>Tursiops truncatus</i>         |
| Bryde's whale                                                                                        | <i>Balaenoptera edeni</i>         |
| Common dolphin                                                                                       | <i>Delphinus delphis</i>          |
| Cuvier's beaked whale                                                                                | <i>Ziphius cavirostris</i>        |
| Dwarf sperm whale                                                                                    | <i>Kogia sima</i>                 |
| False killer whale                                                                                   | <i>Pseudorca crassidens</i>       |
| Fraser's dolphin                                                                                     | <i>Lagenodelphis hosei</i>        |
| Killer whale                                                                                         | <i>Orcinus orca</i>               |
| Melon-headed whale                                                                                   | <i>Peponocephala electra</i>      |
| Minke whale                                                                                          | <i>Balaenoptera acutorostrata</i> |
| Pygmy killer whale                                                                                   | <i>Feresa attenuata</i>           |

|                                                  |                                   |
|--------------------------------------------------|-----------------------------------|
| Pygmy sperm whale                                | <i>Kogia breviceps</i>            |
| Risso's dolphin                                  | <i>Grampus griseus</i>            |
| Rough-toothed dolphin                            | <i>Steno bredanensis</i>          |
| Short-finned pilot whale                         | <i>Globicephala macrorhynchus</i> |
| Spinner dolphin                                  | <i>Stenella longirostris</i>      |
| Spotted dolphin<br>(Pantropical spotted dolphin) | <i>Stenella attenuata</i>         |
| Striped dolphin                                  | <i>Stenella coeruleoalba</i>      |
| Longman's beaked whale                           | <i>Indopacetus pacificus</i>      |

\*Species is also listed under the Endangered Species Act.

Sources: NMFS PIRO and PIFSC unpublished data; Council website: <http://www.wpcouncil.org>

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). On April 8, 2016, NMFS published the 2016 List of Fisheries (LOF) which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). Because there is no deepwater shrimp fishery in American Samoa, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii shrimp trap fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, for the purposes of this EA, NMFS concludes that a deepwater shrimp fishery in the American Samoa that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

### Sea Turtles

There are five Pacific sea turtles designated under the Endangered Species Act (ESA) as either threatened or endangered (Table 23) that occur in waters around American Samoa. Green and hawksbill sea turtles are most likely to frequent nearshore habitat when foraging around American Samoa. The breeding populations of Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. This species is rare in American Samoa but one dead olive ridley turtle was found to have been injured by a shark and may have recently laid eggs. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. Loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtles in the South Pacific Ocean were recently identified as members of a distinct population segment (South Pacific Ocean) and listed as endangered. These five species of sea turtles are highly migratory, or have a highly migratory phase in their life history (NMFS 2001).

### Seabirds of American Samoa

Seabirds found on and around American Samoa that could potentially interact with fisheries are listed in Table 25. There have been no reports of adverse interactions between any American Samoa crustacean fishery and migratory birds.

**Table 25. Seabirds occurring in American Samoa**

| <b>Resident seabirds in American Samoa</b> |                                |                             |
|--------------------------------------------|--------------------------------|-----------------------------|
| <b>Samoan name</b>                         | <b>Common name</b>             | <b>Scientific name</b>      |
| ta'i'o                                     | Wedge-tailed shearwater        | <i>Puffinus pacificus</i>   |
| ta'i'o                                     | Audubon's shearwater           | <i>Puffinus lherminieri</i> |
| ta'i'o                                     | Christmas shearwater           | <i>Puffinus nativitatis</i> |
| ta'i'o                                     | Tahiti petrel                  | <i>Pterodroma rostrata</i>  |
| ta'i'o                                     | Herald petrel                  | <i>Pterodroma heraldica</i> |
| ta'i'o                                     | Collared petrel                | <i>Pterodroma brevipes</i>  |
| fua'o                                      | Red-footed booby               | <i>Sula sula</i>            |
| fua'o                                      | Brown booby                    | <i>Sula leucogaster</i>     |
| fua'o                                      | Masked booby                   | <i>Sula dactylatra</i>      |
| tava'esina                                 | White-tailed tropicbird        | <i>Phaethon lepturus</i>    |
| tava'e'ula                                 | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>  |
| atafa                                      | Great frigatebird              | <i>Fregata minor</i>        |
| atafa                                      | Lesser frigatebird             | <i>Fregata ariel</i>        |
| gogouli                                    | Sooty tern                     | <i>Onychoprion fuscatus</i> |
| gogo                                       | Brown noddy                    | <i>Anous stolidus</i>       |
| gogo                                       | Black noddy                    | <i>Anous minutus</i>        |
| laia                                       | Blue-gray noddy                | <i>Procelsterna cerulea</i> |
| manu sina                                  | White tern / Common fairy-tern | <i>Gygis alba</i>           |

Note: An uncommon visitor in American Samoa is the ta'i'o, or Newell's shearwater.

Source: WPFMC 2009a

Newell's shearwater (*Puffinus auricularis newelli*) is listed as threatened under the ESA. Generally known with other shearwaters and petrels as ta'i'o in Samoan, this species breeds only in colonies on the main Hawaiian Islands. Newell's shearwater has been sighted once in American Samoa, but the species has also been observed in other parts of the western and South Pacific. It is considered an uncommon visitor to the archipelago.

#### ***Potential Effects of the Proposed ACL and AM specifications on Protected Species in American Samoa***

To date, there has not been a deepwater shrimp fishery around American Samoa. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

Because the proposed action alternatives do not include an in-season fishery closure, none of the alternatives would modify operations of the American Samoa deepwater shrimp fisheries in any way, and there is no additional information that would change the conclusions of previous informal consultations which determined that the American Samoa deepwater shrimp fishery is not likely to adversely affect listed species. Neither alternative would modify the deepwater



shrimp fishery in any way that would require new consultations under the ESA or MMPA. Neither would result in changes to fishing that would affect seabirds.

### **3.1.3 CNMI Deepwater Shrimp Fishery, Affected Resources and Potential Effects**

#### **3.1.3.1 Affected Target, Non-Target Stocks and Bycatch in the CNMI**

Shrimp trapping surveys conducted by NMFS at 22 islands and banks in the Mariana Archipelago between 1982 and 1984 reported the presence of all eight species of *Heterocarpus*: *Heterocarpus ensifer*, *H. laevigatus* and *H. longirostris* comprised 99 percent of the catch while *H. tricarinatus*, *H. gibbosus* and *H. sibogae* were rare (Moffitt and Polovina 1987). *H. ensifer* was found at depths between 350-550 m, *H. laevigatus* at depths between 500-900 m, and *H. longirostris* at depths of 900 m and greater. *H. laevigatus* had the highest CPUE at 2.33 kg/trap and was also recorded as the largest of the shrimp caught, with an average carapace length of 38.2 mm (size range: 13-61mm). Based on an equilibrium yield assessment conducted by NMFS Southwest Fisheries Science Center in 1987, the most current estimate of maximum sustainable yield (MSY) for the deepwater shrimp stock complex in the CNMI is 137.4 mt/yr or 302,830 lb/yr (Moffitt and Polovina 1987) and is presented in Table 4.

Bycatch in CNMI's deepwater shrimp fishery was reported during the commercial operations that occurred between May 1994 and February 1996 and included a few deepwater eels (*Synaphobranchus* sp.) and dogfish sharks. A large number of two species of geryonid crabs were also caught. The crabs are a marketable incidental catch and could contribute to the success of any deepwater shrimp fishery (WPFMC 2008).

#### ***Current impacts of the fishery: target, non-target and bycatch species***

Currently, there is no fishery for deepwater shrimp in the CNMI. Small amounts of catch were reported in 2001, 2005, and 2006 as local fishermen explored re-invigorating the deepwater shrimp fishery; however this data cannot be reported due to requirements to protect the confidentiality of fishery information. No catches have been reported from local waters since then. Currently, there is little information about bycatch associated with this fishery, and what is known comes primarily from research fishing in the CNMI where species such as deepwater eels (*Synaphobranchus* sp.), dogfish sharks and geryonid crabs have been reportedly caught (WPFMC 2008). However, research findings did not report whether the bycatch was released alive or dead. The sporadic nature of the fishery means that bycatch is considered sustainable in this fishery.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in the CNMI***

##### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for the CNMI deepwater shrimp fishery and AMs would not be necessary. Based on past fishery performance in the past decade, it is expected that fishing is not likely to occur in 2016 – 2018, as no catch has been reported

since 2006. Catches, if they were to occur, could be similar to the maximum reported catches of approximately 27,000 lb taken between May 1994 and February 1996, 97 percent of which were *Heterocarpus laevis*. Catches would continue to be monitored through fisheries monitoring programs administered by CNMI DFW. The status of CNMI deepwater shrimp would continue to be subject to ongoing discussion and review by NMFS and the Council.

#### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 275,575 lb of deepwater shrimp in fishing years 2016 – 2018. This ACL is equal to the ABC recommended by the Council's SSC and is 91% of MSY. The proposed ACL specifications are substantially higher than recent commercial landings. If a fishery were to re-develop, catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because no in-season monitoring can be done, and therefore, no in-season closure is possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation.

#### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 247,018 lb of deepwater shrimp, which is 82% of MSY. If a fishery were to re-develop, catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because no in-season monitoring can be done, and therefore no in-season closure is possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation.

Under all alternatives considered, including the proposed action, no new monitoring of CNMI deepwater shrimp is required to be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and adversely affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year.

The post-season review of catch relative to the proposed ACL is part of the AM designed to prevent the fishery from becoming overfished. The additional level of post season review of the catch would also provide an enhanced level of management review of the fishery compared with Alternative 1, and would provide an opportunity for the Council to refine ACL and AM specifications, as needed. Therefore, the proposed ACL and AMs are expected to promote long-term sustainability in the CNMI deepwater shrimp fishery.

### 3.1.3.2 Affected Fishery Participants in the CNMI

#### ***Overview of CNMI Deepwater Shrimp Fishery***

A directed fishery for deepwater shrimp in the CNMI began in mid-1994, but lasted only two years. One of two companies involved stopped fishing in mid-1995, after fishing for a total of 193 days. The fishery is sporadic in nature due to gear loss, short product shelf life, and inconsistent fishery product quality, and due to local depletion that is generally experienced on known fishing grounds which leads to lower catch rates. Between May 1994 and February 1996, 27,000 lb. of deepwater shrimp were landed in the CNMI, with an approximate value of \$162,000. Of the species landed, more than 97 percent were *Heterocarpus laevigatus*. The remainder of the catch was comprised of *Heterocarpus ensifer* (WPFMC 2008). A small amount of catch was reported in 2001, 2005, and 2006 as local fishermen explored re-invigorating the deepwater shrimp fishery; however this data cannot be reported in order to protect the confidentiality of fishery data. No catch has been reported from local waters since 2006. There is currently no Federal crustacean permits issued for deepwater shrimp harvest in the CNMI.

Because no landings of deepwater shrimp have been reported since 2006, there is no economic value for this fishery at present.

#### ***Potential Effects of the Proposed ACL specification and AM on CNMI's Deepwater Shrimp Fishery Participants***

##### Alternative 1: No Management Action

Under the no-action alternative, which is the baseline alternative, the CNMI deepwater shrimp fishery would not be managed using ACLs, AMs would not be needed, and fishing would continue to be monitored by the CNMI DFW, NMFS, and the Council. Fisheries statistics would become available approximately six months or longer after the data have been initially collected. Fishing could occur on a sporadic basis. Effort and catch would be monitored through permits and logbooks, and voluntary vendor reports.

##### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 275,575 lb of deep water shrimp in fishing years 2016 – 2018. This ACL is equal to the ABC recommended by the Council's SSC. Currently, there is no fishery for deepwater shrimp in the CNMI. Small amounts of catch were reported in 2001, 2005, and 2006 but cannot be reported because of the requirement to protect confidential fishery information. The proposed ACL would be several orders of magnitude higher than this level of catch.

If a fishery were to re-develop, catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because no in-season monitoring can be done, and therefore no in-season closure is possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation.

The AM for the CNMI deepwater shrimp fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL were to be exceeded and found to be adversely affecting deepwater shrimp stocks, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available. Management under ACLs and AMs regime is expected to result in long-term sustainability of the fishery.

#### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 247,018 lb which is 90% of the ABC (275,575 lb) and 82% of MSY. An ACL at this level is expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3. If the ACL were to be exceeded, the post-season review by NMFS and the Council would provide additional evaluation of the reasons the ACL was exceeded, and allow the Council to consider future management adjustments. Because there is no in-season fishery management action, such as a closure, this alternative would not have an effect on fishery participants and fishing would be the same as under Alternative 1. Management under ACLs and AMs regime is expected to result in long-term sustainability of the fishery.

#### **3.1.3.3 Affected Protected Resources in the CNMI**

A number of protected species are reported from the waters around the Mariana Islands and there is, therefore, the potential for interactions with the crustacean fisheries of the CNMI. The crustacean fisheries of the Pacific Islands Region have been evaluated for impacts on protected resources and are managed in compliance with the requirements of the Magnuson-Stevens Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and other applicable statutes. For the reader's interest, additional detailed descriptions of potentially affected protected resources and their life histories can be found in Section 3.3.4 of the FEP for the Mariana Archipelago (WPFMC 2009b).

#### Listed species and ESA review of the CNMI Crustacean Fisheries

Table 26 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around the Mariana Archipelago, including the CNMI, which may have the potential to interact with fisheries. They include a number of whales, five sea turtles, and a seabird. There is no critical habitat designated for ESA-listed marine species around the CNMI.

**Table 26. Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)**

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                                     |                                       |                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Common name</b>                                                                                                                                          | <b>Scientific Name</b>              | <b>ESA listing status in the CNMI</b> | <b>Occurrence in the CNMI</b>                                                                                             |
| <b>Listed Sea Turtles</b>                                                                                                                                   |                                     |                                       |                                                                                                                           |
| Green sea turtle<br>Central West Pacific DPS                                                                                                                | <i>Chelonia mydas</i>               | Endangered DPS                        | Most common turtle in the Mariana Archipelago. Foraging and minor nesting confirmed on Guam, Rota, Tinian and Saipan.     |
| Hawksbill sea turtle                                                                                                                                        | <i>Eretmochelys imbricata</i>       | Endangered                            | Small population foraging around Guam and suspected low level around southern islands of CNMI. Low level nesting on Guam. |
| Leatherback sea turtle                                                                                                                                      | <i>Dermochelys coriacea</i>         | Endangered                            | Occasional sightings around Guam. Not known to what extent they are present around Guam and CNMI                          |
| Olive ridley sea turtle                                                                                                                                     | <i>Lepidochelys olivacea</i>        | Threatened                            | Range across Pacific: not confirmed in the Mariana Archipelago                                                            |
| North Pacific loggerhead sea turtle                                                                                                                         | <i>Caretta caretta</i>              | Endangered DPS                        | No known reports of loggerhead turtles in waters around the Mariana Archipelago                                           |
| <b>Listed Marine Mammals</b>                                                                                                                                |                                     |                                       |                                                                                                                           |
| Blue whale                                                                                                                                                  | <i>Balaenoptera musculus</i>        | Endangered                            | Extremely rare                                                                                                            |
| Fin whale                                                                                                                                                   | <i>Balaenoptera physalus</i>        | Endangered                            | Infrequent sightings.                                                                                                     |
| Humpback whale - Western North Pacific DPS                                                                                                                  | <i>Megaptera novaeangliae</i>       | Endangered DPS                        | Infrequent sightings. Winter in the CNMI.                                                                                 |
| Sei whale                                                                                                                                                   | <i>Balaenoptera borealis</i>        | Endangered                            | Infrequent sightings.                                                                                                     |
| Sperm whale                                                                                                                                                 | <i>Physeter macrocephalus</i>       | Endangered                            | Regularly sighted; most abundant large cetaceans in the region.                                                           |
| <b>Listed Sea Birds</b>                                                                                                                                     |                                     |                                       |                                                                                                                           |
| Newell's Shearwater                                                                                                                                         | <i>Puffinus auricularis newelli</i> | Threatened                            | Rare visitor                                                                                                              |
|                                                                                                                                                             |                                     |                                       |                                                                                                                           |

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI) |                             |                                |                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------|------------------------|
| Common name                                                                                                                                          | Scientific Name             | ESA listing status in the CNMI | Occurrence in the CNMI |
| <b>Listed Sharks</b>                                                                                                                                 |                             |                                |                        |
| Scalloped Hammerhead Shark – Indo-West Pacific DPS                                                                                                   | <i>Sphyrna lewini</i>       | Threatened DPS                 | Common                 |
| <b>Listed Corals</b>                                                                                                                                 |                             |                                |                        |
| None                                                                                                                                                 | <i>Acropora globiceps</i>   | Threatened                     | Present                |
| None                                                                                                                                                 | <i>Seriatopora aculeata</i> | Threatened                     | Present                |

#### ***Applicable ESA Coordination – CNMI Crustacean Fisheries***

In a letter of concurrence covering the Fishery Management Plan (FMP) for the Crustacean Fisheries of the Western Pacific, dated September 28, 2007, NMFS determined crustacean fisheries of the CNMI that operate in accordance with regulations implementing the FMP, inclusive of the spiny and slipper lobster fisheries, deepwater shrimp fisheries, and potential Kona crab fisheries were not likely to adversely affect ESA-listed species or their habitats.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based fishery ecosystem plans (FEPs) including the Mariana Archipelago FEP. The FEP incorporated and reorganized elements of the Council’s species-based FMPs, including the Crustaceans FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for the Mariana Archipelago, including the CNMI. No substantial changes to the crustacean fishery around the CNMI have occurred since the FEP was implemented that have required further consultation.

On July 3, 2014, NMFS published a final rule that listed four distinct population segments (DPSs) of scalloped hammerhead shark under the ESA (79 FR 38213). The threatened Indo-West Pacific DPS is the only DPS that occurs around the CNMI.

On September 10, 2014, NMFS published a final rule that listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Of the 20 listed species, two species occur in the Mariana Archipelago.

In a letter of concurrence covering the Marianas FEP crustacean fisheries dated April 29, 2015, NMFS determined that continuation of the crustacean fishery in the CNMI was not likely to adversely affect any threatened or endangered species, including the scalloped hammerhead shark DPS and listed reef-building corals.

#### Marine Mammals

Several whales, dolphins, and porpoises occur in waters around the CNMI and are protected under the MMPA. Table 27 provides a list of marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago that have the potential to interact with the CNMI crustacean fishery. See Section 4.3 for more information on the MMPA determination for this fishery

**Table 27. Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)**

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                                   |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>            |
| Humpback whale*                                                                                                      | <i>Megaptera novaeangliae</i>     |
| Sperm whale*                                                                                                         | <i>Physeter macrocephalus</i>     |
| Sei whale*                                                                                                           | <i>Balaenoptera borealis</i>      |
| Fin whale*                                                                                                           | <i>Balaenoptera physalus</i>      |
| Blue whale*                                                                                                          | <i>Balaenoptera musculus</i>      |
| Blainville's beaked whale                                                                                            | <i>Mesoplodon densirostris</i>    |
| Bottlenose dolphin                                                                                                   | <i>Tursiops truncatus</i>         |
| Bryde's whale                                                                                                        | <i>Balaenoptera edeni</i>         |
| Common dolphin                                                                                                       | <i>Delphinus delphis</i>          |
| Cuvier's beaked whale                                                                                                | <i>Ziphius cavirostris</i>        |
| Dwarf sperm whale                                                                                                    | <i>Kogia sima</i>                 |
| False killer whale                                                                                                   | <i>Pseudorca crassidens</i>       |
| Fraser's dolphin                                                                                                     | <i>Lagenodelphis hosei</i>        |
| Killer whale                                                                                                         | <i>Orcinus orca</i>               |
| Longman's beaked whale                                                                                               | <i>Indopacetus pacificus</i>      |
| Melon-headed whale                                                                                                   | <i>Peponocephala electra</i>      |
| Minke whale                                                                                                          | <i>Balaenoptera acutorostrata</i> |
| Northern elephant Seal                                                                                               | <i>Mirounga angustirostris</i>    |
| Pilot whale                                                                                                          | <i>Globicephala malaena</i>       |
| Pygmy killer whale                                                                                                   | <i>Feresa attenuate</i>           |
| Pygmy sperm whale                                                                                                    | <i>Kogia breviceps</i>            |
| Risso's dolphin                                                                                                      | <i>Grampus griseus</i>            |
| Rough-toothed dolphin                                                                                                | <i>Steno bredanensis</i>          |
| Short-finned pilot whale                                                                                             | <i>Globicephala macrorhynchus</i> |

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                              |
|----------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>       |
| Spinner dolphin                                                                                                      | <i>Stenella longirostris</i> |
| Spotted dolphin                                                                                                      | <i>Stenella attenuate</i>    |
| Striped dolphin                                                                                                      | <i>Stenella coeruleoalba</i> |

Species is also listed under the Endangered Species Act.

Source: Eldredge 2003, Randall et al. 1975, Pyle and Pyle 2005, Council website:

<http://www.wpcouncil.org>

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). On April 8, 2016, NMFS published the final List of Fisheries (LOF) for 2016 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). Because there is no deepwater shrimp fishery in the CNMI, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii shrimp trap fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, for the purposes of this EA, NMFS concludes that a deepwater shrimp fishery in the CNMI that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

In 2008, NMFS also concluded that the CNMI deepwater shrimp fishery, conducted on a small scale and sporadic level as in the mid-1990's, will not affect marine mammals in a manner not considered or authorized by the commercial fishing take exemption under section 118 of the MMPA.

### Sea Turtles

There are five Pacific sea turtles designated under the Endangered Species Act (ESA) as either threatened or endangered. Green sea turtles are most likely to frequent nearshore habitat when foraging around Guam and other areas in the Mariana Islands. The breeding populations of Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. Loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtles were recently identified as part of a distinct population segment (North Pacific Ocean) and listed as endangered. These five species of sea turtles are highly migratory, or have a highly migratory phase in their life history (NMFS 2001).

Based on nearshore surveys conducted jointly between the CNMI-DFW and NMFS around the southern Mariana Islands (Rota and Tinian 2001; Saipan 1999), an estimated 1,000 to 2,000 green sea turtles forage in these areas (Kolinski et al., 2001). Nesting beaches and seagrass beds



on Tinian and Rota are in good condition but beaches and seagrass beds around Saipan have been impacted by hotels, golf courses and general tourist activities. Intensive monitoring in occurred on Saipan at seven beaches from March 4 to August 31, 2009 resulting in 16 green turtle nests documented. Rapid assessments at Rota beaches Okgok and Tatgua on July 12, 2009 yielded 13 nests. On Tinian, from July 22-31, 2009, 36 nests at five beaches were documented (Maison et al. 2010). There have been occasional sightings of leatherback turtles around Guam (Eldredge 2003); however, the extent to which leatherback turtles are present around the Mariana Archipelago is unknown. There are no known reports of loggerhead turtles in waters around the Mariana Archipelago (WPFMC 2009b). Olive ridley sea turtles are believed to occasionally transit the area (Starmer et al. 2005).

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute “species” that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the CNMI, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, because loggerhead sea turtles, inclusive of the North Pacific Ocean DPS, are not known to nest or even transit the waters around the Mariana Archipelago, and because none of the action alternatives would modify operations of the CNMI crustacean fisheries in any way, there is no additional information that would change the conclusions of the September 28, 2007 informal consultation. The informal consultation concluded that the CNMI crustacean fisheries were not likely to adversely affect ESA-listed marine species or their designated critical habitat.

### Seabirds

The following seabirds in Table 28 are considered residents of Mariana Archipelago: wedge-tailed shearwater (*Puffinus pacificus*), white-tailed tropicbird (*Phaethon lepturus*), red-tailed tropicbird (*Phaethon rubricauda*), masked booby (*Sula dactylatra*), brown booby (*Sula leucogaster*), red-footed booby (*Sula sula*), white tern (*Gygis alba*), sooty tern (*Onychoprion fuscatus*), brown noddy (*Anous stolidus*), black noddy (*Anous minutus*), and the great frigatebird (*Fregata minor*).

The following seabirds in Table 28 have been sighted and are considered visitors (some more common than others) to the Mariana Archipelago: short-tailed shearwater (*Puffinus tenuirostris* - common visitor), Newell’s shearwater (*Puffinus auricularis*- rare visitor), Audubon’s shearwater (*Puffinus iherminieri*), Leach’s storm-petrel (*Oceanodroma leucorhoa*), and the Matsudaira’s storm-petrel (*Oceanodroma matsudairae*). Of these, only the Newell’s shearwater is listed (as threatened) under the ESA. There have been no sightings of the endangered short-tailed albatross (*Phoebastria albatrus*) in the CNMI although CNMI is within the range of the species’ largest breeding colony at Torishima, Japan (WPFMC 2009b). There are no known interactions between seabirds and any of the Mariana Archipelago crustacean fisheries (WPFMC 2009b).

**Table 28. Seabirds occurring in the Mariana Archipelago (CNMI)**

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                                |                                                                   |
|-------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------|
|                                                                                                             | <b>Common name</b>             | <b>Scientific name</b>                                            |
| Vr                                                                                                          | Newell's shearwater            | <i>Puffinus auricularis newelli</i> (ESA:Threatened) rare visitor |
| R                                                                                                           | Wedge-tailed shearwater        | <i>Puffinus pacificus</i>                                         |
| V                                                                                                           | Audubon's shearwater           | <i>Puffinus lherminieri</i>                                       |
| Vc                                                                                                          | Short-tailed shearwater        | <i>Puffinus tenuirostris</i> (common visitor)                     |
| V                                                                                                           | Leach's storm-petrel           | <i>Oceanodroma leucorhoa</i>                                      |
| V                                                                                                           | Matsudaira's storm-petrel      | <i>Oceanodroma matsudairae</i>                                    |
| R                                                                                                           | Red-footed booby               | <i>Sula sula</i>                                                  |
| R                                                                                                           | Brown booby                    | <i>Sula leucogaster</i>                                           |
| R                                                                                                           | Masked booby                   | <i>Sula dactylatra</i>                                            |
| R                                                                                                           | White-tailed tropicbird        | <i>Phaethon lepturus</i>                                          |
| R                                                                                                           | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>                                        |
| R                                                                                                           | Great frigatebird              | <i>Fregata minor</i>                                              |
| R                                                                                                           | Sooty tern                     | <i>Onychoprion fuscatus</i>                                       |
| R                                                                                                           | Brown noddy                    | <i>Anous stolidus</i>                                             |
| R                                                                                                           | Black noddy                    | <i>Anous minutus</i>                                              |
| R                                                                                                           | White tern / Common fairy-tern | <i>Gygis alba</i>                                                 |

Source: WPFMC 2009b

### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in the CNMI***

Although the action alternative would implement ACLs and AMs, without an in-season closure, none of the alternatives would modify operations of the CNMI deepwater shrimp fishery in any way that would be expected to affect endangered or threatened species or critical habitat. Therefore, the existing MMPA and ESA consultations would continue to be applicable.

While Alternatives 2 and 3 would implement ACLs and a post-season review of the catch relative to the ACL, managing the deepwater shrimp fishery for up to three year using an ACL and AM specification regime (Alternative 1) that is intended to promote long term sustainability of the fishery stock. Additionally, there is currently no means of conducting in-season monitoring of catch towards an ACL, and this precludes managers from implementing an in-season closure. This means that participants in the CNMI deepwater shrimp fishery would continue to fish as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the preferred alternative (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

### **3.1.4 Guam Deepwater Shrimp Fishery Potentially Affected Resources and Potential Effects**

#### **3.1.4.1 Potentially Affected Target, Non-target and Bycatch Species in Guam**

Shrimp trapping surveys conducted by NMFS at 22 islands and banks in the Mariana Archipelago between 1982 and 1984 reported the presence of all eight species of *Heterocarpus*: *Heterocarpus ensifer*, *H. laevigatus* and *H. longirostris* comprised 99 percent of the catch while *H. tricarinatus*, *H. gibbosus* and *H. sibogae* were rare (Moffitt and Polovina 1987). *H. ensifer* was found at depths between 350-550 m, *H. laevigatus* at depths between 500-900 m, and *H. longirostris* at depths of 900 m and greater. *H. laevigatus* had the highest CPUE at 2.33 kg/trap (max) and was also recorded as the largest of the shrimp caught, with an average carapace length of 38.2 mm (size range: 13-61mm). Based on an equilibrium yield assessment conducted by NMFS Southwest Fisheries Science Center in 1987, the most current estimate of maximum sustainable yield (MSY) for the deepwater shrimp stock complex in the Guam is 24.1 mt/yr or 53,116 lb/yr (Moffitt and Polovina 1987) and is presented in Table 4. This estimate is based on habitat areas around the Island of Guam and its offshore banks of Galvez and Santa Rosa.

Information on bycatch in Guam shrimp trap fishery is lacking because there has never been a fishery; however, if a fishery were to develop, bycatch could be similar to that of the CNMI research fishing which reported species such as deepwater eels (*Synaphobranchus* spp.), dogfish sharks and geryonid crabs have been reportedly caught (WPFMC 2008). However, research findings did not report whether the bycatch was released alive or dead. Because there is no fishery, there are no concerns about the sustainability of bycatch.

### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in Guam***

#### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for the Guam deepwater shrimp fishery and AMs would not be necessary. Catches, if they were to occur, could be similar to the maximum catches of approximately 27,000 lb taken in the CNMI between May 1994 and February 1996. Catches would be tracked through existing fisheries monitoring programs administered by Guam DAWR and the status of Guam's deepwater shrimp stocks would be subject to discussion and review by NMFS and the Council. Fishing for deepwater shrimp would likely be sporadic and not result in overfishing. Based on the past fishery in the CNMI, the potential impacts on non-target (bycatch) species under the no-action Alternative would likely also not result in large adverse effects to potential bycatch stocks of dogfish sharks and eels or geryonid crabs.

### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 48,488 lb for Guam deepwater shrimp in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC. Although there has never been a deepwater shrimp fishery in Guam, there could be a fishery that begins that would be subject to the ACL and AM requirements. With no in-season closure, the ACLs and AMs would not constrain future fishing; however, managing the fishery with ACLs and AMs is part of an overall management scheme designed to ensure long-term sustainability of the resources.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 43,639 lb for Guam deepwater shrimp in fishing year 2016 – 2018. The impacts under Alternative 3 would be identical to Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of shrimp that may be harvested annually where none previously existed. While fishery managers lack the ability to monitor catch in-season and, therefore, cannot effect a fishery closure to prevent the ACL from being exceeded, the post-season review of catch relative to the proposed ACL is part of the fishery management and is designed to prevent shrimp stocks from becoming overfished. The additional level of post season review of the catch under Alternatives 2 and 3 would provide an enhanced level of management review of the fishery compared to Alternative 1 and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

### **3.1.4.2 Affected Fishery Participants in Guam**

#### ***Overview of Guam's Deepwater Shrimp Fishery***

A small-scale fishery for deepwater shrimp occurred in the 1970s, but ended shortly thereafter. No fishing or landings have been reported since. There is currently no Federal crustacean permits issued for deepwater shrimp harvest in Guam and no reports of harvest reported from local waters in recent time.

### ***Potential Effects of the Proposed ACL and AM Specifications on Guam's Deepwater Shrimp Fishery Participants***

To date, there has not been a deepwater shrimp fishery in Guam; therefore, there is no fishery participant that could be affected by any of the alternatives considered. However, it is possible for a fishery to occur on an intermittent basis.

Under each alternative, fishery managers would monitor catches. Monitoring would help ensure long-term sustainability of the fishery so there would be a positive effect on fishery participants. Alternatives 2 and 3 would provide additional review of any catches in comparison to the ACL.

However, without an in-season fishery closure, neither of the proposed action alternatives would affect fishing for deepwater shrimps. In general, additional management review of fisheries would promote long-term sustainability of the fishery so there would be a positive effect on fishery participants.

#### **3.1.4.3 Affected Protected Resources in Guam**

A number of protected species are reported from the waters around the Mariana Islands and there is, therefore, the potential for interactions with the fisheries of Guam. The crustacean fisheries of the Pacific Islands Region have been evaluated for impacts on protected resources and are managed in compliance with the requirements of the Magnuson-Stevens Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and other applicable statutes. For the readers' interest, additional detailed descriptions of potentially affected protected resources and their life histories can be found in Section 3.3.3 of the FEP for the Mariana Archipelago (WPFMC 2009b).

#### Listed species and ESA review of Guam's Crustacean Fisheries

Table 29 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around the Mariana Archipelago, including Guam, which may have the potential to interact with fisheries. They include a number of whales, five sea turtles, and a seabird. There is no critical habitat designated for ESA-listed marine species around Guam.

**Table 29. Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)**

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)</b> |                        |                                   |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------|-------------------------------------------------------------------------------------|
| <b>Common name</b>                                                                                                                                          | <b>Scientific Name</b> | <b>ESA listing status in Guam</b> | <b>Occurrence in Guam</b>                                                           |
| <b>Listed Sea Turtles</b>                                                                                                                                   |                        |                                   |                                                                                     |
| Green sea turtle<br>Haggan Betde                                                                                                                            | <i>Chelonia mydas</i>  | Threatened                        | Most common turtle in the Mariana Archipelago. Foraging and minor nesting confirmed |

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Marina Archipelago (Guam) |                                     |                                           |                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Common name                                                                                                                                         | Scientific Name                     | ESA listing status in Guam                | Occurrence in Guam                                                                                                        |
|                                                                                                                                                     |                                     |                                           | on Guam, Rota, Tinian and Saipan.                                                                                         |
| Hawksbill sea turtle<br>Haggan Karai                                                                                                                | <i>Eretmochelys imbricata</i>       | Endangered                                | Small population foraging around Guam and suspected low level around southern islands of CNMI. Low level nesting on Guam. |
| Leatherback sea turtle                                                                                                                              | <i>Dermochelys coriacea</i>         | Endangered                                | Occasional sightings around Guam. Not known to what extent they are present around Guam and CNMI                          |
| Olive ridley sea turtle                                                                                                                             | <i>Lepidochelys olivacea</i>        | Threatened                                | Range across Pacific:limited occurrence confirmed in the Mariana Archipelago                                              |
| North Pacific Loggerhead sea turtle                                                                                                                 | <i>Caretta caretta</i>              | Endangered<br>Distinct Population Segment | No known reports of loggerhead turtles in waters around the Mariana Archipelago.                                          |
| <b>Listed Marine Mammals</b>                                                                                                                        |                                     |                                           |                                                                                                                           |
| Blue whale                                                                                                                                          | <i>Balaenoptera musculus</i>        | Endangered                                | Extremely rare                                                                                                            |
| Fin whale                                                                                                                                           | <i>Balaenoptera physalus</i>        | Endangered                                | Infrequent sightings.                                                                                                     |
| Humpback whale-<br>Western North Pacific DPS                                                                                                        | <i>Megaptera novaeangliae</i>       | Endangered<br>DPS                         | Infrequent sightings. Winter in the CNMI.                                                                                 |
| Sei whale                                                                                                                                           | <i>Balaenoptera borealis</i>        | Endangered                                | Infrequent sightings.                                                                                                     |
| Sperm whale                                                                                                                                         | <i>Physeter macrocephalus</i>       | Endangered                                | Regularly sighted                                                                                                         |
| <b>Listed Sea Birds</b>                                                                                                                             |                                     |                                           |                                                                                                                           |
| Newell's Shearwater                                                                                                                                 | <i>Puffinus auricularis newelli</i> | Threatened                                | Rare visitor                                                                                                              |
| <b>Listed Sharks</b>                                                                                                                                |                                     |                                           |                                                                                                                           |
| Scalloped Hammerhead Shark – Indo-West Pacific DPS                                                                                                  | <i>Sphyrna lewini</i>               | Threatened<br>DPS                         | Common                                                                                                                    |

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Marina Archipelago (Guam)</b> |                             |                                   |                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------|---------------------------|
| <b>Common name</b>                                                                                                                                         | <b>Scientific Name</b>      | <b>ESA listing status in Guam</b> | <b>Occurrence in Guam</b> |
| <b>Listed Corals</b>                                                                                                                                       |                             |                                   |                           |
| None                                                                                                                                                       | <i>Acropora globiceps</i>   | Threatened                        | Present                   |
| None                                                                                                                                                       | <i>A. retusa</i>            | Threatened                        | Present                   |
| None                                                                                                                                                       | <i>Seriatopora aculeata</i> | Threatened                        | Present                   |

### ***Applicable ESA Coordination – Guam Crustacean Fisheries***

In a letter of concurrence covering the Fishery Management Plan (FMP) for the Crustacean Fisheries of the Western Pacific, dated September 28, 2007, NMFS determined crustacean fisheries of Guam that operate in accordance with regulations implementing the FMP (including the spiny and slipper lobster fisheries, and potential deepwater shrimp and Kona crab fisheries) were not likely to adversely affect ESA-listed species or their habitats.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based fishery ecosystem plans (FEPs) including the Mariana Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Crustacean Fisheries FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for the Mariana Archipelago. No substantial changes to the crustacean fishery around Guam have occurred since the FEP was implemented that have required further consultation under the ESA.

On September 22, 2011, NMFS and the US Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute "species" that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which encompasses waters around Guam, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, because loggerhead sea turtles, inclusive of the North Pacific Ocean DPS, are not known to nest or even transit the waters around the Mariana Archipelago, and because none of the alternatives considered would modify operations of Guam crustacean fisheries in any way, there is no additional information that would change the conclusions of the September 28, 2007 informal consultation. The informal consultation determined that the Guam crustacean fisheries were not likely to adversely affect ESA-listed marine species or their designated critical habitat.

On July 3, 2014, NMFS published a final rule that listed distinct population segments (DPSs) of scalloped hammerhead shark under the ESA (79 FR 38213). The threatened Indo-West Pacific DPS is the only DPS that occurs around Guam. On September 10, 2014, NMFS published a final

rule that listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Of the 20 listed species, three are thought to occur in the Mariana Archipelago.

In a letter of concurrence covering the Marianas FEP crustacean fisheries dated April 29, 2015, NMFS determined that continuation of the crustacean fishery in Guam was not likely to adversely affect any threatened or endangered species, including the newly listed DPS of scalloped hammerhead shark (79 FR 38214, July 3, 2014) and newly listed species of reef-building corals (79 FR 53852, September 10, 2014).

### Marine Mammals

Several whales, dolphins and porpoises occur in waters around Guam and are protected under the MMPA. Table 30 provides a list of marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago that have the potential to interact with the crustacean fishery. See Section 4.3 for more information on the MMPA determination. A single dugong, listed as endangered, was observed in Cocos Lagoon, Guam in 1975 (Randall et al. 1975). Several sightings were reported in 1985 on the southeastern side of Guam (Eldredge 2003). Since that time, however no reports of dugong sightings have been made.

**Table 30. Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago - Guam**

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)</b> |                                   |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>            |
| Humpback whale*                                                                                                      | <i>Megaptera novaeangliae</i>     |
| Sperm whale*                                                                                                         | <i>Physeter macrocephalus</i>     |
| Sei whale*                                                                                                           | <i>Balaenoptera borealis</i>      |
| Fin whale*                                                                                                           | <i>Balaenoptera physalus</i>      |
| Blue whale*                                                                                                          | <i>Balaenoptera musculus</i>      |
| Blainville's beaked whale                                                                                            | <i>Mesoplodon densirostris</i>    |
| Bottlenose dolphin                                                                                                   | <i>Tursiops truncatus</i>         |
| Bryde's whale                                                                                                        | <i>Balaenoptera edeni</i>         |
| Common dolphin                                                                                                       | <i>Delphinus delphis</i>          |
| Cuvier's beaked whale                                                                                                | <i>Ziphius cavirostris</i>        |
| Dwarf sperm whale                                                                                                    | <i>Kogia sima</i>                 |
| Dugong*                                                                                                              | <i>Dugong dugong</i>              |
| False killer whale                                                                                                   | <i>Pseudorca crassidens</i>       |
| Fraser's dolphin                                                                                                     | <i>Lagenodelphis hosei</i>        |
| Killer whale                                                                                                         | <i>Orcinus orca</i>               |
| Longman's beaked whale                                                                                               | <i>Indopacetus pacificus</i>      |
| Melon-headed whale                                                                                                   | <i>Peponocephala electra</i>      |
| Minke whale                                                                                                          | <i>Balaenoptera acutorostrata</i> |



| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)</b> |                                   |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>            |
| Pygmy killer whale                                                                                                   | <i>Feresa attenuate</i>           |
| Pygmy sperm whale                                                                                                    | <i>Kogia breviceps</i>            |
| Risso's dolphin                                                                                                      | <i>Grampus griseus</i>            |
| Rough-toothed dolphin                                                                                                | <i>Steno bredanensis</i>          |
| Short-finned pilot whale                                                                                             | <i>Globicephala macrorhynchus</i> |
| Sperm whale                                                                                                          | <i>Physeter macrocephalus</i>     |
| Spinner dolphin                                                                                                      | <i>Stenella longirostris</i>      |
| Spotted dolphin                                                                                                      | <i>Stenella attenuate</i>         |
| Striped dolphin                                                                                                      | <i>Stenella coeruleoalba</i>      |

\*Species is also listed under the Endangered Species Act.

Source: Eldredge 2003, Randall et al. 1975, (Guam DAWR 2005), Council website:  
<http://www.wpcouncil.org>

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). On April 8, 2016, NMFS published the final List of Fisheries (LOF) for 2016 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). Because there is no deepwater shrimp fishery in Guam, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii shrimp trap fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, for the purposes of this EA, NMFS concludes that a deepwater shrimp fishery in Guam that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals

### Sea Turtles

There are five Pacific sea turtles designated under the Endangered Species Act (ESA) as either threatened or endangered. Green sea turtles are most likely to frequent nearshore habitat when foraging around Guam and other areas in the Mariana Islands. The breeding populations of Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. Loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtles in the North Pacific Ocean were identified as part of a distinct population segment (North Pacific Ocean) and listed as endangered. These five species of sea turtles are highly migratory, or have a highly migratory phase in their life history (NMFS 2001).

Nesting surveys for green sea turtles have been done on Guam since 1973 with the most consistent data collected between 1990 and 2001 (Cummings 2002). Survey results show nesting in Guam to be generally increasing with 1997 having the most numerous nesting females at 60

(Cummings 2002). From October 1, 2006 through July 31, 2008, 55 green turtle nests were counted at various beaches during opportunistic surveys throughout Guam (Guam DAWR 2009). Aerial surveys done in 1990–2000 also found an increase in green sea turtle sightings around Guam with over 200 turtles counted in 2000 (Cummings 2002). There have been occasional sightings of leatherback turtles around Guam (Eldredge 2003); however, the extent to which leatherback turtles are present around the Mariana Archipelago is unknown. There are no known reports of loggerhead turtles in waters around the Mariana Archipelago (WPFMC 2009b). Olive ridley sea turtles are believed to occasionally transit the area (Starmer et al. 2005).

### Seabirds

The following seabirds are considered residents of Mariana Archipelago: wedge-tailed shearwater (*Puffinus pacificus*), white-tailed tropicbird (*Phaethon lepturus*), red-tailed tropicbird (*Phaethon rubricauda*), masked booby (*Sula dactylatra*), brown booby (*Sula leucogaster*), red-footed booby (*Sula sula*), white tern (*Gygis alba*), sooty tern (*Onychoprion fuscatus*), brown noddy (*Anous stolidus*), black noddy (*Anous minutus*), and the great frigatebird (*Fregata minor*). However, According to Wiles (2003), the only resident seabirds on Guam are the brown noddy and the white tern.

The following seabirds in Table 31 have been sighted and are considered visitors (some more common than others) to the Mariana Archipelago; short-tailed shearwater (*Puffinus tenuirostris*; common visitor), Newell’s shearwater (*Puffinus auricularis*; rare visitor), Audubon’s shearwater (*Puffinus iherminieri*), Leach’s storm-petrel (*Oceanodroma leucorhoa*), and the Matsudaira’s storm- Petrel(*Oceanodroma matsudairae*). Of these, only the Newell’s shearwater is listed as threatened under the ESA. There have been no sightings of the endangered short-tailed albatross (*Phoebastria albatrus*) in Guam although Guam s within the range of the largest breeding colony at Torishima, Japan (WPFMC 2009b).

There are no known interactions between seabirds and any of the Mariana Archipelago crustacean fisheries (WPFMC 2009b).

**Table 31. Seabirds occurring in the Mariana Archipelago (Guam)**

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                           |                                                      |
|-------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------|
|                                                                                                             | Common name               | Scientific name                                      |
| Vr                                                                                                          | Newell’s shearwater       | <i>Puffinus auricularis newelli</i> (ESA:Threatened) |
| Vr                                                                                                          | Wedge-tailed shearwater   | <i>Puffinus pacificus</i>                            |
| V                                                                                                           | Audubon’s shearwater      | <i>Puffinus iherminieri</i>                          |
| Vc                                                                                                          | Short-tailed shearwater   | <i>Puffinus tenuirostris</i> (common visitor)        |
| V                                                                                                           | Leach’s storm-petrel      | <i>Oceanodroma leucorhoa</i>                         |
| Vr                                                                                                          | Matsudaira’s storm-petrel | <i>Oceanodroma matsudairae</i>                       |
| Vr                                                                                                          | Red-footed booby          | <i>Sula sula</i>                                     |
| Vr                                                                                                          | Brown booby               | <i>Sula leucogaster</i>                              |
| V                                                                                                           | Masked booby              | <i>Sula dactylatra</i>                               |
| Vr                                                                                                          | White-tailed tropicbird   | <i>Phaethon lepturus</i>                             |

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                                |                             |
|-------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------|
|                                                                                                             | Common name                    | Scientific name             |
| Vr                                                                                                          | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>  |
| Vr                                                                                                          | Great frigatebird              | <i>Fregata minor</i>        |
| Vr                                                                                                          | Sooty tern                     | <i>Onychoprion fuscatus</i> |
| R                                                                                                           | Brown noddy                    | <i>Anous stolidus</i>       |
| V                                                                                                           | Black noddy                    | <i>Anous minutus</i>        |
| R                                                                                                           | White tern / Common fairy-tern | <i>Gygis alba</i>           |

Source: WPFMC 2009b

### ***Potential Effects of the Proposed ACL and AM specifications on Protected Species in Guam***

A small-scale fishery for deepwater shrimp occurred in the 1970s, but ended shortly thereafter. No fishing or landings have been reported since. There are currently no Federal crustacean permits issued for deepwater shrimp harvest in Guam and no reports of harvest reported from local waters in recent time. NMFS recognizes that it is possible for fishing to occur for deepwater shrimps around Guam and it could be conducted in much the same way as was done in the CNMI for a limited time. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

## **3.2 Crustaceans –Slipper Lobster Fisheries**

Lobsters are harvested on small scales throughout the inhabited islands of the Pacific Islands Region. The most common crustacean harvests include lobster species of the taxonomic groups Palinuridae (spiny lobsters) and Scyllaridae (slipper lobsters). The appearance of the slipper lobster is notably different than that of the spiny lobster. Uchida and Uchiyama (1986) provided a detailed description of the morphology of slipper lobsters (*S. squammosus* and *S. haanii*) and note that the two species are very similar in appearance and are easily confused.

### **3.2.1 Hawaii Lobster Fishery, Affected Resources and Potential Effects**

#### **3.2.1.1 Affected Target, Non-target and Bycatch Species in Hawaii**

In Hawaii, fisheries for lobsters target two species of spiny lobster and several species of slipper lobsters, although two species, the common slipper lobster (*Scyllarides squammosus*) and the ridgeback slipper lobster (*Scyllarides haanii*) are the principle species harvested. Gear types used in Hawaii's lobster fisheries include traps, nets and hand harvest, with the latter being the

preferred method in recent years and accounting for nearly 80 percent of reported landings between 1994 and 2004 (Kelly and Messer, 2005).

### ***Current impacts of the fishery: target, non-target and bycatch species***

Between 1966 and 2015, slipper lobster landings ranged from about 0–2,395 lb (Table 6). There is currently no Federal crustacean permit issued for lobsters in the MHI. Table 6 summarizes the reported commercial landing of slipper lobster landings between 1966 and 2015.

Hand harvest is the predominate gear employed in this fishery and results in no bycatch. Other gear types such as traps or nets could inadvertently catch other unintended species, but no information on composition or amount bycatch from these gear types is currently available.

### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in Hawaii***

#### Alternative 1: No Management Action

Under the no-action alternative, an ACL would not be specified for the Hawaii lobster fishery and AMs would not be necessary. The fishery would continue to catch lobsters in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by Hawaii DAR and under Federal permits, if required. The current level of catch under this alternative is expected to continue as it currently has in recent years with 2009 catch for slipper lobster being 102 lb. The status of Hawaii lobsters would continue to be subject to ongoing discussion and review by the Council and NMFS. The current level of lobster fishing is considered to be sustainable as there have been no trends showing decreasing catches.

#### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 280 lb for slipper lobsters in Hawaii for fishing years 2016 – 2018. The ACLs are equal to the ABC recommended by the Council's SSC and are set at the 75<sup>th</sup> percentile of the long-term catch. While MSY for the MHI lobsters are unknown, the impacts of an ACL specification and post-season AM calling for review of the Hawaii slipper lobster harvests are expected to be beneficial because it would establish a limit on the amount that is considered appropriate for long-term sustainability of slipper lobsters and would provide for additional management review of the fishery.

#### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 252 lb for slipper lobster and is expected to have impacts similar to Alternative 2.

Under all alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and

affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of lobsters that is considered appropriate for long-term sustainability of the resource. Although there is no ability to conduct in-season monitoring of catch relative to the proposed ACL, which precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded; the post-season review of catch relative to the proposed ACL is part of management of the lobster fishery that is designed to prevent lobster stocks from becoming overfished. The additional level of post season review of the catch provided under Alternatives 2 and 3 would provide an enhanced level of management review of the fishery compared with Alternative 1 and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

### **3.2.1.2 Affected Fishery Participants in Hawaii**

#### ***Overview of Hawaii's Lobster Fishery***

Prior to 1999, the majority of lobster production was attributed to the Northwestern Hawaiian Island spiny lobster trap fishery. However, since the closure of the NWHI lobster fishery in 1999 and prohibition on commercial fishing in the Marine National Monument in (DATE), fishing is now confined to the main Hawaiian Islands (MHI) and with more than 97% of the total catch of slipper lobsters coming from state waters (WPFMC 2011).

Between 1966 and 2010, slipper lobster landings ranged from about 40-900 lb with 4-12 commercial participants. Table 6 summarizes the reported commercial landing of slipper lobster landings between 1966 and 2010. There is currently no Federal crustacean permit issued for lobsters in the MHI which indicates there is no Federal slipper lobster fishing.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Hawaii's Lobster Fishery Participants***

##### **Alternative 1: No Management Action**

Under the no-action alternative, which is the baseline alternative, the Hawaii lobster fishery would not be managed using ACLs, AMs would not be needed, and fishing would continue to be monitored by Hawaii DAR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected. Lobster fishing is expected to continue to be sustainable as there have been no indications that the stocks are being depleted. Although the fishery has not been reported from Federal waters recently, any fisherman could obtain a permit and harvest slipper lobsters in Federal waters. Harvests are expected to remain low.

### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 280 lb for slipper lobster in fishing years 2016 – 2018. The ACLs are equal to the ABCs recommended by the Council's SSC and are set at the 75<sup>th</sup> percentile of the long-term catch.

The AM for the MHI lobster fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL were to be exceeded, NMFS, as recommended by the Council, would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

The ACL and AMs would not change the fishery. Effects would be to help provide for long-term sustainability of Hawaii slipper lobster resources which would benefit fishermen.

### Alternative 3: Specify ACL at 90% of ABC

Under this Alternative, NMFS would specify an ACL of 252 lb for slipper lobster in fishing years 2016 – 2018. The ACLs are 90% of the ABCs which is 280 lb for slipper lobster. ACLs at this level are expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

The ACL and AMs would not change the fishery. Effects would be to help provide for long-term sustainability of Hawaii slipper lobster resources which would benefit fishermen.

### **Discussion**

Regardless of which action alternative is selected, because there would be no in-season closure, the proposed ACLs and AMs would not result in a change to fishing. The additional post-season review and adjustment to the ACL, as warranted by the effects on fishing on stocks, are designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants.

#### **3.2.1.3 Affected Protected Resources in Hawaii**

Section 3.1.1.3 describes protected resources that have the potential to interact with the Hawaii slipper lobster fishery. It also describes ESA consultations and MMPA determinations that have been made regarding all crustacean fisheries in Federal waters around Hawaii.

#### ***Potential Effects of the Proposed ACL and AM Specifications for the Hawaii Slipper Lobster Fishery on Protected Species in Hawaii***

None of the alternatives considered would modify operations of the Hawaii slipper lobster fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the lobster fishery using an ACL and AM would promote long term sustainability of the fishery stock. As fishery managers do not have the ability to conduct in-season tracking of catch towards an ACL, there is no in-season closure being proposed. Therefore, participants in the Hawaii lobster fishery would continue to fish as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, neither of the action alternatives would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected species or change effects on critical habitat.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the Hawaii slipper lobster fishery were found to be occurring in or near areas that are designated as critical habitat in the future, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

### **3.2.2 American Samoa Slipper Lobster Fishery, Affected Resources and Potential Effects**

#### **3.2.2.1 Affected Target, Non-target and Bycatch Species in American Samoa**

Slipper lobsters do not appear in landings records in American Samoa; however, an SSC member from American Samoa reported at the 116<sup>th</sup> SSC meeting that some slipper lobster are harvested but the catch is not identified to the species level in the DMWR fishery monitoring creel survey programs (i.e., they are listed as “lobsters”). There is currently no Federal crustacean permit issued for lobster harvest in Federal waters around American Samoa.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in American Samoa***

##### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for the American Samoa lobster fishery and AMs would not be necessary. The fishery would continue to catch lobsters in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by American Samoa DMWR. Catch for slipper lobster would remain un-quantified. The status of American Samoa lobsters would continue to be subject to ongoing discussion and review by the Council and NMFS. The current level of lobster fishing is considered to be sustainable as there have been no trends showing decreasing catches or lobster size. Slipper lobster fishing is done through hand collection and there is no known bycatch or non-target catch in this fishery.

### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 30 lb for slipper lobsters for American Samoa in fishing years 2016 – 2018. This ACL is equal to the ABC. ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.2.

While MSY for American Samoa lobsters is unknown, the impacts of an ACL specification for American Samoa slipper lobster are expected to be beneficial because it would establish a limit related to sustainable harvest levels. An AM would provide additional annual monitoring by the Council and NMFS compared with the no-action Alternative.

This alternative would not change fishing for slipper lobsters around American Samoa, but would result in greater monitoring of catches by the Council than under the no-action alternative. There would be no change to non-target and target stocks.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 27 lb for slipper lobster and is expected to have impacts similar to Alternative 2, except that the ACL would be more likely to be exceeded under Alternative 3.

While MSY for American Samoa lobsters is unknown, the impacts of an ACL specification for American Samoa slipper lobster are expected to be beneficial because it would establish a limit related to sustainable harvest levels. An AM would provide additional annual monitoring by the Council and NMFS compared with the No-action Alternative. There would be no change to non-target and target stocks.

The American Samoa slipper lobster fishery has been operating with ACLs and AMs since 2012. The proposed ACLs are [similar to?] the 2015 ACL. The same AM has been in place since \_\_\_\_ (year).

The specification on an ACL and AM is not expected to change fishing under either action alternative.

Under both action alternatives considered, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, which could include a downward adjustment to the ACL in the subsequent fishing year.

The effects of an ACL specification are expected to be beneficial because it would establish a limit on the amount of lobster that may be harvested annually. There is no ability to conduct in-season monitoring, which precludes in-season measures (such as a fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of fishery management that is designed to prevent the fishery from becoming



overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

### **3.2.2.2 Affected Fishery Participants in American Samoa**

#### ***Overview of American Samoa's Lobster Fishery***

Aside for catch, there is no information available on American Samoa's lobster fishery in terms of participation and effort. Spiny lobster (*Panulirus penicillatus*) is the most-often targeted species, and is usually speared at night by free divers who are hunting for finish on the outer reef slope within territorial waters. The number of participants in the fishery is unknown. No economic data is available for slipper lobsters. We assume that slipper lobsters are primarily harvested in territorial waters for personal consumption and that fishermen comply with local restrictions on their harvest. There are likely few commercial fishermen targeting slipper lobsters in Federal waters around American Samoa.

#### ***Potential Effects of the Proposed ACL and AM Specifications on American Samoa's Lobster Fishery Participants***

##### Alternative 1: No Management Action

Under the no-action alternative, which is the baseline alternative, the American Samoa lobster fishery would not be managed using ACLs, AMs would not be needed, and fishing would continue to be monitored by American Samoa DMWR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected. Fishing would continue to be at low levels in Federal waters.

##### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 30 lb for slipper lobster in American Samoa in fishing years 2016 – 2018. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.2 and is a level of harvest that would be sustainable over the long term.

The AM for the American Samoa lobster fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Because there is no fishery closure, specification of the ACL and AM under Alternative 2 is not expected to affect fishing or participation in the fishery and there would be no change from fishing described under the baseline.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 27 lb for slipper lobsters in fishing years 2016 – 2018. The ACLs are 90% of the ABCs which is 30 lb for slipper lobster. ACLs at this level are expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

Because there is no fishery closure, specification of the ACL and AM under Alternative 2 is not expected to affect fishing or participation in the fishery and there would be no change from fishing described under the baseline.

### ***Discussion***

Regardless of which action alternative is selected, because there is no in-season closure, the proposed ACL and AM would not result in a change to the manner in which lobster fishing is conducted. The additional post-season review and adjustment to the ACL, as warranted by the effects on fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants.

#### **3.2.2.3 Affected Protected Resources in American Samoa**

Section 3.1.2.3 describes protected resources that have the potential to interact with the American Samoa lobster fishery. It also describes ESA consultations that have been made regarding all crustaceans, including lobster, fisheries in Federal waters around American Samoa.

On April 8, 2016, NMFS published the final List of Fisheries (LOF) for 2016 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). However, due to the nature of this fishery as primarily a near-shore hand/spear fishery with relatively small levels of commercial harvest, NMFS has not classified this fishery in its LOF; however, NMFS classifies the similar Hawaii lobster dive, net and trap fisheries as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, for the purpose of this EA, NMFS concludes that the lobster fishery in American Samoa is comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in American Samoa***

None of the action alternatives considered would modify operations of the American Samoa lobster fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the lobster fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1) that is intended to promote long term sustainability of the fishery stock. Additionally, there is currently no ability to conduct in-season tracking of catch in relation to an ACL which precludes an in-season closure. This means participants in the American Samoa lobster fishery would continue to fish for lobsters as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

### **3.2.3 CNMI Lobster Fishery, Affected Resources and Potential Effects**

#### **3.2.3.1 Affected Target, Non-target and Bycatch Species in the CNMI**

The CNMI lobster fishery primarily targets spiny lobsters which are harvested by hand, with scuba or by free diving. This fishery occurs almost exclusively inside of three nautical miles of the inhabited southern islands of Saipan, Tinian and Rota although, anecdotal information indicates that in the northern islands on the reef surrounding Farallon de Medinilla, bottomfish fishermen anchored overnight occasionally dive for lobsters (WPFMC 2011; NMFS 2009). Slipper lobster catches have only recently been reported within the past several years with catches of 7 lb, 371 lb, and 165 lb reported in 2007, 2008 and 2009, respectively (WPacFIN unpublished data). There is currently no Federal crustacean permit issued for lobster harvest in CNMI and no catch limit on lobsters.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in the CNMI***

##### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for the CNMI lobster fishery and AMs would not be necessary. The fishery would continue to catch lobsters in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by CNMI DFW. The current level of slipper lobster catch under this alternative is expected to remain small. The status of CNMI lobsters would continue to be subject to ongoing discussion and review by the Council and NMFS. The current level of catch for both species is not likely to result in overfishing as there are no clear trends indicating that lobster stocks in the CNMI have been declining. There are no adverse effects to non-target species or bycatch associated with the CNMI lobster fishery which is target-specific.

### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 60 lb for slipper lobster in fishing years 2016 – 2018. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.3.

Landings of slipper lobsters are beginning to be reported with landings of 371 lb and 165 lb occurring in 2007 and 2008, respectively. Therefore, there is a high potential that the ACLs proposed under this alternative will be exceeded in each of the three years.

While MSY for CNMI lobsters is unknown, the impacts of an ACL specification for CNMI slipper lobster are expected to be beneficial because it would help to establish a limit at which harvests are sustainable.

Given that recent harvests exceed the ACL, it is likely that the ACL will be exceeded. With no-inseason closure, there is not likely to be a change in fishing. The effects of Alternative on slipper lobsters in the CNMI are expected to be no different than under the no-action alternative.

### Alternative 3: Specify ACL at 90% of ABC

Under this Alternative, NMFS would specify an ACL of 54 lb for slipper lobster and is expected to have impacts similar to Alternative 2.

Given that recent harvests exceed the ACL, it is likely that the ACL will be exceeded. With no-inseason closure, there is not likely to be a change in fishing. The effects of Alternative on slipper lobsters in the CNMI are expected to be no different than under the no-action alternative.

Regardless of which action alternative is selected, because there is no in-season closure, the proposed ACL and AM would not result in a change to fishing. The additional post-season review and adjustment to the ACL, as warranted by the effects of fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants. There would be no change to the impacts of the lobster fishery on non-target species.

### **3.2.3.2 Affected Fishery Participants in the CNMI**

#### ***Overview of CNMI's Lobster Fishery***

Aside for catch, there is no information available on CNMI's lobster fishery in terms of participation and effort. No economic data is available for slipper lobsters.

## ***Potential Effects of the Proposed ACL and AM Specifications on CNMI's Lobster Fishery Participants***

### **Alternative 1: No Management Action**

Under the no-action alternative, which is the baseline alternative, the CNMI lobster fishery would not be managed using annual catch limits, accountability measures would not be needed, and fishing would continue to be monitored by CNMI DFW, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected.

### **Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, NMFS would specify an ACL of 60 lb for slipper lobster in fishing years 2016 – 2018. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.3.

Landings of slipper lobsters are beginning to be reported with landings of 371 lb and 165 lb occurring in 2007 and 2008, respectively. Therefore, it is likely that the ACLs proposed under this alternative would be exceeded in each of the three years. With no in-season management measure being proposed, this alternative is not expected to change fishing.

The AM for the CNMI lobster fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

### **Alternative 3: Specify ACL at 90% of ABC**

Under this alternative, NMFS would specify an ACL of 54 lb for slipper lobsters in fishing years 2016 – 2018. The ACLs are 90% of the ABCs which is 60 lb for slipper lobster. ACLs at this level are expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

### **3.2.3.3 Affected Protected Resources in the CNMI**

Section 3.1.3.3 describes protected resources that have the potential to interact with the lobster fishery in the CNMI. It also describes ESA consultations that have been made regarding all crustacean, including lobster, fisheries in Federal waters around the CNMI.

On April 8, 2016, NMFS published the 2016 List of Fisheries (LOF) which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). However, due to

the nature of this fishery as primarily a near-shore hand harvest fishery with relatively small levels of commercial harvest, NMFS has not classified this fishery in its LOF; however, NMFS classifies the similar Hawaii lobster dive, net and trap fisheries as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, for the purpose of this EA, NMFS concludes that the lobster fishery in the CNMI is comparable to the Category III classification in Hawaii and is one with a low likelihood of incidentally taking marine mammals.

### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in the CNMI***

None of the alternatives considered would modify operations of the CNMI lobster fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the lobster fishery using an ACL and AM is intended to promote long term sustainability of the fishery stock. Additionally, the current inability of in-season tracking of catch towards an ACL prevents in-season closure ability, meaning participants in the CNMI slipper lobster fishery would continue as described in Alternative 1.

Because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

## **3.2.4 Guam Slipper Lobster Fishery, Affected Resources and Potential Effects**

### **3.2.4.1 Affected Target, Non-target and Bycatch Species in Guam**

Little is known about Guam's crustacean fisheries. Most fishing for crustaceans around Guam occurs in territorial waters by hand in a subsistence or recreational context. There are no documented landings of slipper lobsters in Guam. Additionally, there is currently no Federal crustacean permit issued for lobster harvest in Guam.

## ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in Guam***

### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for the Guam lobster fishery and AMs would not be necessary. The fishery would continue to catch lobsters in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by Guam DAWR.

The current level of catch for both species is not likely to result in overfishing as there are no trends indicating that slipper lobster stocks in Guam have been declining.

There are no adverse impacts to non-target species or bycatch associated with the Guam lobster fishery, which is target-specific.

### **Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this Alternative, NMFS would specify an ACL of 20 lb for slipper lobsters in fishing year 2016 – 2018. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.4.

While MSY for Guam lobsters is unknown, the impacts of an ACL specification for Guam slipper lobster are expected to be beneficial because it would establish a limit on the amount that may be harvested annually. Even without an in-season management measure, lobster harvests on Guam would continue to be subject to local management measures that help ensure the fishery is sustainable.

Because there would be no change to the fishery, effects of Alternative 2 would be the same as under Alternative 1, and harvests of slipper lobsters will continue to be sustainable, despite an ACL that is lower than likely harvests.

There would be no changes to bycatch or non-target species, as there are no issues associated with these in the Guam lobster fishery.

### **Alternative 3: Specify ACL at 90% of ABC**

Under this Alternative, NMFS would specify an ACL of 18 lb for slipper lobster and is expected to have impacts similar to Alternative 2.

Regardless of which action alternative is selected, because there is no in-season closure, the proposed ACL and AM would not result in a change to lobster fishing in Guam. The additional post-season review and adjustment to the ACL, as warranted by the effects of fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants.

### **3.2.4.2 Affected Fishery Participants in Guam**

#### ***Overview of Guam's Lobster Fishery***

Aside from catch, there is no information available on Guam's lobster fishery in terms of participation and effort. The number of participants in the fishery is unknown. No economic data is available for slipper lobsters.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Guam's Lobster Fishery Participants***

##### Alternative 1: No Management Action

Under the no-action alternative, which is the baseline alternative, the Guam lobster fishery would not be managed using ACLs, AMs would not be needed, and fishing would continue to be monitored by Guam DAWR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected.

##### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 20 lb for slipper lobster on Guam in fishing years 2016 – 2018. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.4.

The AM for the Guam lobster fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL were to be exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

##### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 18 lb for slipper lobster in fishing year 2016 – 2018. The ACLs are 90% of the ABCs which is 20 lb for slipper lobster. ACLs at this level are expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

Regardless of which action alternative is selected, because there is no in-season closure, the proposed ACL and AM would not result in a change to fishing. The additional post-season review and adjustment to the ACL, as warranted by the effects of fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants.



### **3.2.4.3 Affected Protected Resources in Guam**

Section 3.2.4.3 describes protected resources that have the potential to interact with the Guam lobster fishery. It also describes ESA consultations that have been made regarding all crustacean, including lobster, fisheries in Federal waters around Guam.

On April 8, 2016, NMFS published the 2016 List of Fisheries (LOF) which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). However, due to the nature of this fishery as primarily a near-shore hand harvest fishery with relatively small levels of commercial harvest, NMFS has not classified this fishery in its LOF; however, NMFS classifies the similar Hawaii lobster dive net and trap fisheries as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that the lobster fishery in Guam would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in Guam***

None of the alternatives considered would modify operations of the Guam lobster fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the Guam lobster fishery is intended to promote long term sustainability of the fishery stocks. However, the current inability of in-season tracking of catch towards an ACL prevents in-season closure ability, meaning participants in the Guam lobster fishery would continue to harvest lobsters as they do under the current management regime. Because this fishery is currently subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the preferred alternative (Alternative 2), would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If, at any time, the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

### **3.3 Crustaceans – Kona Crab Fisheries**

#### **3.3.1 Hawaii Kona Crab Fishery, Affected Resources and Potential Effects**

##### **3.3.1.1 Affected Target, Non-target and Bycatch Species in Hawaii**

The Kona crab, *Ranina ranina*, is found in the MHI and the NWHI at depths from 24 to 115 m.

Kona crab fishing in Hawaii usually involves setting strings of baited tangle-nets on sandy bottom habitat for an average soak time of one hour (Kennelly and Craig 1989). Nets are set during day-trips from small boats (10-12 m in length) (Brown 1985). The net frames are built from ½ cm wire approximately 1 meter across. This frame is then covered in 1-2 layers of small gauge mesh netting to entangle the crabs. There is some variation in size and type of material used to construct tangle nets (Onizuka 1972; Kennelly and Craig 1989). Upon retrieval, crabs are untangled; female and undersized crabs are released.

While there are no Federal permit and reporting requirements for Kona crab fishing in the EEZ, fishermen are required to have Hawaii Commercial Marine Licenses (CMLs) for commercial Kona crab harvest. The Kona crab fishery is subject to State regulations that include a prohibition on taking females, no taking of crabs less than 4 inches, and a closed season from June to August. Commercial landings of Kona crab peaked in 1972 with approximately 69,000 lb landed. However, landings have declined since that time with catches between 2010 and 2015 ranging between and 11,807 lb (2010) and 2,332 lb (2015). During this time period, the number of CML holders catching Hawaii Kona crab declined from 40 to 26. Table 8 summarizes Kona crab participation and landings in Hawaii from 1950 to 2015.

By the nature of the fishing method and fishing location on sandy bottoms, the Hawaii Kona crab incidental harvest of non-target species is minimal. Since the State of Hawaii implemented a prohibition on the retention of female Kona crabs, the only bycatch that occurs are regulatory discards of female crabs; however, the level of discards is currently unavailable.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in Hawaii***

##### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for the Hawaii Kona crab fishery and AMs would not be necessary. The fishery would continue to catch Kona crab in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by Hawaii DAR. The current level of catch under this alternative is expected to continue as it currently has in recent years with catch ranging between 11,807 lb (2010) and 2,332 lb (2015). Based on existing information, it is uncertain whether catches at these levels would be sustainable or would result in overfishing. The stock status of Hawaii Kona crab would continue to be subject to ongoing discussion and review by the Council and NMFS.

### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 27,600 lb for Hawaii Kona crab in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC and is set at the 75<sup>th</sup> percentile of the long-term catch. The ACL is higher than recent catch levels and is not expected to be exceeded. While MSY for Hawaii Kona crab is unknown, and while the current stock status has not been rigorously analyzed, and is uncertain, establishing a limitation on catch may provide for some conservation of the stock than an unconstrained fishery. The ACL and AM are expected to provide additional management review (compared with Alternative 1) to promote sustainable harvests of Kona crabs. This alternative would not change the effects on non-target species. This alternative would not change effects on regulatory discards of female crabs, which would remain unknown. Based on existing information, it is uncertain whether catches at this level would be sustainable or would result in overfishing.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 24,840 lb and is expected to have impacts similar to Alternative 2. The ACL and AM are expected to provide additional management review (compared with Alternative 1) to promote sustainable harvests of Kona crabs. This alternative would not change the effects on non-target species. This alternative would not change effects on regulatory discards of female crabs, which would remain unknown.

Under both action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of this ACL specification are expected to slightly more beneficial than alternatives 1 and 2 because it would establish a lower limit on the amount of Kona crab that may be harvested annually. However, based on existing information, it is uncertain whether catches at this level would be sustainable or would result in overfishing. While the lack of in-season catch monitoring ability precludes in-season measures (such as a fishery closure) to prevent the ACL from being exceeded, the post-season review of catch relative to the proposed ACL is part of the fishery management that is designed to prevent the Kona crab stock from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed. The proposed ACLs and AMs would not affect bycatch or non-target catch in this fishery.

### **3.3.1.2 Affected Fishery Participants in Hawaii**

#### ***Overview of Hawaii's Kona Crab Fishery***

Participation in the fishery varies from year to year. Over the past 15 years, the number of CML holders in the Hawaii Kona crab fishery has steadily declined from 85 commercial fishermen in 2000, to a low of 26 fishermen in 2015. In the last three years, there were 30 or fewer CML holders participating in the fishery (see Table 8). A substantial amount (30–75%) of Hawaii Kona crab catches are from the EEZ or Federal waters, which is likely Penguin Bank south east of Oahu (NMFS 2011).

Penguin Bank accounted for more than 50% of the total landings in the fishery from 1950 through 2009; although Penguin Bank accounts for less than 20% of all trips taken for Kona crab, it has a significantly higher CPUE and larger crabs (Thomas 2011). From 2002-2009, only 3 fishers accounted for more than 50% of the trips.

In 2010 (the last year when price data was available), the commercial price per pound for Kona crab in Hawaii averaged \$4.82. In that year, there were 40 participants in the fishery. Based on a catch of 11,807 lb, the annual commercial value of the fishery in 2009 was \$56,910.

Assuming that three of the 40 participants accounted for half of the total landing in 2010, these fishers would have caught 5,903 lb of Kona crab with a value of \$ 9,484 per fisher. Assuming participation and effort of the remaining 37 participants were equal, each would have caught 159 lb of Kona crab valued at \$769 per fisher.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Hawaii's Kona Crab Fishery Participants***

##### **Alternative 1: No Management Action**

Under the no-action alternative, which is the baseline alternative, the Hawaii Kona crab fishery would not be managed using annual catch limits, accountability measures would not be needed, and fishing would continue unconstrained and would be monitored by Hawaii DAR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected. Under this alternative, NMFS expects fishing participation would remain relatively low and variable, with no more than 30 participants. NMFS also expects catches to continue as it currently has in recent years, with catch ranging between and 11,807 lb (2010) and 2,332 lb (2015).

##### **Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this Alternative, NMFS would specify an ACL of 27,600 lb for Hawaii Kona crab in fishing year 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC and is set at the 75<sup>th</sup> percentile of the long-term catch. This ACL is the same ACL NMFS specified for the fishery in each 2012,-2015.. Under this alternative, NMFS does not expect the fishery

would reach the ACL and, therefore, the effects on fishery participants are expected to be similar to Alternative 1.

The AM for the Hawaii Kona crab fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

### Alternative 3: Specify ACL at 90% of ABC

Under this Alternative, NMFS would specify an ACL of 24,840 lb for Hawaii Kona crab in fishing year 2016 – 2018. The ACL is 90% of the ABC which is 27,600 lb. While the ACL under this alternative is lower than that of Alternative 2, NMFS expects an ACL at this level would have impacts that are generally similar to Alternative 2. This is because, based on fishery performance in recent years, NMFS does not expect the fishery would catch 24,804 lb.

#### **3.3.1.3 Affected Protected Resources in Hawaii**

Section 3.1.1.3 describes protected resources that have the potential to interact with the Hawaii Kona crab fishery. It also describes ESA consultations and MMPA determinations that have been made regarding all crustacean fisheries in Federal waters around Hawaii.

None of the alternatives proposed are expected to change the conduct of the Hawaii Kona crab fishery in any manner that would result in interactions with protected species in any manner not covered by existing consultations.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in Hawaii***

None of the alternatives considered would modify operations of the Hawaii Kona crab fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the Kona crab fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1) that is intended to promote long term sustainability of the fishery stock. Additionally, there is currently no means of in-season tracking of catch in relation to an ACL, which precludes the ability to implement an in-season closure. This means participants in the Hawaii Kona crab fishery would continue to fish for Kona crab as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2)

would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

### **3.3.2 American Samoa Kona Crab Fishery, Affected Resources and Potential Effects**

#### **3.3.2.1 Affected Target, Non-target and Bycatch Species in American Samoa**

There is no record of any fishery for Kona crab in American Samoa. However, due to their documented presence in the Territory, they are included in the crustacean management unit of the American Samoa FEP. Currently, there are no Federal permit requirements for Kona crab in the EEZ around American Samoa.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in American Samoa***

##### Alternative 1: No Management Action

Under the no-action alternative, an ACL would not be specified for the American Samoa Kona crab fishery and AMs would not be necessary. There has never been a Kona crab fishery in American Samoa, so currently there is no catch data. If catches did occur, they would be documented through fisheries monitoring programs administered by American Samoa DMWR. Under the no-action Alternative the status of American Samoa Kona crab would continue to be subject to discussion and review by the Council and NMFS. The Kona crab resource in American Samoa is assumed to be healthy and fishing sustainable.

##### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 3,200 lb for American Samoa Kona crab in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.3.2.

To date, there has never been a fishery for Kona crab in American Samoa. If a fishery were to develop, however, the ACL is not expected to change the manner in which the fishery would be conducted under the no-Action alternative. The AM does not include a fishery closure, rather a post-season review. Over time, management of a Kona crab fishery in American Samoa with ACLs and the AM is designed to prevent overfishing of the resource.

Effects on Kona crab stocks would be the same as under Alternative 1, and the stock would continue to be healthy and fishing sustainable.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 2,880 lb for American Samoa Kona crab in fishing years 2016 – 2018. The impacts under Alternative 3 would be identical to Alternative 2.

Under both action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of Kona crab that could be harvested annually. There is no ability to monitor in-season catches which precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is designed to prevent the Kona crab stock from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

#### **3.3.2.2 Affected Fishery Participants in American Samoa**

##### ***Overview of American Samoa's Kona Crab Fishery***

There is no record of a fishery for Kona crab in American Samoa.

##### ***Potential Effects of the Proposed ACL and AM Specifications on American Samoa's Kona Crab Fishery Participants***

To date, there has never been a fishery for Kona crab in American Samoa. Therefore, there is no fishery participant that could be affected by any three alternatives considered.

#### **3.3.2.3 Affected Protected Resources in American Samoa**

Section 3.1.2.3 describes protected resources that have the potential to interact with an American Samoa Kona crab fishery should one develop. It also describes ESA consultations that have been made regarding all crustacean, including Kona crab, fisheries in Federal waters around American Samoa.

On April 8, 2016, NMFS published the 2016 List of Fisheries (LOF) which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). Because there is no Kona crab fishery in American Samoa, NMFS has not classified this potential fishery in its

LOF; however, NMFS classifies the similar Hawaii Kona crab loop net fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a Kona crab fishery in American Samoa that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in American Samoa***

To date, there has never been a Kona crab fishery around American Samoa. Even if one were to develop, none of the action alternatives to specify an ACL and implement post-season review, are expected to create a fishery or modify the crab fishery or any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

### **3.3.3 CNMI Kona Crab Fishery, Affected Resources and Potential Effects**

#### **3.3.3.1 Affected Target, Non-target and Bycatch Species in the CNMI**

There is no record of a fishery for Kona crab in CNMI. However, due to their documented presence, they are included in the crustacean management unit of the Mariana Archipelago FEP. Currently, there are no Federal permit requirements for Kona crab in the EEZ around CNMI.

### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in the CNMI***

#### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for the CNMI Kona crab fishery and AMs would not be necessary. There has never been a Kona crab fishery in CNMI, so currently there is no catch data. If catches did occur, they would be documented through fisheries monitoring programs administered by CNMI DFW. Under the no-action alternative the status of CNMI Kona crab would continue to be subject to discussion and review by the Council and NMFS.

#### **Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, NMFS would specify an ACL of 6,300 lb for CNMI Kona crab in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.3.3.

To date, there has never been a fishery for Kona crab in CNMI. If a fishery were to develop, however, the ACL is not expected to change the manner in which the fishery would be conducted under the no-action alternative. The AM does not include a fishery closure, rather a post-season review. Over time, management of a Kona crab fishery in CNMI is designed to prevent overfishing of the resource.



### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 5,670 lb for CNMI Kona crab in fishing year 2016 – 2018. The impacts under Alternative 3 would be identical to Alternative 2.

Under both action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the Kona crab stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of Kona crab that may be harvested annually where none previously existed. There is no ability to monitor in-season catches which precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of the management of the fishery and is designed to prevent the Kona crab stock from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

#### **3.3.3.2 Affected Fishery Participants in the CNMI**

##### ***Overview of CNMI's Kona Crab Fishery***

There is no record of any fishery for Kona crab in the CNMI.

##### ***Potential Effects of the Proposed ACL and AM Specifications on CNMI's Kona Crab Fishery Participants***

To date, there has never been a Kona crab fishery in the CNMI. Even if one were to develop, none of the action alternatives to specify an ACL and implement post-season review, are expected to create a fishery or modify the crab fishery or any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

#### **3.3.3.3 Affected Protected Resources in the CNMI**

Section 3.1.1.3 describes protected resources that have the potential to interact with a Kona crab fishery in the CNMI should a fishery develop. It also describes ESA consultations that have been made regarding all crustacean, including Kona crab, fisheries in Federal waters around the CNMI.

On April 8, 2016, NMFS published the 2016 List of Fisheries (LOF) which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). Because there is

no Kona crab fishery in the CNMI, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii Kona crab loop net fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a Kona crab fishery in the CNMI that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in the CNMI***

To date, there has never been a Kona crab fishery around the CNMI. Even if one were to develop, none of the action alternatives to specify an ACL and implement post-season review, are expected to create a fishery or modify the crab fishery or any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

### **3.3.4 Guam Kona Crab Fishery, Affected Resources and Potential Effects**

#### **3.3.4.1 Affected Target, Non-target and Bycatch Species in Guam**

There is no record of any fishery for Kona crab in Guam. However, due to their documented presence, they are included in the crustacean management unit of the Mariana Archipelago FEP. Currently, there are no Federal permit requirements for Kona crab in the EEZ around Guam.

### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in Guam***

#### Alternative 1: No Management Action

Under the no-action alternative, an ACL would not be specified for the Guam Kona crab fishery and AMs would not be necessary. There has never been a Kona crab fishery in Guam, so currently there is no catch data. If catches did occur, they would be documented through fisheries monitoring programs administered by Guam DAWR. Under the no-action Alternative the status of Kona crab would continue to be subject to discussion and review by the Council and NMFS.

#### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 1,900 lb for Guam Kona crab in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.3.4.

To date, there has never been a fishery for Kona crab in Guam, and consequently there would be no impacts to target, non-target or bycatch species from establishment of an ACL and AM for the fishery. If a fishery were to develop, however, the ACL is not expected to change the manner in which the fishery would be conducted under the no-Action alternative. The AM does not

include a fishery closure, rather a post-season review. Over time, management of a Kona crab fishery in Guam is designed to prevent overfishing of the resource.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 1,729 lb for Guam Kona crab in fishing years 2016 – 2018. The impacts under Alternative 3 would be identical to Alternative 2.

Under both action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of Kona crab that may be harvested annually where none previously existed. There is no ability to monitor in-season catches which precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of the management of the fishery and is designed to prevent the Kona crab stock from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

### **3.3.4.2 Affected Fishery Participants in Guam**

#### ***Overview of Guam's Kona Crab Fishery***

There is no record of any fishery for Kona crab in Guam.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Guam's Kona Crab Fishery Participants***

To date, there has never been a fishery for Kona crab in the Guam. Therefore, there is no fishery participant that could be affected by any three alternatives considered.

### **3.3.4.3 Affected Protected Resources in Guam**

Section 3.1.1.4 describes protected resources that have the potential to interact with a Guam Kona crab fishery should a fishery develop. It also describes ESA consultations that have been made regarding all crustacean, including Kona crab, fisheries in Federal waters around Guam.

On April 8, 2016, NMFS published the 2016 List of Fisheries (LOF) which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). Because there is

no Kona crab fishery in Guam, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii Kona crab loop net fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a Kona crab fishery in Guam that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in Guam***

To date, there has never been a Kona crab fishery around Guam. Even if one were to develop, none of the action alternatives to specify an ACL and implement post-season review, are expected to create a fishery or modify the crab fishery or any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

### **3.4 Precious Corals**

In general, Pacific Island precious corals share several ecological characteristics: they lack symbiotic algae in tissues (they are ahermatypic) and most are found in deep water below the euphotic zone; they are suspension feeders (they require external water motion to bring them food); and many are fan shaped to maximize contact surfaces with particles or microplankton in the water column.

All precious corals are slow growing and are characterized by low rates of mortality and recruitment. Natural populations are relatively stable, and a wide range of age classes is generally present. This life history pattern (longevity and many year classes) has two important consequences with respect to exploitation. First, the response of the population to exploitation is drawn out over many years. Second, because of the great longevity of individuals and the associated slow rates of turnover in the populations, a long period of reduced fishing effort is required to restore the ability of the stock to produce at the MSY if a stock has been over exploited for several years.

Precious corals MUS are taxonomically classified as members of the phylum Cnidaria, which includes all of the corals, hydroids, jellyfish and sea anemones. Within the Cnidaria, precious corals are placed in the class Anthozoa, which includes the corals, soft corals and sea anemones, all characterized by having a relatively complicated gut compared with other cnidarians. Living tissues are composed of polyps, each with a mouth surrounded by tentacles. Some species are composed of a single polyp while others are colonies of many polyps.

Within the Anthozoa, precious corals are members of three orders in two subclasses: 1) subclass Octocorallia (or Alcyonaria), order Gorgonacea and 2) subclass Hexacorallia (or Zoantharia), and orders Zoanthidae and Antipathidae. Members of the subclass Octocorallia are characterized by their eight tentacles. All octocorals are colonial, with each colony consisting of numerous polyps growing out of, and constituting the body of, the animal. Octocoral include the pink corals of the genus *Corallium* and the bamboo corals of the genera *Lepidisis* and *Acanella*.

Other anthozoans have their tentacles in multiples of six and are thus termed the Hexacorallia, or hexacorals. Hexacoral MUS include gold corals of the order Zoanthidea and black corals of the order Antipathidae.

Red, pink and bamboo octocorals are of the Order *Gorgonacea*. They are commonly called fan corals because their growth resembles that of a plant, with a main trunk fastened to the substrate, and lateral branching stems which may be in the same plane. Gorgonian colonies are all derived from one another and they are all one gender. The age at reproductive maturity is 12-13 years for *Corallium secundum* (WPFMC 2008).

Adult pink, bamboo and gold corals are found in deep water (100-1500 m) on solid substrate where bottom currents are strong. This is in contrast to black corals, discussed below, which also typically occur on solid substrate, but generally at depths between 30 and 110m.

Zoanthidea are a small group of hearty, solitary, sometimes colonial, anemone-like anthozoans that lack a skeleton. Gold corals (*Gerardia* sp., *Narella* sp., *Calyptrophora* sp., and *Callogorgia gilberti*) are Zoantharian corals that belong to the family Parazoanthus. Many are parasitic species that commonly overgrow other gorgonian corals. *Gerardia* seems to prefer overgrowing the bamboo corals (*Acanella* spp.).

The Pacific Islands Region's gold coral fishery is currently dormant, although research on gold coral remains active. Recent research by Roark et al. (2006) suggests that the growth rates and age estimates for pink and gold are significantly slower and older than those used in estimating MSY. Therefore, in 2008, the Council recommended and NMFS implemented a five year moratorium on the harvest of gold coral in the Western Pacific Region (73 FR 47098, August 13, 2008). On May 29, 2013, the moratorium was extended five more years, through June 30, 2018 (78 FR 32181).

### **3.4.1 Hawaii Black Coral Fishery, Affected Resources and Potential Effects**

#### **3.4.1.1 Affected Target, Non-target and Bycatch Species in Hawaii**

Grigg and Opresko (1977) reported 14 species of black coral known to occur in Hawaiian waters. Historically, however, commercial fishermen have harvested only three species. *Antipathes dichotoma* (recently renamed *A. griggi*) is the most commonly harvested species accounting for almost 90% of commercial harvest, followed by *A. grandis* (10%), and *A. ulex* (1%). The two major species (*A. dichotoma* and *A. grandis*) are found in coastal waters from Hawaii to Niihau and their range may extend into the NWHI. *A. dichotoma* is found at depths from 30 to 110 m while *A. grandis* occurs at depths from 45 to 110 m. Within their depth ranges, both species can be found highly aggregated on, or under, vertical drop-offs, terraces, or undercut notches. The growth rates for *A. dichotoma* and *A. grandis* have been estimated to be 6.42 cm per year and 6.12 cm per year respectively. Plotting gonad diameter versus colony height, Grigg (1976) estimated the size of reproductively mature *A. dichotoma* colonies to range from 64 to 80 cm. This implies an age at reproduction of 10 to 12.5 year and reproduction may occur annually (Grigg 1976). A large six-foot (1.8 m) tall coral tree is estimated to be between 30 and 40 years old. The oldest black corals observed in the Maui Auau Channel Bed are thought to be 75 years

old, and it is believed that black corals may live even longer. In 2006, growth rates of *A. dichotoma* was estimated using radio-carbon dating indicating growth rates ranged from 130  $\mu\text{m}/\text{yr}$  to 1140  $\mu\text{m}/\text{yr}$  (Roark et al. 2006).

There are two known major beds of black coral in Hawaii; the Auau Channel Bed located near Maui, Lanai and Molokai; and the bed off of Kauai. Most of these are located in Hawaii's State waters. However, the largest (the Auau Channel Bed) extends into the EEZ. Since 1980, virtually all of the black coral harvested around the Hawaiian Islands has been taken from the Auau Channel Bed. Most of this harvest has been confined to State waters. The Hawaii Department of Land and Natural Resources (DLNR) estimates that about 85% of the black coral harvested is hand harvested by scuba divers within three miles of the shoreline (WPFMC 2008), perhaps because gear constraints have restricted divers for black coral to relatively shallow waters (75 m or less) (Grigg 2002).

Black coral harvesters employ selective methods when harvesting black corals. Divers use SCUBA gear to reach the black coral resource. Hand held tools are used to remove the black coral from its base rock and float bags are used to bring the harvested black coral to the surface. Therefore, there is virtually no bycatch in this fishery except species that may be attached to the base of a coral tree.

The current harvest quota for black coral in the Auau Channel is 5,000 kg (11,000 lb) which may be taken during any part of a two year fishing year cycle. For the most recent time period (2011-2015), approximately 1,840 lb of black coral were landed annually (Table 11).

### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in Hawaii***

Precious coral fisheries are highly target specific and there are no issues related to non-target or bycatch species.

#### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for black coral in Hawaii. However, the current harvested quota of 5,000 kg (11,000 lb) for the Auau Channel Established Bed would remain. Regulations that allow for this quota to be harvested over two consecutive fishing years would also remain in place. The average level of black coral harvest under this alternative is expected to continue as it currently has in recent years, where the average annual catch between 2000 and 2009 is estimated to be 5,587 lb/yr as shown in Table 11. This level of catch is approximately 68% of MSY (8,250 lb or 3,750 kg) and is sustainable. Catches would continue to be monitored through fisheries monitoring programs administered by Hawaii DAR and the status of Hawaii black coral would continue to be subject to ongoing discussion and review by the Council and NMFS. More recently, harvests of black coral have been in the range of 1,840 lb/year, well below MSY of 8,250 lb/year; and therefore, sustainable.

### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 2,500 kg (5,500 lb) for black coral in the Auau Channel Established Bed in fishing years 2016 – 2018. This ACL would be equal to the current harvest quota if it was applied on an annual basis and is 67% of the estimated MSY. An ACL set at this level would also be 2,000 lb lower than the SSC established ABC of 7,500 lb (3,413 kg/yr). Because the ACL would be higher than recent catches (e.g., 1,840 lb/yr), NMFS does not expect the ACL would be reached in fishing years 2016, 2017, or 2017. Even if landings exceed the ACL, landings are expected remain below ABC of 7,500 lb and not exceed MSY of 8,250 lb. For this reason, harvests of black coral are expected to remain sustainable under Alternative 2.

### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 6,750 lb (3,072 kg) of black coral which is 90% of the SSC established ABC of 7,500 lb (3,413 kg/yr). This ACL would be 1,250 lb greater than the ACLs under Alternative 2. Because the ACL is higher than recent catches (5,587 lb/yr) the fishery has a lower chance of exceeding the ACL compared with Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to provide limits to the amount of black coral that may be harvested in Hawaii annually. The inability to conduct in-season monitoring of harvests precludes implementation of in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of the management of the fishery that is intended to prevent black coral stocks from becoming overfished. The additional level of post season review of black coral harvest that would be provided under the action alternatives would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

Without an in-season management measure, fishing for black coral would not change from fishing that would occur under the no-action baseline; therefore, there would be no change to effects on target stocks from either action alternative.

#### **3.4.1.2 Affected Fishery Participants in Hawaii**

##### ***Overview of Hawaii's Black Coral Fishery***

Black coral harvesters employ selective methods when harvesting black corals. Divers use SCUBA gear to reach the black coral resource. Hand held tools are used to remove the black coral from its base rock and float bags are used to bring the harvested black coral to the surface.

Since 1980, virtually all of the black coral harvested around the Hawaiian Islands has been taken from the Auau Channel Bed. Most of this harvest has been confined to State waters. The Hawaii Department of Land and Natural Resources estimates that about 85% of the black coral harvested is hand harvested by scuba divers within three miles of the shoreline (WPFMC 2008).

The current harvest quota for black coral in the Auau Channel is 5,000 kg (11,000 lb) which may be taken during any part of a two year fishing year cycle. Landings, almost exclusively from State waters, have been reported for black coral between 1982 and 2010; however, data cannot be reported annually because of the low number of active participants (fewer than three). Therefore, to protect confidential fishery information, landing information is summarized in approximately 10-year intervals and shown in Table 11.

In every year since 2010, NMFS has only issued one or two Federal permits for fishing precious corals in Hawaii. As of September 29, 2016, NMFS has issued one Federal permit for fishing for Pacific Island precious corals in the Hawaiian Islands ([http://www.fpir.noaa.gov/SFD/SFD\\_permits\\_index.html](http://www.fpir.noaa.gov/SFD/SFD_permits_index.html)).

### ***Potential Effects of the Proposed ACL and AM Specifications on Hawaii's Black Coral Fishery Participants***

#### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for black coral in Hawaii. However, the current harvested quota of 5,000 kg (11,000 lb) for the Auau Channel Established Bed would remain. Regulations which allow for this quota to be taken over two consecutive fishing years would also remain in place. The average level of catch under this alternative is expected to continue as it currently has in recent years with average annual catch between 2000 and 2009 estimated to be 5,587 lb/yr as shown in Table 11.

This level of catch is approximately 68% of MSY (8,250 lb or 3,750 kg) and is sustainable. Because harvest occurs predominantly in state waters, NMFS does not anticipate any Federal permits would be issued in 2012 and fishing would continue to be monitored by Hawaii DAR, with fisheries statistics becoming available approximately six months or longer after the data has been initially collected.

#### **Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, NMFS would specify an ACL of 2,500 kg (5,500 lb) for black coral in the Auau Channel Established Bed in fishing year 2016 – 2018. This ACL would be equal to the current harvest quota if it was applied on an annual basis and is 67% of the estimated MSY. An ACL set at this level would also be 2,000 lb lower than the SSC recommended ABC of 7,500 lb (3,413 kg/yr). By creating an annual limit, there is a possibility that the ACL could be reached in fishing year 2012.

The AM for Hawaii's black coral fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This



could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

#### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 6,750 lb (3,072 kg) which is 90% of the SSC recommended ABC of 7,500 lb (3,413 kg/yr). This ACL is expected to have impacts that are generally similar to Alternative 2 except that the potential to exceed ACL is lower under this alternative.

#### **3.4.1.3 Affected Protected Resources in Hawaii**

Section 3.1.1.3 describes protected resources that have the potential to interact with the Hawaii black coral fishery.

#### ***Applicable ESA and MMPA Coordination – Hawaii precious coral fisheries***

In an informal consultation covering the Western Pacific Precious Corals FMP, dated December 20, 2000, NMFS determined precious coral fisheries of Hawaii that operate in accordance with regulations implementing the FMP were not likely to adversely affect ESA-listed species or their habitats. More recently, a February 4, 2008, letter of concurrence opined that the approval and implementation of Amendment 7 to the Precious Corals FMP did not modify fishery operations in a manner that warranted reinitiating consultation.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based fishery ecosystem plans (FEP) including the Hawaii Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Precious Corals FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning precious coral fishing were retained through the development and implementation of the FEP for the Hawaii Archipelago. No substantial changes to the precious coral fisheries around Hawaii have occurred since the FEP was implemented that have required further consultation.

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute "species" that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the Hawaii Archipelago, are a distinct population segment (DPS) that is endangered and at risk of extinction.

The North Pacific DPS of loggerheads may be found in Federal waters in the MHI. However, given the low level of participation in precious coral fisheries, there have been no reported or observed incidental take of this species in the history of the fishery. Because neither action alternative would modify operations of the Hawaii precious coral fisheries in any way, there is

no additional information that would change the conclusions of the 2008 consultation that determined this fishery was not likely to adversely affect ESA-listed species or their habitats.

In 2013, NMFS re-initiated ESA consultation for Hawaii crustacean fisheries in response to the listing of the MHI insular false killer whale DPS as an endangered species under the ESA. The consultation evaluated the effects of all Hawaii precious coral fisheries on all ESA-listed species and designated critical habitat. In a letter of concurrence dated December 5, 2013, NMFS determined that the continued authorization of precious coral fisheries in the Hawaiian Archipelago may affect, but is not likely to adversely affect, endangered or threatened species or designated critical habitat. Specifically, NMFS concluded that effects of the Hawaii precious coral fisheries are expected to be insignificant, discountable or beneficial.

On August 21, 2015, NMFS designated critical habitat for the endangered Hawaiian monk seal in areas where the Hawaii precious coral fisheries fishes (80 FR 50926). Specific areas designated include sixteen occupied areas within the range of the species: ten areas in the Northwestern Hawaiian Islands and six in the MHI. These areas contain one or a combination of habitat types: preferred pupping and nursing areas, significant haul-out areas, and/or marine foraging areas, that will support conservation for the species. Specific areas designated as monk seal critical habitat in the MHI include marine habitat from the 200 m depth contour line, including the seafloor and all subsurface waters and marine habitat within 10 m of the seafloor, through the water's edge 5 m into the terrestrial environment from the shoreline between identified boundary points on the Islands of: Kaula, Niihau, Kauai, Oahu, Maui Nui (including Kahoolawe, Lanai, Maui, and Molokai), and Hawaii. In areas where critical habitat does not extend inland, the designation ends at a line that marks mean lower low water. The August 21, 2015, final rule designating monk seal critical habitat in the MHI, triggered consultation on the continuation of precious coral fisheries in the Hawaiian Islands Archipelago. Given the generalist foraging habits of monk seals, the small number of participants in precious coral fisheries and the small area fished, potential effects to monk seals were expected to be insignificant. In a memo dated March 1, 2016, the consultation concluded with NMFS' finding that precious coral fisheries are not likely to adversely affect the newly designated Hawaiian monk seal critical habitat, because the effects of the fisheries are expected to be discountable or insignificant.

On April 6, 2016, (81 FR 20058) NMFS published a final rule to list 11 DPS of the green sea turtle (*Chelonia mydas*) under the ESA. Based on the best available scientific and commercial data, and after considering comments on the proposed rule, NMFS determined that three DPS are endangered and eight DPS, including the Hawaiian green sea turtle (Central North Pacific DPS), are threatened. NMFS does not expect the number of green sea turtles taken in the Hawaii precious coral fisheries to change based on the designation of the DPS. The 2016 rule supersedes the 1978 final listing rule for green turtles and applies the existing protective regulations to the DPS.

On September 30, 2016, the USFWS listed the Hawaii DPS of the band-rumped storm-petrel (*Oceanodroma castro*) as an endangered seabird (81 FR 67786). Due to harvesting techniques, precious coral fisheries do not interact with seabirds.

On April 8, 2016, NMFS published the final List of Fisheries (LOF) for 2016 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (81 FR 20550). Hawaii precious coral fisheries are listed as a Category III fishery, with a low likelihood or no known incidental takings of marine mammals. NMFS concluded that the Hawaii Archipelago precious coral fisheries, as currently conducted, will not affect marine mammals in any manner not considered or authorized by the commercial fishing take exemption under section 118 of the MMPA.

### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in Hawaii***

None of the action alternatives considered would modify operations of the Hawaii black coral fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the black coral fishery using an ACL and AM is intended to promote long term sustainability of the fishery stock. Additionally, the current inability of in-season tracking of catch towards an ACL prevents in-season closure ability, meaning participants in the Hawaii black coral fishery would continue as they do under the no-action alternative. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

## **3.4.2 Hawaii Pink and Bamboo Fishery, Affected Resources and Potential Effects**

### **3.4.2.1 Affected Target, Non-target and Bycatch Species in Hawaii**

To date, beds of pink, gold and/or bamboo corals have been found in eight locations in the EEZ around Hawaii. This number includes two recently discovered beds, one near French Frigate Shoals in the NWHI, and a second on Cross Seamount, approximately 150 nm south of Oahu. Six of the beds have been classified as Established, Conditional or Refugia beds and have bank-specific harvest quotas assigned as discussed in Section 2.4. The remaining area of the EEZ around Hawaii has been classified as the Hawaii Exploratory Area and is subject to a 1,000 kg/yr harvest quota for all precious corals except black corals, which are subject to a separate quota.

Fishing for pink, bamboo, and gold is not currently conducted in Hawaii. One company used two one-man submersibles to survey and harvest pink and gold corals at depths between 400 and 500 meters in the MHI during 1999 and 2001; however, they did not continue their operations after

that time and the actual harvests cannot be reported here because of data confidentiality (WPFMC 2009b). In every year since 2010, NMFS has only issued one or two Federal permits for fishing precious corals in Hawaii. As of September 29, 2016, NMFS has issued one Federal permit for fishing for Pacific Island precious corals in the Hawaiian islands ([http://www.fpir.noaa.gov/SFD/SFD\\_permits\\_index.html](http://www.fpir.noaa.gov/SFD/SFD_permits_index.html)).

Currently, a moratorium on gold coral harvest is in place throughout the western Pacific through June 30, 2018 due to uncertainty in estimates the age and growth (78 FR 32181, May 29, 2013). Additionally, fishing is prohibited at Westpac Bed due to its status as a refugium. These prohibitions serve as functional equivalent of an ACL of zero.

### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in Hawaii***

#### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for precious corals in Hawaii. However, the current harvest quotas for all Established, Conditional and Refugia beds, and the quota of 1,000 kg/yr for the Hawaii exploratory area as listed in

would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2018 would also remain in place. Since there has not been a precious coral fishery in Hawaii for over a decade, this alternative would have no effect on any marine resource. Catches, in Federal waters if they were to occur, would be documented through Federal fisheries monitoring programs administered by NMFS and the status of Hawaii precious corals would be subject to discussion and review. While two Federal permits have been, no fishing has been conducted.

Under this alternative, fishing for pink and/or bamboo corals around Hawaii could occur under a Federal permit.

#### **Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, NMFS would specify ACLs for pink, and bamboo corals for each Exploratory and Conditional bed, and the Hawaii exploratory area as shown in Table 18. The ACLs would be identical to the current harvest quotas listed in Table 10 except at the Makapuu Established bed where the ACL would be specified at one half of the current two year quota and would be set at 1,000 kg/yr and 250 kg/yr, respectively. ACLs set at this level would not exceed the estimated MSYs and ABCs shown in Table 16 and Table 17, respectively and would be sustainable. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2018, and the zero harvest quotas for Westpac bed would also remain in place and would serve as a functional equivalent of an ACL of zero.

#### **Alternative 3: Specify ACL at 90% of ABC**

Under this alternative, NMFS would specify an ACL that is 90% of ABC and is shown in Table 19. For the Hawaii exploratory area, NMFS would specify an ACL of 900 kg. Like under

alternative 2, the current moratorium on gold coral harvest would remain in place through June 30, 2018 and fishing would remain prohibited at Wespac Bed. Because there is no fishery for deepwater precious corals in Hawaii, the impacts under this alternative would be identical to Alternative 2.

Under the action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to specify a limit on the amount of coral that may be harvested annually. While Federal permit and reporting requirements are currently in place, and 2 Federal permits have been for the Hawaii exploratory area, no fishing has been conducted. If fishing were to occur, NMFS does not anticipate the ACL would be reached as selective harvesting requirements provide for precision in the amounts harvest; however, the post-season review of catch relative to the proposed ACL is part of fishery management measures intended to prevent precious corals from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery compared to Alternative 1 and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

### **3.4.2.2 Affected Fishery Participants in Hawaii**

#### ***Overview of Hawaii's Pink and Bamboo Coral Fishery***

Harvest operations for Hawaii pink and bamboo coral have not occurred since 2000. In every year since 2010, NMFS has only issued one or two Federal permits for fishing precious corals in Hawaii. As of September 29, 2016, NMFS has issued one Federal permit for fishing for Western Pacific precious corals in the Hawaiian islands ([http://www.fpir.noaa.gov/SFD/SFD\\_permits\\_index.html](http://www.fpir.noaa.gov/SFD/SFD_permits_index.html)).

#### ***Potential Effects of the Proposed ACL and AM Specifications on Hawaii's Pink and Bamboo Coral Fishery Participants***

##### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for precious corals in Hawaii. However, the current harvest quotas for all Established, Conditional and Refugia beds, and the quota of 1,000 kg/yr for the Hawaii exploratory area as listed in Table 10 would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2018 would also remain in place. Under this alternative, catches would be reported under Federal permits reported to NMFS within 72 hours of fishing. In every year since 2010, NMFS has only issued one or two Federal permits for fishing precious corals in Hawaii. As of September 29, 2016, NMFS has

issued one Federal permit for fishing for Western Pacific precious corals in the Hawaiian islands ([http://www.fpir.noaa.gov/SFD/SFD\\_permits\\_index.html](http://www.fpir.noaa.gov/SFD/SFD_permits_index.html)).

NMFS concludes that it is possible for fishing to occur for pink and bamboo coral, but unlikely. Fishing is likely to remain at low levels under the status quo. If fishing were to start, a Federal permit and logbook reports would be required

#### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify ACLs for pink, and bamboo corals for each Exploratory and Conditional bed, and the Hawaii exploratory area as shown in Table 18. The ACLs would be identical to the current harvest quotas listed in Table 10 except at the Makapuu Established bed where the ACL would be specified at one half of the current two year quota and would be set at 1,000 kg/yr and 250 kg/yr, respectively. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2018 and the zero harvest quotas for Westpac bed would also remain in place and would serve as a functional equivalent of an ACL of zero.

In every year since 2010, NMFS has only issued one or two Federal permits for fishing precious corals in Hawaii. As of September 29, 2016, NMFS has issued one Federal permit for fishing for Western Pacific precious corals in the Hawaiian islands ([http://www.fpir.noaa.gov/SFD/SFD\\_permits\\_index.html](http://www.fpir.noaa.gov/SFD/SFD_permits_index.html)). Since the ACL would be essentially identical to the harvest quotas under the no action, the effects on fishery participants would be identical to the no action alternative and is not expected to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation.

The AM for the Hawaii precious coral fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

#### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL that is 90% of ABC and is shown in Table 19. For the Hawaii exploratory area, NMFS would specify an ACL of 900 kg. Like under alternative 2, the current moratorium on gold coral harvest would remain in place through June 30, 2018 and fishing would remain prohibited at Westpac Bed. Because there is no fishery for deepwater precious corals in Hawaii, the effects on fishery participants under this alternative would be identical to Alternative 2. ACLs at this level expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

### **3.4.2.3 Affected Protected Resources in Hawaii**

Section 3.1.1.3 describes protected resources that have the potential to interact with the Hawaii pink and bamboo coral fishery. Section 3.4.1.3 describes applicable ESA and MMPA consultations for the precious coral fisheries of Hawaii.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in Hawaii***

None of the alternatives considered would modify operations of the Hawaii pink and bamboo coral fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season review of the catch relative to the ACL and other operational adjustments, as needed based on the potential impacts of fishing on stocks, managing the pink and bamboo coral fishery in Hawaii using an ACL and AM would be an addition to the current fishery management regime (Alternative 1) that is intended to promote long term sustainability of the fishery stocks. Without an in-season fishery closure, participants in the Hawaii pink and bamboo fishery would continue to harvest corals as they would under the current management regime.

However, because the pink and bamboo coral fisheries are currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation, as required, to comply with requirements of the ESA and the MMPA.

### **3.4.3 American Samoa Precious Coral Fishery, Affected Resources and Potential Effects**

#### **3.4.3.1 Affected Target, Non-target and Bycatch Species in American Samoa**

There is no record of any fishery for black, pink, gold or bamboo coral in American Samoa. However, they are included in the precious coral management unit of the American Samoa FEP. No Federal permits have ever been issued for precious coral fishing in American Samoa.

## ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in American Samoa***

### **Alternative 1: No Management Action**

Under the no-action alternative, an ACL would not be specified for precious corals in American Samoa and the current harvest quota of 1,000 kg for pink, gold and bamboo corals (except black coral) in the American Samoa Exploratory Area would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2018 would also remain in place. Since there has never been a precious coral fishery in American Samoa, this alternative would have no effect on any marine resource. Catches, in Federal waters if they were to occur, would be documented through Federal fisheries monitoring programs administered by NMFS and the status of American Samoa precious corals would be subject to discussion and review by the Council and NMFS.

### **Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)**

Under this alternative, NMFS would specify an ACL of 1,000 kg for pink, gold and bamboo corals in the American Samoa Exploratory Area in fishing years 2016 – 2018. The current moratorium on gold coral would remain in place through June 30, 2018. The ACL is equal to the ABC recommended by the Council's SSC and is identical to the current harvest guideline under Alternative 1.

Additionally, NMFS would also specify an ACL of 790 lb for American Samoa black coral in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.4.2.1.

To date, there has never been a fishery for precious corals in American Samoa. However, if a precious coral fishery were to develop the ACLs and AM is expected to provide for continued review of the fishery by the Council and NMFS and, over the long term, is expected to help maintain harvests at sustainable levels.

### **Alternative 3: Specify ACL at 90% of ABC**

Under this alternative, NMFS would specify an ACL of 900 kg for pink, gold and bamboo corals in the American Samoa Exploratory Area in fishing years 2016 – 2018. The current moratorium on gold coral would remain in place through June 30, 2018. For American Samoa black coral, NMFS would specify an ACL of 711 lb. To date, there has never been a fishery for precious corals in American Samoa. However, if a precious coral fishery were to develop the ACLs and AM is expected to provide for continued review of the fishery by the Council and NMFS and, over the long term, is expected to help maintain harvests at sustainable levels.

Under the action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the



operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to specify limits to the amount of precious corals that may be harvested annually in American Samoa. While Federal permit and reporting requirements are currently in place, no permits have ever been issued. If fishing were to occur, NMFS does not anticipate the ACL would be reached as selective harvesting requirements provides for precision in the amount of harvest.; however, the post-season review of harvests relative to the proposed ACL is part of the management of the fishery that are intended to prevent precious coral stocks from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

#### **3.4.3.2 Affected Fishery Participants in American Samoa**

##### ***Overview of American Samoa's Precious Coral Fishery***

There is no record of any fishery for precious corals in American Samoa.

##### ***Potential Effects of the Proposed ACL and AM Specifications on American Samoa's Fishery Participants***

To date, there has never been a fishery for precious corals in American Samoa. Therefore, there is no fishery participant that would be affected by any of three alternatives considered.

#### **3.4.3.3 Affected Protected Resources in American Samoa**

Section 3.1.2.3 describes protected resources that have the potential to interact with an American Samoa precious coral fishery should one develop. However, if a precious coral fishery were to develop in American Samoa, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

##### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in American Samoa***

To date, there has never been a precious coral fishery around American Samoa. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

### **3.4.4 CNMI Precious Coral Fishery, Affected Resources and Potential Effects**

#### **3.4.4.1 Affected Target, Non-target and Bycatch Species in the CNMI**

There is no record of any fishery for black, pink, gold or bamboo coral in the CNMI. However, they are included in the precious coral management unit of the Mariana Archipelago FEP. No Federal permits have ever been issued for precious coral fishing in the CNMI.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in the CNMI***

##### Alternative 1: No Management Action

Under the no-action alternative, an ACL would not be specified for precious corals in CNMI and the current harvested quota of 1,000 kg for pink, gold and bamboo corals (except black coral) in the CNMI exploratory area would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2018 would also remain in place. Since there has never been a precious coral fishery in CNMI, this alternative would have no effect on any marine resource. Catches, in Federal waters if they were to occur, would be documented through Federal fisheries monitoring programs administered by NMFS and the status of CNMI precious corals would be subject to discussion and review by the Council and NMFS.

##### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 1,000 kg for pink, gold and bamboo corals (except black coral) in the CNMI exploratory area in fishing year 2016 – 2018. The current moratorium on gold coral would remain in place through June 30, 2018. The ACL is equal to the ABC recommended by the Council's SSC and is identical to the current harvest guideline under Alternative 1.

Additionally, NMFS would also specify an ACL of 2,100 lb for CNMI black coral in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.4.3.1. To date, there has never been a fishery for precious corals in CNMI and consequently there would be no impacts to target, non-target or bycatch species from establishment of an ACL and AM for the fishery.

##### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 900 kg for pink, gold and bamboo corals in the CNMI exploratory area in fishing years 2016 – 2018. The current moratorium on gold coral would remain in place through June 30, 2018. For CNMI black coral, NMFS would specify an ACL of 1,890 lb. Because there has never been a fishery for precious corals in the CNMI, the impacts under this alternative would be identical to Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to establish a limit on the amount of precious corals that may be harvested annually. While Federal permit and reporting requirements are currently in place, no permits have ever been issued. If fishing were to occur, NMFS does not anticipate the ACL would be reached as selective harvesting requirements provides for precision in the amount of harvest; however,, the post-season review of catch relative to the proposed ACL is part of the fishery management that is designed to prevent the precious coral fishery from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

#### **3.4.4.2 Affected Fishery Participants in the CNMI**

##### ***Overview of CNMI's Precious Coral Fishery***

There is no record of any fishery for precious corals in the CNMI.

##### ***Potential Effects of the Proposed ACL and AM Specifications on CNMI's Fishery Participants***

To date, there has never been a fishery for precious corals in the CNMI. Therefore, there is no fishery participant that would be affected by any of three alternatives considered.

#### **3.4.4.3 Affected Protected Resources in the CNMI**

Section 3.1.2.3 describes protected resources that have the potential to interact with a precious coral fishery in the CNMI should one develop. However, if a precious coral fishery were to develop, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

##### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in the CNMI***

To date, there has never been a precious coral fishery around the CNMI. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

### **3.4.5 Guam Precious Coral Fishery, Affected Resources and Potential Effects**

#### **3.4.5.1 Affected Target, Non-target and Bycatch Species in Guam**

There is no record of any fishery for black, pink, gold or bamboo coral in Guam. However, they are included in the precious coral management unit of the Mariana Archipelago FEP. No Federal permits have ever been issued for precious coral fishing in the Guam. Precious coral fisheries are target-specific and there are no known bycatch issues with this fishery.

#### ***Potential Effects of the Proposed ACL and AM Specifications on Target, Non-target and Bycatch Species in Guam***

##### Alternative 1: No Management Action

Under the no-action alternative, an ACL would not be specified for precious corals in Guam and the current harvest quota of 1,000 kg for pink, gold and bamboo corals in the Guam exploratory area would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2018 would also remain in place. Since there has never been a precious coral fishery in Guam, this alternative would have no effect on any marine resource. Catches, in Federal waters if they were to occur, would be documented through Federal fisheries monitoring programs administered by NMFS and the status of Guam precious corals would be subject to discussion and review by the Council and NMFS.

##### Alternative 2: Specify Council recommended ACL (Status Quo/Preferred)

Under this alternative, NMFS would specify an ACL of 1,000 kg for pink, gold and bamboo corals in the Guam exploratory area in fishing years 2016 – 2018. The current moratorium on gold coral would remain in place through June 30, 2018. The ACL would be equal to the ABC recommended by the Council's SSC and is identical to the current harvest guideline under Alternative 1.

Additionally, NMFS would also specify an ACL of 700 lb for Guam black coral in fishing years 2016 – 2018. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.4.4.1. To date, there has never been a fishery for precious corals in Guam and, consequently, there would be no impacts to target, non-target or bycatch species from establishment of an ACL and AM for the fishery.

##### Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify an ACL of 900 kg for pink, gold and bamboo corals in the Guam exploratory area in fishing years 2016 – 2018. The current moratorium on gold coral would remain in place through June 30, 2018. For Guam black coral, NMFS would specify an ACL of 630 lb. Because there has never been a fishery for precious corals in Guam, the impacts under this alternative would be identical to Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to place a limit on the amount of precious corals that may be harvested annually. While Federal permit and reporting requirements are currently in place, no permits have ever been issued. If fishing were to occur, NMFS does not anticipate the ACL would be reached as selective harvesting requirements provides for precision in the amount of harvest; however, the post-season review of catch relative to the proposed ACL is part of the fishery management that is designed to prevent precious coral stocks from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

#### **3.4.5.2 Affected Fishery Participants in Guam**

##### ***Overview of Guam's Precious Coral Fishery***

There is no record of any fishery for precious corals in the Guam.

##### ***Potential Effects of the Proposed ACL and AM Specifications on Guam's Fishery Participants***

To date, there has never been a fishery for precious corals in Guam. Therefore, there is no fishery participant that would be affected by any of three alternatives considered.

#### **3.4.5.3 Affected Protected Resources in Guam**

Section 3.2.4.3 describes protected resources that have the potential to interact with a precious coral fishery in Guam should one develop. There is no fishery for precious corals in Guam; however, if one were to develop, NMFS would initiate consultation, as required, to comply with requirements of the ESA and the MMPA.

##### ***Potential Effects of the Proposed ACL and AM Specifications on Protected Species in Guam***

To date, there has never been a precious coral fishery in Federal waters around Guam. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

### **3.5 Potential Effects to Essential Fish Habitat and Habitat Areas of Particular Concern**

Essential fish habitat (EFH) is defined as those waters and substrate as necessary for fish spawning, breeding, feeding, and growth to maturity. This includes the marine areas and their chemical and biological properties that are utilized by the organism. Substrate includes sediment, hard bottom, and other structural relief underlying the water column along with their associated biological communities. In 1999, the Council developed and NMFS approved EFH definitions for management unit species (MUS) of the Bottomfish and Seamount Groundfish FMP (Amendment 6), Crustacean FMP (Amendment 10), Pelagic FMP (Amendment 8), and Precious Corals FMP (Amendment 4) (74 FR 19067, April 19, 1999). NMFS approved additional EFH definitions for coral reef ecosystem species in 2004 as part of the implementation of the Coral Reef Ecosystem FMP (69 FR 8336, February 24, 2004). EFH definitions were also approved for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

In 2009, the Council developed and NMFS approved five new archipelagic-based fishery ecosystem plans (FEP). The FEPs incorporated and reorganized elements of the Councils' species-based FMPs into a spatially-oriented management plan (75 FR 2198, January 14, 2010). EFH definitions and related provisions for all FMP fishery resources were subsequently carried forward into the respective FEPs. In addition to and as a subset of EFH, the Council described habitat areas of particular concern (HAPC) based on the following criteria: ecological function of the habitat is important, habitat is sensitive to anthropogenic degradation, development activities are or will stress the habitat, and/or the habitat type is rare. In considering the potential impacts of a proposed fishery management action on EFH, all designated EFH must be considered.

**Table 32. EFH and HAPC for Western Pacific FEP MUS.**

| <b>MUS</b>                | <b>Species Complex</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>EFH</b>                                                                                                                                                                                                                                                                                 | <b>HAPC</b>                                                                                                                                                                                                                                                                                           |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bottomfish<br/>MUS</b> | <b>American Samoa, Guam and<br/>CNMI bottomfish species:</b> lehi<br>( <i>Aphareus rutilans</i> ) uku<br>( <i>Aprion virescens</i> ), giant<br>trevally ( <i>Caranx ignoblis</i> ),<br>black trevally ( <i>Caranx<br/>lugubris</i> ), blacktip grouper<br>( <i>Epinephelus fasciatus</i> ),<br>Lunartail grouper ( <i>Variola<br/>louti</i> ), ehu ( <i>Etelis carbunculus</i> ),<br>onaga ( <i>Etelis coruscans</i> ),<br>ambon emperor ( <i>Lethrinus<br/>amboinensis</i> ), redgill emperor<br>( <i>Lethrinus rubrioperculatus</i> ),<br>taape ( <i>Lutjanus kasmira</i> ),<br>yellowtail kalekale<br>( <i>Pristipomoides auricilla</i> ),<br>opakapaka ( <i>P. filamentosus</i> ),<br>yelloweye snapper ( <i>P.<br/>flavipinnis</i> ),<br>kalekale ( <i>P. sieboldii</i> ), gindai<br>( <i>P. zonatus</i> ), and amberjack<br>( <i>Seriola dumerili</i> ). | Eggs and larvae: the<br>water column<br>extending from the<br>shoreline to the outer<br>limit of the EEZ down<br>to a depth of 400 m<br>(200 fm).<br><br>Juvenile/adults: the<br>water column and all<br>bottom habitat<br>extending from the<br>shoreline to a depth of<br>400 m (200 fm) | All slopes and<br>escarpments<br>between 40–280 m<br>(20 and 140 fm)                                                                                                                                                                                                                                  |
|                           | <b>Hawaii bottomfish species:</b><br>uku ( <i>Aprion virescens</i> ), thicklip<br>trevally ( <i>Pseudocaranx dentex</i> ),<br>giant trevally ( <i>Caranx<br/>ignoblis</i> ), black trevally<br>( <i>Caranx lugubris</i> ), amberjack<br>( <i>Seriola dumerili</i> ), taape<br>( <i>Lutjanus kasmira</i> ), ehu ( <i>Etelis<br/>carbunculus</i> ), onaga ( <i>Etelis<br/>coruscans</i> ), opakapaka<br>( <i>Pristipomoides filamentosus</i> ),<br>yellowtail kalekale ( <i>P.<br/>auricilla</i> ), kalekale ( <i>P.<br/>sieboldii</i> ), gindai ( <i>P. zonatus</i> ),<br>hapuupuu ( <i>Hyporthodus<br/>quernus</i> ), lehi ( <i>Aphareus<br/>rutilans</i> )                                                                                                                                                                                                    | See Amendment 4 for<br>specific EFH<br>descriptions for<br>revised life history<br>stages and shallow,<br>mid, and deep-water<br>complexes.                                                                                                                                                | Kaena Point, Oahu<br>Kaneohe Bay, Oahu<br>Makapuu, Oahu<br>Penguin Bank,<br>Oahu<br>Pailolo Channel,<br>Maui, North<br>Kahoolawe,<br>Hilo, Hawaii (see<br>Amendment 4 for<br>specific locations)<br><br>Three known areas<br>of juvenile<br>opakapaka habitat:<br>two off Oahu and<br>one off Molokai |

| MUS                     | Species Complex                                                                                                                                                                                                                                                                                                                                     | EFH                                                                                                                                                                                                                                                                                                                                                                                                                           | HAPC                                                                                        |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Seamount Groundfish MUS | Hawaii Seamount groundfish species (50–200 fm): armorhead ( <i>Pseudopentaceros wheeleri</i> ), raftfish/butterfish ( <i>Hyperoglyphe japonica</i> ), alfonsin ( <i>Beryx splendens</i> )                                                                                                                                                           | <p><b>Eggs and post-hatch pelagic life stage:</b> Pelagic waters 0–600 m depth within the EEZ north of 29° N., and west of 179° W.</p> <p><b>Post-settlement life stage:</b> Benthic or benthopelagic waters from 120 – 600 m depth within the EEZ north of 29° N., and west of 179° W.</p> <p><b>Sub-adults and adults:</b> Benthopelagic waters from 120–600 m depth within the EEZ north of 29° N. and west of 179° W.</p> | All waters from 0–600 m depth within the EEZ north of 29° N., and west of 179° W.           |
| Crustaceans MUS         | <p><b>Spiny and slipper lobster complex (all FEP areas):</b> spiny lobster (<i>Panulirus marginatus</i>), spiny lobster (<i>P. penicillatus</i>, <i>P. spp.</i>), ridgeback slipper lobster (<i>Scyllarides haanii</i>), Chinese slipper lobster (<i>Parribacus antarcticus</i>)</p> <p><b>Kona crab :</b><br/>Kona crab (<i>Ranina ranina</i>)</p> | <p>Eggs and larvae: the water column from the shoreline to the outer limit of the EEZ down to a depth of 150 m (75 fm)</p> <p>Juvenile/adults: all of the bottom habitat from the shoreline to a depth of 100 m (50 fm)</p>                                                                                                                                                                                                   | All banks in the NWHI with summits less than or equal to 30 m (15 fathoms) from the surface |
|                         | <b>Deepwater shrimp (all FEP areas):</b><br>( <i>Heterocarpus</i> spp.)                                                                                                                                                                                                                                                                             | <p>Eggs and larvae: the water column and associated outer reef slopes between 550 and 700 m</p> <p>Juvenile/adults: the outer reef slopes at depths between 300–700 m</p>                                                                                                                                                                                                                                                     | No HAPC designated for deepwater shrimp.                                                    |



| <b>MUS</b>                      | <b>Species Complex</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>EFH</b>                                                                                                                                                                                                                                                                                                                                                                             | <b>HAPC</b>                                                                                                                                                                               |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Precious Corals MUS</b>      | <p><b>Shallow-water precious corals (10-50 fm) all FEP areas:</b><br/>black coral (<i>Antipathes dichotoma</i>), black coral (<i>Antipathes grandis</i>), black coral (<i>Antipathes ulex</i>)</p> <p><b>Deep-water precious corals (150–750 fm) all FEP areas:</b><br/>Pink coral (<i>Corallium secundum</i>), red coral (<i>C. regale</i>), pink coral (<i>C. laauense</i>), midway deepsea coral (<i>C. sp nov.</i>), gold coral (<i>Gerardia spp.</i>), gold coral (<i>Callogorgia gilberti</i>), gold coral (<i>Narella spp.</i>), gold coral (<i>Calyptrophora spp.</i>), bamboo coral (<i>Lepidisis olapa</i>), bamboo coral (<i>Acanella spp.</i>)</p> | <p>EFH for Precious Corals is confined to six known precious coral beds located off Keahole Point, Makapuu, Kaena Point, Wespac bed, Brooks Bank, and 180 Fathom Bank</p> <p>EFH has also been designated for three beds known for black corals in the Main Hawaiian Islands between Milolii and South Point on the Big Island, the Auau Channel, and the southern border of Kauai</p> | <p>Includes the Makapuu bed, Wespac bed, Brooks Banks bed</p> <p>For Black Corals, the Auau Channel has been identified as a HAPC</p>                                                     |
| <b>Coral Reef Ecosystem MUS</b> | <b>Coral Reef Ecosystem MUS (all FEP areas)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | EFH for the Coral Reef Ecosystem MUS includes the water column and all benthic substrate to a depth of 50 fm from the shoreline to the outer limit of the EEZ                                                                                                                                                                                                                          | Includes all no-take MPAs identified in the CREFMP, all Pacific remote islands, as well as numerous existing MPAs, research sites, and coral reef habitats throughout the western Pacific |

Currently, precious coral fisheries only occur in Hawaii. The proposed ACL specification and AM would not have a direct effect on EFH or HAPC in any of the subject island areas because regulations require precious coral fisheries to use only selective gears such as hand harvest or submersible or remotely operated vehicle technologies which are not known to have large adverse effects on EFH or HAPC for any MUS. None of the alternatives considered are expected to result in substantial changes to the way the precious coral in Hawaii are conducted. Additionally, if precious coral fisheries were to develop in American Samoa, Guam, and CNMI, they would be required to use only selective gear technologies and are likely to be conducted in the same manner as done in Hawaii.

### **3.6 Potential Effects of the Alternatives on Fishery Administration and Enforcement**

#### **3.6.1 Federal Agencies and the Council**

The Council in accordance with the approved FEPs currently manages fisheries in Federal waters, and NMFS PIRO is responsible for implementing and enforcing fishery regulations that implement the FEPs. NMFS PIFSC conducts research and reviews fishery data provided through logbooks and fishery monitoring systems administered by state and territorial resource management agencies. The Council, PIRO and PIFSC collaborate with local agencies in the administration of fisheries of the western Pacific through other activities including coordinating meetings, conducting research, developing information, processing fishery management actions, training fishery participants, and conducting educational and outreach activities for the benefit of fishery communities.

NOAA's Office of Law Enforcement (OLE) is responsible for enforcement of the nation's marine resource laws, including those regulating fisheries and protected resources. OLE, Pacific Islands Division oversees enforcement of Federal regulations in American Samoa, Guam, the CNMI and Hawaii and enters into Joint Enforcement Agreements (JEA) with each participating state and territory.

The U.S. Coast Guard's (USCG) Fourteenth District (Honolulu) jurisdiction is the U.S. EEZ as well as the high seas in the Western and Central Pacific. At over 10 million square miles, its area of responsibility is the largest of any USCG District. The USCG patrols the region with airplanes, helicopters, and surface vessels, as well as monitors vessels through VMS. The USCG also maintains patrol assets on Guam.

#### ***Potential effects to Federal agencies***

The proposed ACL and AM specifications would not require a change to monitoring or collecting fishery data. However, monitoring of catch data towards an ACL would be conducted by PIFSC in collaboration with local resource management agencies, and is expected to result in improved timeliness in processing species specific catch reporting on an annual basis. No changes to the role of law enforcement agents or the U.S. Coast Guard would be required in association with implementing these specifications. The ACL and AM specifications would not result in any change to the fishery that would pose an additional risk to human safety at sea.

#### **3.6.2 Local Agencies**

Currently, local marine resource management agencies in each of the four areas are responsible for the conservation and management of fishery resources. These agencies monitor catches through licenses and fishery data collection programs, conduct surveys of fishermen and scientific surveys of fish stocks, establish and manage marine protected areas, provide outreach and educational services, serve on technical committees, and enforce local and Federal resource laws through JEAs, among other responsibilities.

### ***Potential effects to local agencies***

The specification of ACLs and AMs for crustacean and precious coral fisheries of American Samoa, Guam, the CNMI, and Hawaii is not expected to result in changes to fishery monitoring by the local resource management agencies, at this time. However, monitoring of catch data for ACL purposes would continue to be conducted by PIFSC in collaboration with local resource management agencies and the requirements to conduct post-season review of catch relative to the ACLs are expected to result in improved timeliness in processing species specific catch reporting on an annual basis.

No change to enforcement activities would be required in association with implementing these specifications because there is no fishery closure recommended for any of the areas. Additionally, the ACL and AM specifications would not result in any change to any fishery and therefore, the proposed specification would not result in additional risk to human safety associated with crustacean fishing or precious coral harvesting in American Samoa, Guam, the CNMI, or Hawaii.

### **3.7 Environmental Justice**

Under the no-action alternative, the continued management of Federal crustacean and precious corals fisheries without ACLs or AMs is not expected to have large adverse environmental effects because the fisheries of the western Pacific region are subject to ongoing regulations that help ensure fishing is sustainable.

Under the action alternatives, the proposed ACLs and AMs would apply to all catches of slipper lobsters, kona crab and precious corals.

Fisheries management programs that are currently in place, and management under either of the action alternatives are intended to provide for sustainability of crustaceans (shrimp, lobsters and kona crab) and precious corals (black, pink and bamboo corals). Sustainable fisheries management helps ensure that marine seafood resources and the human communities that rely on their harvest, are properly managed over the short and long term.

The proposed specifications are not likely result in any large adverse impacts to the environment that could have disproportionately large or adverse effects on members of Environmental Justice communities in American Samoa, Guam, the CNMI, or Hawaii. None of the alternatives would have an adverse effect on sustenance harvests.

### **3.8 Climate Change**

Changes in the environment from global climate change have the potential to affect crustacean and precious coral fisheries. Effects of climate change may include: sea level rise; increased intensity or frequency of coastal storms and storm surges; changes in rainfall (more or less) that can affect salinity nearshore or increase storm runoff and pollutant discharges into the marine environment; increased temperatures resulting in coral bleaching, and hypothermic responses in some marine species (IPCC 2007). Increased carbon dioxide uptake can increase ocean acidity, which can disrupt calcium uptake processes in corals, crustaceans, mollusk, reef-building algae,

and plankton, among other organisms (Houghton et al. 2001; The Royal Society 2005; Caldeira and Wickett 2005; Doney 2006; Kleypas et al. 2006). Climate change can also lead to changes in ocean circulation patterns which can affect the availability of prey, migration, survival, and dispersal (Buddemeier et al. 2004). Damage to coastal areas due to storm surge or sea level rises as well as changes to catch rates, migratory patterns, or visible changes to habitats are among the most likely changes that would be noted first. Climate change has the potential to adversely affect some organisms, while others could benefit from changes in the environment.

The impacts from climate change may be difficult to discern from other impacts; however monitoring of physical conditions and biological resources by a number of agencies would continue to occur and would allow fishery managers to continually make adjustments in fishery management regimes in response to changes in the environment.

Under the no-action alternative, fishing would occur as it has been in the recent past. No ACL or AM would be specified.

As shown in the EA effects analyses above, the ACLs and AMs would not result in a change to any fishery including target species, gear used, areas fished, or effort. This is primarily because there is no in-season management measure (such as a fishery closure) to ensure a fishery does not exceed an ACL. Because the proposed specifications are not expected to result in a change to the manner in which any of the affected fisheries are conducted, neither of the action alternatives would result in a change in greenhouse gas emissions from fishing vessels.

### **3.9 Additional Considerations**

#### **3.9.1 Overall Effects**

When compared against recent fishing harvests, most of the proposed ACLs would be higher than recent catches. The ACLs are considered an acceptable level of catch that would prevent overfishing and provide for long-term sustainability of the target stocks. The specifications were developed using the best available scientific information, in a manner that accords with the fishery regulations, and after considering catches, participation trends, and estimates of the status of the fishery resources.

In the few fisheries that recent catches exceed a proposed ACL specification, it is likely that a fishery may exceed an ACL. In these few cases, the resources do not appear to be subjected to overfishing or facing declines. Instead, the assumptions of the models that were used to develop an ACL are likely in need of scientific refinement and further review.

In the case of Kona crabs, as stated above in section 2.3.1, NMFS will be obtaining new information through the revised stock assessment work that is scheduled for 2018. Coordination with fishery scientists, and observations of fishing results in terms of crab size, and the limited size of the fishery, allow NMFS to preliminarily conclude that the continued operation of the Kona crab fishery in Hawaii would not result in large, irreversible or irretrievable effects on Kona crab stocks.

Taken together neither the proposed ACLs or the proposed AMs would cause large adverse impacts to resources because the fishery stocks would benefit from post-season data review and comparison of catches against ACLs.

For these reasons, the proposed ACLs and AMs are not expected to result in large, irreversible, or irretrievable impacts to the environment.

### **3.9.2 Cumulative Effects of the Proposed Action**

#### ***ACL and AM specifications for other western Pacific fisheries***

In addition to the ACLs and AMs for crustacean and precious coral fisheries, NMFS is proposing to implement the Council's ACL and AM recommendations for all other western Pacific fisheries for the 2016 – 2018 fishing years, including bottomfish and coral reef fisheries. NMFS has developed environmental effects analysis documents on the proposed specifications for these fisheries, which can be obtained from NMFS or the Council by request, or at [www.regulations.gov](http://www.regulations.gov) using the regulatory identification number (RIN) 0648-XE587.

The proposed ACL and AM specifications considered here would not result in changes to the way the crustacean or precious corals fisheries are conducted, so the proposed ACL and AM specifications do not have an interaction with other fisheries. Such interactions can occur, for example, if an AM calls for an in-season management measure such as a fishery closure. In that case, attainment of an ACL can result in changes in participation, seasonality and fishing intensity. The proposed ACL and AM specifications for precious corals and crustaceans do not include in-season measures and there is no interactions with other ACL and AM specifications.

#### ***Foreseeable management actions related to western Pacific fisheries***

In the foreseeable future, the Council may re-evaluate the need for conservation and management for Federal crustacean and precious coral fisheries and may recommend NMFS remove certain species from the FEPs and/or re-classify species as “ecosystem component” (EC) species. Under the provisions of the Magnuson-Stevens Fishery Conservation and Management Act, to be considered for possible classification as an EC species, a species should be: 1) a non-target species; 2) a stock that is not determined to be subject to overfishing, approaching overfished, or overfished; 3) not likely to become subject to overfishing or overfished; and 4) generally not retained for sale or personal use. Various methods for categorizing species and EC components have been preliminarily discussed at Council meetings. These include, but are not limited to, species that are caught exclusively or predominately in state/territorial waters, species that occur infrequently in the available time series, species that are non-native to an FEP area, and species associated with ciguatera poisoning and are generally discarded.

In accordance with National Standard 1 guidelines found in 50 CFR §600.310(d), EC species are not considered to be “in the fishery” and thus, do not require specification of an ACL. EC species may, but are not required to remain in the FEP for data collection purposes, for ecosystem considerations related to the specification of optimum yield for associated MUS, for consideration in the development of conservation and management measures for a fishery; and/or

to address other ecosystem issues (e.g., such as management of bycatch). However, until such time a particular crustacean or precious coral MUS is classified as an EC species, it will remain in the fishery and be subject to the ACL and AM requirements.

Because the proposed ACL and AM specifications are intended to promote sustainable fisheries, the current specifications would not result in effects that would interact with future determinations regarding whether or not a particular MUS would qualify as an EC species.

NMFS and the Council are currently evaluating the potential for managing aquaculture in Federal waters of the western Pacific region under a Federal permit regime. The proposed action and alternatives would not affect decisions to be made or have impacts to any MUS that could interact with potential future aquaculture projects.

#### ***Other foreseeable NOAA/NMFS management actions***

NOAA/NMFS does not have foreseeable management actions that are likely to affect the precious corals or crustacean fisheries. There are no other reasonably foreseeable NMFS management actions pending that would be affected by or interact with the specification of ACLs and AMs that would change the environmental effects review.

#### ***Past, Present and Reasonably Foreseeable Actions by Others***

Numerous activities take place in Federal and State and territorial waters including military and maritime uses, wind and tidal power, communication uses, and conservation activities. Management of fishery harvests using the proposed ACLs and the AMs regimes is not expected to result in changes to fishing activities or have impacts that would be affected by these other activities.

### **3.10 Other effects**

None of the alternatives would have the potential to change any of the fisheries being considered. Therefore, there would be no potential for the alternatives to result in the introduction of or spread of invasive species, or to result in changes to safety for fishery participants.

The continuation of the fisheries under any of the alternatives would not result in concerns regarding predator-prey relationships or biodiversity.

Decisions to establish ACLs and AMs under either of the action alternatives, would not establish precedents or narrow decisions about future specifications. All of the fisheries considered here have been operating under ACL and AM specifications made annually since 2012. The proposed ACLs and AMs would not result in changes to the way any of the fisheries are conducted. Furthermore, because the proposed specifications are intended to and will support ongoing management in fisheries that are considered sustainable, and because the specifications would not result in effects to resources that are having high and adverse effects on stocks, the proposed specifications would not affect the Council or NMFS' ability to establish effective ACLs or AMs in the future.

## **4 Consistency with Other Applicable Laws**

### **4.1 National Environmental Policy Act**

NOAA Administrative Order (NAO) 216-6A, dated April 22, 2016, contains NOAA's policy and procedures for compliance with the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) regulations in 40 CFR 1500–1508; other related authorities; Executive Order (EO) 12114, *Environmental Effects Abroad of Major Federal Action*; EO 11988, *Floodplain Management*; and EO 11990, *Protection of Wetlands*. NEPA requires agencies to consider potential effects of proposed agency actions and alternatives on the human environment and allows for involvement of interested and affected members of the public before a decision is made. This environmental assessment (EA) has been written and organized to satisfy the requirements of NEPA and NAO 216-A.

The Regional Administrator of the NMFS Pacific Islands Regional Office (PIRO) will use the information in this EA, including any public input received on a draft EA, to determine whether the proposed ACL specifications and AMs would constitute a major Federal action with the potential to have a significant environmental impact that would require the preparation of an environmental impact statement. If not, the RA would prepare a finding of no significant impact.

#### **4.1.1 Alternatives Considered**

Section 2 describes the alternatives considered in the EA. The Council's recommendation forms NMFS' proposed action (Alternative 2).

#### **4.1.2 Affected Environment**

Section 3 describes the affected environment. The main focus is the areas in which the crustacean, deepwater shrimp and precious corals fisheries occur in waters of the U.S. EEZ that are open to commercial fishing for these species around American Samoa, CNMI, Guam, and Hawaii.

#### **4.1.3 Effects of the Alternatives**

Section 4 describes the expected impacts of the alternatives. The analysis compares the effects of the proposed action against the baseline. This allows NMFS to evaluate whether there would be the potential for significant effects on the fisheries and their target crustacean, precious corals stocks, non-target stocks, bycatch, protected resources, EFH and HAPC, and special resources or management areas. Section 4 considers the direct, indirect, short-term, long-term, and cumulative impacts of the proposed action alternative. Environmental justice and climate change considerations are described in sections 3.7 and 3.8, respectively.

#### **4.1.4 Preparers and Reviewers**

National Marine Fisheries Service, Pacific Islands Regional Office (PIRO), Honolulu, Hawaii.

##### ***Preparers:***

Matthew Dunlap, Resource Management Specialist (Project Lead, Fishery management action;  
and fishery and environmental effects analysis)  
Jarad Makaiau, Fish and Wildlife Administrator

##### ***Reviewers:***

Phyllis Ha, Resource Management Specialist (NEPA compliance)  
Marilyn Luipold, NEPA Coordinator (NEPA compliance)

#### **4.1.5 Coordination with others**

The proposed action described in this EA was developed in coordination with various Federal and local government agencies that are represented on the Western Pacific Fishery Management Council. At the 160<sup>th</sup> Council meeting, the proposed ACL specifications and AMs were deliberated among the following Council member organizations:

- American Samoa Department of Marine and Wildlife Resources
- Guam Department of Agriculture, Division of Aquatic and Wildlife Resources
- Hawaii Department of Land and Natural Resources, Division of Aquatic Resources
- Northern Mariana Island Department of Land and Natural Resources, Division of Fish and Wildlife
- U.S. Coast Guard
- U.S. Fish and Wildlife Service
- U.S. Department of State
- A number of Council members are part of the fishing community.

#### **4.1.6 Public Coordination**

The development of the proposed ACL and AM specifications for crustacean and precious coral fisheries of American Samoa, Guam, the CNMI, and Hawaii has taken place in public meetings of the SSC and the Council. In addition, the Council advertised the need to focus on Federal annual catch limits in media releases, newsletter articles, and on the Council's website, <http://www.wpcouncil.org>. Public meetings are listed in Section 1.4, above.

At its 160th meeting, the Council considered and discussed issues relevant to the ACLs and AMs, including the ABC recommendations of the 116th SSC. The 116th SSC and the 160th Council meetings were held June 17-19, 2014, and June 25-27, 2014, respectively. Both meetings were open to the public and advertised through notices in the Federal Register (79 FR 31310, June 2, 2014), and on the Council's website. The public had an opportunity to comment at the meetings on the proposed ACL specifications and AMs and no public comment was provided at either meeting.



On January 18, 2017, NMFS made the draft EA available for a 15-day public review and comment period (82 FR 5517). The public comment ended on February 2, 2017. NMFS received public comments expressing general support for ACL. NMFS did not receive comments on the EA analysis. NMFS will respond to comments in the final rule. NMFS also provided the public with opportunities to comment on proposed ACL specifications and AMs over the previous past 4 years. No public comments have been received on the EA analysis during rulemaking.

## 4.2 Endangered Species Act

The Endangered Species Act (ESA) provides for the protection and conservation of threatened and endangered species. Section 7(a)(2) of the ESA requires Federal agencies to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

Pursuant to Section 7 of the ESA, NMFS has evaluated the crustacean and precious coral fisheries managed under the western Pacific Fishery Ecosystem Plans for potential impacts on ESA-listed species under the jurisdiction of NMFS. Table 33 summarizes ESA section 7 consultations for these fisheries managed under the FEPs for American Samoa, the Marianas (including Guam and CNMI) and Hawaii. Additional information about the potential effects of the alternatives on listed species is found in chapter 3 of this EA.

**Table 33. ESA section 7 consultations for western Pacific crustacean and precious coral fisheries**

| <b>Fishery</b>                             | <b>Consultation</b>                       | <b>NMFS Determination</b>                                                 |
|--------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------|
| American Samoa crustacean fisheries        | September 28, 2007, Letter of Concurrence | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                            | April 9, 2015, Letter of Concurrence      |                                                                           |
| American Samoa precious corals             | December 20, 2000, Letter of Concurrence  | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                            | April 9, 2015, Letter of Concurrence      |                                                                           |
| Main Hawaiian Islands crustacean fisheries | April 4, 2008, Letter of Concurrence      | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                            | December 5, 2013, Letter of Concurrence   |                                                                           |
|                                            | March 1, 2016, Letter of Concurrence      |                                                                           |
| Hawaii precious coral fisheries            | December 20, 2000, Letter of Concurrence, | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                            | February 5, 2008, Letter of Concurrence   |                                                                           |
|                                            | December 5, 2013, Letter of Concurrence   |                                                                           |

| <b>Fishery</b>                | <b>Consultation</b>                       | <b>NMFS Determination</b>                                                 |
|-------------------------------|-------------------------------------------|---------------------------------------------------------------------------|
|                               | March 1, 2016, Letter of Concurrence      |                                                                           |
| CNMI crustacean fisheries     | September 28, 2007, Letter of Concurrence | Not likely to adversely affect any ESA-listed species or critical habitat |
|                               | April 29, 2015, Letter of Concurrence     |                                                                           |
| CNMI precious coral fisheries | December 20, 2000, Letter of Concurrence  | Not likely to adversely affect any ESA-listed species or critical habitat |
|                               | June 3, 2008, Letter of Concurrence       |                                                                           |
|                               | April 29, 2015, Letter of Concurrence     |                                                                           |
| Guam crustacean fisheries     | September 28, 2007, Letter of Concurrence | Not likely to adversely affect any ESA-listed species or critical habitat |
|                               | April 29, 2015, Letter of Concurrence     |                                                                           |
| Guam precious coral fisheries | December 20, 2000, Letter of Concurrence  | Not likely to adversely affect any ESA-listed species or critical habitat |
|                               | April 29, 2015, Letter of Concurrence     |                                                                           |

Because the proposed action is not expected to modify vessel operations or other aspects of any fishery, these consultations would remain valid for the fishery operating under the proposed ACLs specification and AMs for crustacean and precious coral fisheries in American Samoa, Guam, CNMI, and Hawaii . No crustacean or precious coral fishery under any of the alternatives would have an adverse effect on ESA listed species or any designated critical habitats that was not considered in prior consultations, and no further consultation would be required to implement the specification.

#### **4.3 Marine Mammal Protection Act**

The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the take of marine mammals in the U.S. and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. The MMPA gives the Secretary of Commerce authority and duties for all cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions, except walruses). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries that classifies U.S. commercial fisheries into one of three categories. Specifically, the MMPA mandates that each fishery be classified according to whether it has a frequent, occasional, or remote likelihood of, or no known, incidental mortality or serious injury to marine mammals.

According to the most recent NOAA List of Fisheries,<sup>9</sup> all of the affected crustacean and precious coral fisheries are either classified as a Category III fishery or are conducted in a similar

<sup>9</sup>2016 LOF at: [www.nmfs.noaa.gov/pr/interactions/fisheries/2016\\_list\\_of\\_fisheries\\_lof.html](http://www.nmfs.noaa.gov/pr/interactions/fisheries/2016_list_of_fisheries_lof.html)

manner as the classified fisheries. The following is the most recent MMPA category classification information for specific fisheries:

**Table 34. Summary of 2016 MMPA categories for affected fisheries in Hawaii\*.**

| Area / Fishery                       | Gear / fishery 2016 LOF                                | Category in 2016 LOF |
|--------------------------------------|--------------------------------------------------------|----------------------|
| <b>Hawaii</b>                        |                                                        |                      |
| Hawaii Precious Corals/ Black Coral  | HI black coral diving                                  | Category III         |
| Hawaii Deepwater Shrimp              | HI shrimp trap                                         | Category III         |
| Hawaii Slipper Lobster               | HI lobster diving                                      | Category III         |
| Hawaii Kona Crab/ Other crab fishery | HI crab trap**; HI crab net;<br>HI Kona crab loop net. | Category III         |

\*All other similar fisheries in American Samoa, CNMI, Guam, and Hawaii would be categorized as Category III fisheries under the MMPA, by analogy.

\*\*2016 LOF indicates interactions with humpback whales from the Central North Pacific DPS and Hawaii crab trap gear. Two interactions are described with “Hawaii crab trap” gear in Bradford and Lyman (2015). It is not specified which type of crab trap. Also, the Central North Pacific DPS of humpback whales was de-listed on September 8, 2016 (81 FR 62259).

Category III fisheries are fisheries that have been determined by NMFS to have a remote likelihood of or no known incidental mortality and serious injury of marine mammals (50 CFR 229.20). According to the provisions of the MMPA, vessel owners and crew that are engaged only in Category III fisheries may incidentally take marine mammals without registering or receiving an Authorization Certificate under the MMPA, but they are required to: 1) report all incidental mortality and injury of marine mammals to NMFS, 2) immediately return to the sea with minimum of further injury any incidentally taken marine mammal, 3) allow vessel observers if requested by NMFS, and 4) comply with guidelines and prohibitions under the MMPA when deterring marine mammals from gear, catch, and private property (50 CFR 229.5, 229.6, 229.7).

Given the very low likelihood of Pacific Island precious coral, deepwater shrimp, slipper lobster, or crab fisheries interacting with marine mammals, and because the proposed action would not modify vessel operations or other aspects of these or other fisheries, none of the alternatives would result in interactions with marine mammals in any manner not previously considered or authorized the commercial fishing take exemption under section 118 of the MMPA.

#### **4.4 Coastal Zone Management Act**

The Coastal Zone Management (CZM) Act requires NMFS determine that a recommended management measure has no effect on the land, water uses, or natural resources of the coastal zone or is consistent to the maximum extent practicable with an affected state’s enforceable coastal zone management program. NMFS determined that the proposed specifications are consistent to the maximum extent practicable with the enforceable policies of the approved coastal zone management programs of American Samoa, Guam, the Northern Mariana Islands, and Hawaii. NMFS submitted this determination dated April 22, 2016, for review by the appropriate agencies under section 307 of the CZMA.

#### **4.5 National Historic Preservation Act**

The National Historic Preservation Act (NHPA) requires Federal agencies review all Federally funded and permitted projects that may impact sites listed on or eligible for listing on the National Register of Historic Places. Currently, there are no known sites or historic properties in the EEZ around the main Hawaiian Islands or American Samoa that are listed on or eligible for listing on the National Register of Historic Places. Areas offshore from Guam and the CNMI contain numerous resources related to the War in the Pacific that may be eligible for listing.

None of the affected fisheries are known to have adverse effects on bottom resources and none is likely to damage any historical or cultural resource that may occur in offshore waters including shipwrecks, or War in the Pacific resources. The continued operation of the fisheries under the proposed action would not change the conduct of the precious coral, slipper lobster, crab, or deepwater shrimp fisheries. For these reasons, the proposed action would not affect historic sites listed on, or eligible for, listing on the National Register of Historic Places and no further coordination is required.

#### **4.6 Paperwork Reduction Act**

The purpose of the Paperwork Reduction Act is to minimize the paperwork burden on the public resulting from the collection of information by or for the Federal government. It is intended to ensure the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501(1)). The proposed action would not establish any new permitting or reporting requirements and therefore it is not subject to the provisions of the Paperwork Reduction Act.

#### **4.7 Regulatory Flexibility Act**

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) requires government agencies to assess and present the impact of their regulatory actions on small entities including small businesses, small organizations, and small governmental jurisdictions. The assessment is done by preparing an Initial Regulatory Flexibility Analysis when impacts are expected. The purpose and need for action is described in Section 1.2. Section 2.0 describes the management alternatives considered to meet the purpose and need for action. Section 3.0 provides a description of the fisheries that may be affected by this action and analyzes environmental impacts of the alternatives considered.

The proposed action would specify an annual catch limit (ACL) for crustacean and precious coral fisheries in American Samoa, Guam, CNMI and Hawaii for fishing years 2016, 2017, and 2018. If the ACL for any of these fisheries is exceeded (considering specifics applicable to each fishery) NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL for that stock or stock complex in the subsequent fishing year, or other measures, as appropriate.

NMFS does not have annual revenue information on a per-vessel basis, but given the relatively small levels of landings for most of the affected fisheries, and total inactivity for others, NMFS assumes all commercial crustacean and precious coral fishery participants where they exist, to be

small entities based on the SBA size standard for defining a small business entity in this industry with average annual receipts less than \$4.0 million. The proposed action of specifying ACL and AMs is expected to have little, if any, direct adverse economic impact, as described in the EA and the RIR. There would be no disproportionate economic impacts between large and small entities. Furthermore, there are no disproportionate economic impacts among the universe of vessels based on gear, home port, or vessel length.

#### **4.8 Administrative Procedure Act**

All Federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II) which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the Federal Register and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it becomes effective, with rare exceptions.

The specification of ACLs for slipper lobsters, Kona crab and other crabs, deepwater shrimp, and precious corals in American Samoa, CNMI, Guam, Hawaii and implementation of AMs complies with the notice and comment provisions of the APA through the Council’s extensive use of public meetings, requests for comments, and consideration of comments in developing ACL recommendations; as well as through the opportunity for the public to comment on a draft EA and the proposed specifications.

Additionally, NMFS will publish a proposed rule announcing the proposed ACL specifications described in this document which will include requests for public comments. After considering public comments, NMFS will publish a final rule which will become effective immediately upon publication.

#### **4.9 Environmental Justice**

Executive Order 12898 and White House Council on Environmental Quality guidance instruct agencies to determine whether a proposed Federal action is likely to have disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, or Indian tribes. Where such effects are identified as a result of the proposed action or any alternative, agencies should analyze how environmental and health effects are distributed within the affected community. The memo directed agencies to consider potential effects on sustenance harvests.

The proposed ACLs would apply to everyone that catches shrimp, lobsters, Kona crabs, or precious corals, and no new monitoring is required for the ACL specifications or the AMs to be implemented. The environmental review in this EA establishes that the proposed specifications of ACLs and provisions for post-season harvest reviews as the AMs in the western Pacific Crustacean and precious coral fisheries are not expected to result in a change to the way the fisheries are conducted and the fisheries now do not have large adverse health or environmental effects and do not affect sustenance harvests.

The ACLs and AMs are intended to provide for long-term sustainability of Crustacean MUS and Precious Coral MUS fisheries. Specification of the ACLs and post-season reviews are expected to help in ensuring long term conservation and management of the resources. This would benefit the human communities that rely on them for sustenance. The proposed specifications are not expected to change the fisheries or result in large or adverse environmental effects that could have disproportionately large or adverse effects on members of Environmental Justice communities in American Samoa, Guam, the CNMI, or Hawaii.

#### **4.10 Executive Order 12866**

A “significant regulatory action” means any regulatory action that is likely to result in a rule that may –

- 1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal government or communities;
- 2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- 3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- 4) Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

The specification of ACLs for precious coral and crustacean fisheries of the western Pacific has been determined to be not significant under E.O. 12866 because it will not: have an annual effect on the economy of \$100M, create a serious inconsistency or otherwise interfere with an action taken or planned by another agency, materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof, or raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

#### **4.11 Information Quality Act**

The information in this amendment complies with the Information Quality Act and NOAA standards (NOAA Information Quality Guidelines, September 30, 2002) that recognize information quality is comprised of three elements: utility, integrity, and objectivity. National Standard 2 of the Magnuson-Stevens Act states that an FMP’s conservation and management measures shall be based upon the best scientific information available. In accordance with this national standard, this EA and the information used to develop the ACLs and AMs all incorporate the best biological, social, and economic information available to date, including the most recent biological information on, and assessment of the fishery resources and protected resources, and the most recent information available on fishing communities.

The policy choices, i.e., the proposed management measures, contained in this EA and associated specification documents, are supported by the available scientific information. The management measures are designed to meet the conservation goals and objectives of the archipelagic FEPs and the

Magnuson-Stevens Act. The data and analyses used to develop and analyze the measures contained in the information product are presented in this EA, or included in reference citations.

## 5 References

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## Western Pacific Crustacean Management Unit Species

### American Samoa Crustacean Management Unit Species

| Scientific Name               | English Common Name | Local Name |
|-------------------------------|---------------------|------------|
| <i>Panulirus marginatus</i>   | spiny lobster       | ula        |
| <i>Panulirus penicillatus</i> | spiny lobster       | ula-sami   |
| Family Scyllaridae            | slipper lobster     | papata     |
| <i>Ranina ranina</i>          | kona crab           | pa'a       |
| <i>Heterocarpus</i> spp.      | deepwater shrimp    | NA         |

### Hawaii Crustacean Management Unit Species

| Scientific Name               | English Common Name | Local Name     |
|-------------------------------|---------------------|----------------|
| <i>Panulirus marginatus</i>   | spiny lobster       | ula            |
| <i>Panulirus penicillatus</i> | spiny lobster       | ula            |
| Family Scyllaridae            | slipper lobster     | ula papapa     |
| <i>Ranina ranina</i>          | Kona crab           | papa'i kua loa |
| <i>Heterocarpus</i> spp.      | deepwater shrimp    | NA             |

### Mariana Crustacean Management Unit Species (CNMI and Guam)

| Scientific Name               | English Common Name | Local Name<br>(Chamorro/Carolinian) |
|-------------------------------|---------------------|-------------------------------------|
| <i>Panulirus penicillatus</i> | spiny lobster       | mahongang                           |
| Family Scyllaridae            | slipper lobster     | pa'pangpang                         |
| <i>Ranina ranina</i>          | Kona crab           | NA                                  |
| <i>Heterocarpus</i> spp.      | deepwater shrimp    | NA                                  |

**Appendix A** Western Pacific Precious Coral Management Unit Species

(This species list applies to American Samoa, Guam, the CNMI and Hawaii)

| <b>Scientific Name</b>      | <b>English Common Name</b>            | <b>Local Name</b> |
|-----------------------------|---------------------------------------|-------------------|
| <i>Corallium secundum</i>   | pink coral<br>(also called red coral) | NA                |
| <i>Corallium regale</i>     | pink coral<br>(also called red coral) | NA                |
| <i>Corallium laauense</i>   | pink coral<br>(also called red coral) | NA                |
| <i>Gerardia</i> spp.        | gold coral                            | NA                |
| <i>Callogorgia gilberti</i> | gold coral                            | NA                |
| <i>Narella</i> spp.         | gold coral                            | NA                |
| <i>Calyptrophora</i> spp.   | gold coral                            | NA                |
| <i>Lepidisis olapa</i>      | bamboo coral                          | NA                |
| <i>Antipathes dichotoma</i> | black coral                           | NA                |
| <i>Antipathes grandis</i>   | black coral                           | NA                |
| <i>Antipathes ulex</i>      | black coral                           | NA                |

## Appendix B

### Appendix C: Letter from PIFSC Director Mike Seki to PIRO Regional Administrator Michael Tosatto regarding 2015 Kona crab stock assessment and CIE review



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Pacific Islands Fisheries Science Center  
1845 Wasp Blvd. Bldg. 176 • Honolulu, Hawaii 96818-5007  
(808) 725-5300 • Fax: (808) 725-5532

January 20, 2016

Mr. Michael Tosatto  
Pacific Islands Regional Administrator  
NOAA National Marine Fisheries Service  
Pacific Islands Regional Office  
1845 Wasp Blvd., Building 176  
Honolulu, HI 96818

Dear Mr. Tosatto,

This letter reports on the 2015 assessment results for the Main Hawaiian Islands (MHI) Kona crab (*Ranina ranina*) fishery by Thomas et al. (2015), which was recently reviewed through the Center for Independent Experts (CIE) (Hall 2015). This assessment used Hawaii State commercial fisher-reported data in the form of catch and catch per-unit-effort (CPUE). Data from 1970 through 2006 were used in fitting the combined-sex production model. Starting in 2007, revised Hawaii State fishing regulations prohibited retention of female crabs. Male-only catch data from 2007-2009, and scenarios with future catch starting in 2010 set at 0, 7,000, and 8,000 lbs were used in projections of future stock biomass from 2007 through 2030, without adjustment for male-only reported catch or altered mortality of discarded females starting in 2007.

The CIE review concurred with the assessment's conclusion that, in 2006, the MHI Kona crab population was overfished (defined as biomass less than 50% of  $B_{MSY}$ ), and that the overfished status was unlikely to have improved by 2010. Biomass in 2006 was estimated to be only 18% of  $B_{MSY}$ . The assessment projections indicate the following results under a future combined-sex catch mortality of 0, 7,000, and 8,000 lbs:

| Combined-sex catch mortality starting in 2010 | Biomass projection result                                                                                             |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 0 lbs                                         | Biomass will definitely increase, and will become greater than 50% of $B_{MSY}$ by ~2015.                             |
| 7,000 lbs                                     | Biomass may increase to greater than 50% $B_{MSY}$ by 2030; still a possibility of biomass decline to 0 lbs by ~2020. |
| 8,000 lbs                                     | Biomass likely to decline to 0 lbs by ~2020.                                                                          |

These projections assume the catch mortality was for both males and females, when in reality reported catch starting in 2007 is male-only. This regulation change may have changed the sex ratio in the stock and affected production of Kona crabs starting in 2007. If females survive release, then there may be higher productivity of the stock. However, the Science Center is concerned that female post-release mortality occurs and may be high (Kennelly and Watkins, 1990). If this is true, reported catches starting in 2007 are underestimating catch mortality.

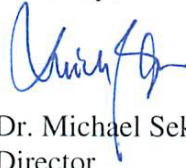




From 2007 through 2012, reported male-only annual catches have ranged from about 8,000 to 11,000 lbs and were slightly lower in 2013 and 2014 (about 8,000 and 3,000 lbs, respectively). If female post-release mortality occurs, then catch mortality is actually higher. The current ACL is 27,600 lbs for male-only catch, and is much higher than the 8,000 lbs of combined-sex catch projected to cause biomass decline or the 7,000 lbs of combined-sex catch that still provides a possibility of biomass decline.

The Center agrees that further work is needed to provide advice on the current status of the population in more recent years, since this stock assessment provides stock status determinations only through 2006. However, this stock assessment provides useful scientific information about stock status within the last decade and the likely result of continued catches since then.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Michael Seki', with a stylized flourish at the end.

Dr. Michael Seki, Ph.D.  
Director

#### References:

N.G. Hall. 2015. Center for Independent Experts (CIE) Report on the Independent Peer Review of the Kona Crab Benchmark Assessment.

S.J. Kennelly, D. Watkins, and J.R. Craig. 1990. Mortality of discarded spanner crabs *Ranina ranina* (Linnaeus) in a tangle-net fishery — laboratory and field experiments, *Journal of Experimental Marine Biology and Ecology*. 140(1–2), 39-48.

L.R. Thomas, H.-H. Lee, and K. Piner. 2015. Characterization and Assessment of the Main Hawaiian Island Kona Crab (*Ranina ranina*) Fishery. Assessment conducted: 2010–2011. Report prepared: October 2015. 34pp.



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## **Environmental Assessment**

### **Specification of 2016-2017 Annual Catch Limits and Accountability Measures for American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands Bottomfish Fisheries**

(RIN 0648-XE587)

March 13, 2017

**Responsible Agency:** National Oceanic and Atmospheric Administration (NOAA)  
National Marine Fisheries Service (NMFS)  
Pacific Islands Region Office (PIRO)

**Responsible Official:** Michael D. Tosatto  
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**Responsible Council:** Western Pacific Fishery Management Council (Council)  
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### **Abstract**

NMFS proposes to specify annual catch limits (ACL) and accountability measures (AM) for bottomfish management unit species (BMUS) in the U.S. Exclusive Economic Zone (EEZ) around American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI) for the 2016 and 2017 fishing years. The Council recommended BMUS ACLs of 106,000 lb for American Samoa, 66,000 lb for Guam, and 228,000 lb for CNMI. The probability of overfishing BMUS in American Samoa is 22.9 percent and 37 percent in American Samoa in 2016 and 2017, respectively. The probability of overfishing BMUS in Guam is 25 percent and 36 percent in 2016 and 2017, respectively. The probability of overfishing BMUS in the CNMI is 24.2 percent and 36 percent in 2016 and 2017, respectively.

The fishing year for bottomfish in the U.S. territories begins January 1 and ends December 31. Unless modified by NMFS, the ACLs and AMs would be applicable in fishing years 2016 and 2017. Each fishing year, territorial bottomfish catches from both territorial waters (generally



from the shoreline to 3 nm offshore), and Federal waters (the EEZ) around the territories would be counted towards the specified ACL.

Catch data from bottomfish fisheries in nearshore territorial waters are generally not available until at least six months after the end of the fishing year. Therefore, it is not possible to monitor bottomfish catch within the fishing season accurately enough to propose in-season AMs (e.g., fishery closure in Federal waters). For these reasons, only a post-season AM is possible. Specifically, after the end of each fishing year, if NMFS and the Council determine that the average catch from the most recent three-year period exceeds the specified ACL, NMFS would reduce the ACL in the subsequent fishing years by the amount of the overage. Prior to implementing a reduced ACL, NMFS would conduct additional environmental analyses, if necessary, and the public would have the opportunity to provide input and comment on the reduced ACL specification at that time. If a fishery exceeds an ACL more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires annual specification of ACLs and AMs for fish included in a fishery ecosystem plan (FEP). The Council recommended the ACLs and AMs for territorial bottomfish stock complexes, and developed its recommendations in accordance with the ACL process approved by NMFS, and in consideration of the best available scientific, commercial, and other information.

NMFS prepared this environmental assessment (EA) to evaluate the potential environmental effects of the proposed ACL specifications and AMs in fishing years 2016 and 2017. The EA includes a description of the information and methods used by the Council to develop the proposed ACLs, and alternatives to the proposed ACL specifications. The analysis in the EA indicates that the proposed ACL specifications and post-season AM would not result in large beneficial or adverse effects on target, non-target, or bycatch species, protected species or on marine habitats. This is because the proposed Federal action, regardless of which alternative the Council recommends and NMFS selects for implementation, would not limit or constrain territorial bottomfish catches, or change the conduct of the commercial or non-commercial fisheries in any way. Therefore, effects of the proposed action would be unchanged from the status quo.

You may find copies of this EA, the final specifications, and supporting documentation by searching on RIN 0648-XE587 at [www.regulations.gov](http://www.regulations.gov), or by contacting the responsible official or Council at the above address.

## **Environmental Assessment**

### **Specification of 2016-2017 Annual Catch Limits and Accountability Measures for American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands Bottomfish Fisheries**

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## Acronyms

ABC – Acceptable Biological Catch  
ACL – Annual Catch Limit  
ACT – Annual Catch Target  
AM – Accountability Measure  
APA – Administrative Procedure Act  
BMUS – Bottomfish Management Unit Species  
CFR – Code of Federal Regulations  
CNMI – Commonwealth of the Northern Mariana Islands  
CPUE – Catch per Unit of Effort  
DAWR – Guam Division of Aquatic and Wildlife Resources  
DMWR – American Samoa Department of Marine and Wildlife Resources  
DFW – Northern Mariana Islands Division of Fish and Wildlife  
EA – Environmental Assessment  
EC – Ecosystem Component  
EEZ – Exclusive Economic Zone  
ESA – Endangered Species Act  
FEP – Fishery Ecosystem Plan  
FMP – Fishery Management Plan  
FR – Federal Register  
MHI – Main Hawaiian Islands  
MFMT – Maximum Fishing Mortality Threshold  
MMPA – Marine Mammal Protection Act  
MSST – Minimum Stock Size Threshold  
MSY – Maximum Sustainable Yield  
MUS – Management Unit Species  
NEPA – National Environmental Policy Act  
nm – Nautical Miles  
NMFS – National Marine Fisheries Service  
NOAA – National Oceanic and Atmospheric Administration  
OFL – Overfishing Limit  
OLE – Office of Law Enforcement  
P\* - Probability or Risk of Overfishing  
PIFSC – NMFS Pacific Islands Fisheries Science Center  
PIRO – Pacific Islands Regional Office  
RIR – Regulatory Impact Review  
SDC – Status Determination Criteria  
SEEM – Social, Economic, and Ecological Considerations, or Management Uncertainty  
SSC – Scientific and Statistical Committee  
USCG – U.S. Coast Guard  
USFWS – U.S. Fish and Wildlife Service  
WPacFIN – Western Pacific Fisheries Information Network  
WPFMC or Council – Western Pacific Fishery Management Council



## 1 Background Information

The National Marine Fisheries Service (NMFS) and the Western Pacific Fishery Management Council (Council) manage fisheries for bottomfish management unit species (BMUS) in the EEZ, generally 3-200 nautical miles (nm) around the U.S. Pacific Islands through one of four FEP authorized by the Magnuson-Stevens Act. Three of the FEP are archipelagic-based and include the FEP for the American Samoa Archipelago, the FEP for the Hawaiian Archipelago, and the FEP for the Mariana Archipelago (which applies to Federal waters around Guam and the Commonwealth of the Northern Mariana Islands (CNMI)). In each archipelago, bottomfish fisheries harvest an assemblage, or complex of species that include emperors, snappers, groupers, and jacks.

NMFS manages Hawaii bottomfish fisheries through separate management actions. NMFS manages Hawaii bottomfish fisheries through two species complexes (Deep 7 and non-Deep 7). This document will not discuss Hawaii bottomfish fisheries.

The fourth FEP covers Federal waters of the U.S. Pacific Remote Island Areas (PRIA), which include Palmyra Atoll, Kingman Reef, Jarvis Island, Baker Island, Howland Island, Johnston Atoll, and Wake Island. On January 6, 2009, the President issued Presidential Proclamation 8335 establishing the Pacific Remote Islands Marine National Monument (Monument). This proclamation prohibited commercial fishing within 12 nm of each island or atoll. The President further expanded the Monument's boundaries by proclamation on September 29, 2014, and prohibited commercial fishing within the expanded boundaries (Presidential Proclamation 9173). These actions eliminated commercial bottomfish fishing in these areas. Therefore, NMFS does not permit commercial fishing for bottomfish in the PRIA.

Federal regulations for Pacific Island bottomfish fisheries in Title 50, Code of Federal Regulations part 665 (50 CFR 665) include vessel identification and observer requirements and a prohibition on the use of bottom trawls and bottom set gillnets. In the CNMI, Federal regulations further require commercial fishermen to obtain a Federal bottomfish fishing permit and report all catch. Currently, Federal regulations prohibit fishing vessels greater than 40 ft in length from fishing within 50 nautical miles (nm) around the southern islands of Rota, Tinian and Saipan, and 10 nm around the Island of Alamagan (50 CFR 665.403(b)). However, a proposed rule for Amendment 4 to the Marianas archipelago FEP would remove the CNMI medium and large vessel prohibited areas (81 FR 38123, June 13, 2016 – update, a final rule for this action becomes effective October 7, 2016 (81 FR 61625, September 7, 2016)). Additionally, Presidential Proclamation 8335 established the Marianas Trench Marine National Monument in 2009, and prohibited all commercial fishing within 50 nm around the three northernmost islands, Uracus, Maug, and Asuncion. In Guam, Federal regulations prohibit vessels greater than 50 ft in length from fishing for BMUS in the U.S. EEZ within 50 nm from shore (50 CFR 665.403(a)). The Monument and Guam prohibited areas would be unchanged by Amendment 4 to the Marianas FEP.

Under all Pacific Island FEPs, Federal regulations require NMFS to specify an annual catch limit (ACL) and implement accountability measures (AM) for each bottomfish stock and stock

complex<sup>1</sup>, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. On August 31, 2015 (80 FR 52415), NMFS specified the 2015 ACLs for BMUS in American Samoa, Guam and the CNMI as follows: American Samoa bottomfish ACL = 101,000 lb, Guam bottomfish ACL = 66,800 lb, and CNMI bottomfish ACL = 228,000 lb.

## **1.1 Overview of the ACL Specification Process**

In accordance with the Magnuson-Stevens Act and the FEPs, there are three required elements in the development of an ACL specification. The first requires the Council's Scientific and Statistical Committee (SSC) to calculate an acceptable biological catch (ABC) that is set at or below the stock or stock complex's overfishing limit (OFL). The OFL is an estimate of the catch level above which overfishing occurs and corresponds with the maximum fishing mortality threshold (MFMT). NMFS defines ABC as the level of catch that accounts for the scientific uncertainty in the estimate of OFL and other scientific uncertainty. To determine the appropriate ABC, the ACL mechanism described in the FEPs includes a five-tiered system of control rules that allows consideration of different levels of scientific information. Tiers 1-2 involve data rich to data moderate situations and include levels of scientific uncertainty derived from model-based stock assessments. Tiers 3-5 involve data poor situations and include levels of scientific uncertainty derived from ad-hoc procedures including simulation models or expert opinion.

When calculating an ABC for a stock or stock complex, the SSC first evaluates the information available for the stock and assign the stock or stock complex into one of the five tiers. The SSC then applies the control rule assigned to that tier to determine ABC. For stocks or stock complexes like bottomfish with estimates of maximum sustainable yield (MSY) and other MSY-based reference points derived from statistically-based stock assessment models (Tier 1-3 quality data), the SSC calculates ABC based on an ABC control rule that accounts for scientific uncertainty in the estimate of the OFL, and the acceptable level of risk (as determined by the Council) that catch equal to the ABC would result in overfishing. ABC represents the maximum value for which the probability of overfishing ( $P^*$ ) is less than 50 percent. In accordance with Federal regulations, the probability of overfishing cannot exceed 50 percent (74 FR 3178, January 9, 2011). Each FEP includes a qualitative process by which the  $P^*$  value may be reduced below 50 percent by the Council based on consideration of four dimensions of information, including assessment information, uncertainty characterization, stock status, and stock productivity and susceptibility. The FEPs also allow the SSC to recommend an ABC that differs from the results of the ABC control rule calculation based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors determined relevant by the SSC. However, the SSC must explain its rationale.

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<sup>1</sup> The Magnuson-Stevens Act defines the term "stock of fish" to mean a species, subspecies, geographic grouping, or other category of fish capable of management as a unit. Federal regulations at 50 CFR 660.310(c) defines "stock complex" to mean a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar.

The second element requires the Council to determine an ACL not exceeding the SSC-recommended ABC. The process includes methods by which the Council ACL may reduce the ABC based on social, economic, and ecological considerations, or management uncertainty<sup>2</sup> (SEEM). An ACL set below the ABC reduces the probability that actual catch would exceed the OFL and result in overfishing.

Finally, the ACL process includes two types of AMs: in-season AMs and post-season AMs. In-season AMs are intended to prevent an ACL from being exceeded and may include, but are not limited to: closing the fishery, closing specific areas, changing bag limits, or other methods to reduce catch. The Council may also recommend an annual catch target (ACT) as an AM so that fisheries do not exceed an ACL. An ACT is the management target of the fishery and accounts for management uncertainty in controlling the actual catch at or below the ACL. An ACT would be included as a management measure where an in-season fishery closure could be implemented. Another type of AM is a post-season AM which could include a downward adjustment to an ACL in the following year if a fishery exceeds the ACL in the preceding year.

If, in a given year, the Council were to determine that landings exceeded an ACL, the Council may recommend that NMFS reduce the ACL in the subsequent fishing year by the amount of the overage. By regulation, to decide whether to recommend an overage adjustment, the Council would consider the magnitude of the overage and its impact on the affected stock's status. Additionally, if a fishery exceeds an ACL more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Figure 1 illustrates the relationship between the terms used in this section.

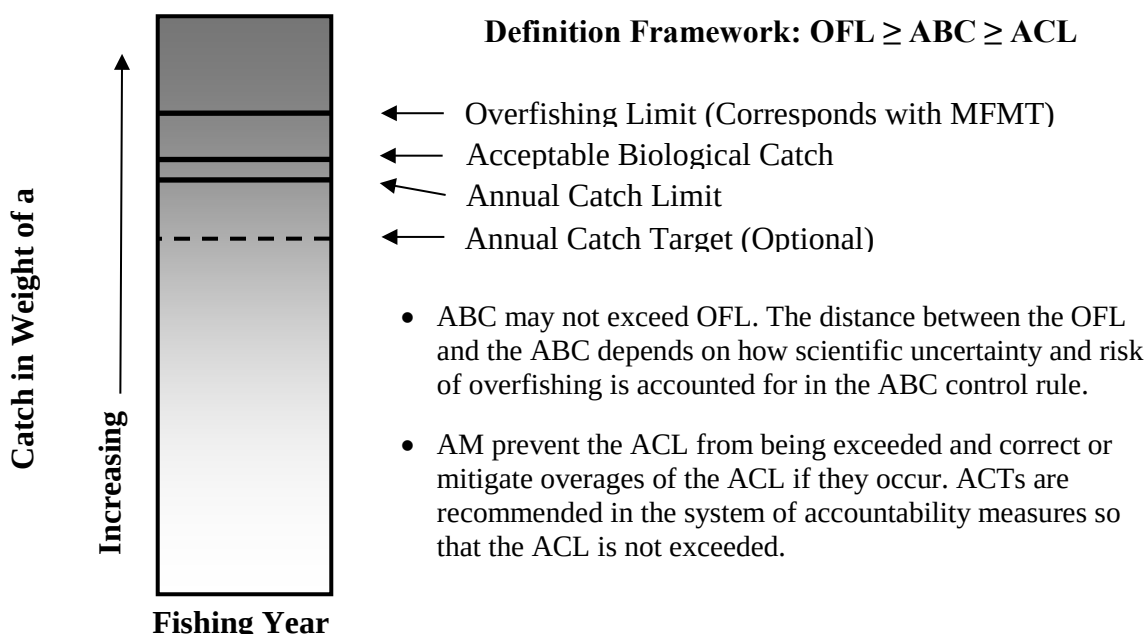


**Figure 1. General relationship between OFL, ABC, ACL and ACT**

<sup>2</sup> Management uncertainty occurs because of the lack of sufficient information about catch (e.g., late reporting, under reporting, and misreporting of landings).

For more details on the specific elements of the ACL specification mechanism and process, see Amendment 1 to the PRIA FEP, Amendment 2 to the FEP for the American Samoa Archipelago, Amendment 2 to the FEP for the Mariana Archipelago, Amendment 3 to the FEP for the Hawaii Archipelago, and the final implementing regulations at 50 CFR 665.4 (76 FR 37286, June 27, 2011)

## **1.2 Proposed Federal Action and Purpose and Need**

NMFS proposes to specify ACLs and AMs for BMUS in American Samoa, CNMI, and Guam. NMFS based its proposed ACL specifications on Council recommendations developed in accordance with the approved ACL mechanism described in the FEPs and implementing Federal regulations at 50 CFR 665.4. The Council considered the best available scientific, commercial, and other information.

NMFS would specify ACLs for each stock complex for the 2016 and the 2017 fishing years, which begin on January 1 and end on December 31, annually. NMFS would use catch data<sup>3</sup> from local resource management agencies and NMFS Federal logbooks to estimate landings for each stock complex for each fishing year. NMFS would then compare estimated landings against the ACLs to evaluate fishery performance. The Council and NMFS manage BMUS in American Samoa, CNMI, and Guam as single multi-species stock complexes in each archipelagic area. Consistent with the FEPs, this proposed action would specify the ACLs at the stock complex level.

The purpose of the proposed action is to specify ACLs and AMs for American Samoa, Guam and CNMI. The proposed action complies with the requirements of the Magnuson-Stevens Act and the provisions of the FEPs for American Samoa and the Mariana Archipelago requiring NMFS to specify ACLs and AMs for bottomfish fisheries based on Council recommendations. The proposed action seeks to ensure long-term sustainability of bottomfish resources while allowing fishery participants to continue to benefit from them.

## **1.3 Public Involvement**

At its 164<sup>th</sup> meeting, the Council considered and discussed issues relevant to ACL and AM specifications for Pacific Island bottomfish stocks and stock complexes in American Samoa, Guam, and the CNMI including ABC recommendations of the 121<sup>st</sup> SSC, and the range of ACLs considered in this document. The 121<sup>st</sup> SSC and the 164<sup>th</sup> Council meetings were held on October 13-14, 2015, and October 21-22, 2015, respectively. The Council notified and invited the public to both meetings through notices published in the Federal Register (80 FR 57582, September 24, 2015).

NMFS sought public comment on the proposed rule and draft EA for the proposed ACL specifications and AMs for territorial bottomfish fisheries of the Pacific Island for fishing years

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<sup>3</sup> Territorial fisheries agencies in American Samoa, the CNMI, and Guam collect catch data for bottomfish fisheries in each archipelagic area at the lowest taxonomic level possible. NMFS Pacific Islands Fisheries Science Center's (PIFSC) Western Pacific Fisheries Information Network (WPacFIN) uses algorithms to expand the data and generate estimates of total catches by both commercial and non-commercial sectors.

2016 through 2018 (82 FR 5517, January 18, 2017). The comment period lasted 15 days and ended on February 2, 2017. NMFS received three comments, expressing general support for ACLs. NMFS responded to the comments in the final rule.

## **2 Description of the Alternatives Considered**

The alternatives considered in this document are a range of ACLs for the multi-species bottomfish stock complexes of American Samoa, Guam, and the CNMI. Although the estimate of overfishing limits (OFLs) and calculation of acceptable biological catches (ABCs) are part of the ACL mechanism, the establishment of these reference points is not part of the proposed Federal action, but we describe the process here for informational purposes because of the relationship between OFLs, ABCs, and ACLs.

The Council's SSC discussed its recommendations for ABCs at its 121<sup>st</sup> meeting in accordance with the approved ACL mechanism described in the FEPs and implementing Federal regulations at 50 CFR 665.4. The SSC considered the best available scientific, commercial, and other information when determining ABCs. This EA includes a discussion of OFLs and the SSC's methods of calculating ABCs for informational purposes.

### **2.1 Development of the Alternatives**

The SSC and Council developed the ABC and ACL recommendations in accordance with the Magnuson-Stevens Act and Federal regulations at 50 CFR 665.4 implementing the ACL specification mechanism of the FEPs described in Section 1. This section summarizes the data, methods, and procedures considered in SSC and Council deliberations described in the Council's ACL specification document (WPFMC 2011). The Council's website, at [www.wpcouncil.org](http://www.wpcouncil.org), contains a full report of the 121<sup>st</sup> SSC and 164<sup>th</sup> Council deliberations.

The 121<sup>st</sup> SSC and 164<sup>th</sup> Council based their ABC and ACL recommendations for bottomfish in American Samoa, Guam, and CNMI on the most recent bottomfish stock assessment updates (Yau et al. 2016) conducted by NMFS Pacific Islands Fisheries Science Center (PIFSC). Yau et al. (2016) produced a stock assessment by applying a Bayesian state space surplus production model to data through 2013 to estimate parameters of a Schaefer model fit to a time series of annual catch per unit effort (CPUE) statistics for BMUS in each island area. This approach provided direct estimates of parameter uncertainty for stock status determinations. The surplus production model includes both process error in biomass production dynamics and observation error in the catch-per-unit effort data. Section 2.1.1, Section 2.1.2, and Section 2.1.3 provide a brief summaries of the model outputs for bottomfish carrying capacity (K), MSY estimates, probabilities of overfishing in 2017 and 2017 and stock status in American Samoa, Guam, and CNMI, respectively (Appendix A).

Under the FEPs for American Samoa and the Mariana Archipelago, overfishing of bottomfish occurs when the fishing mortality rate (F) exceeds the fishing mortality rate for MSY (F<sub>MSY</sub>) for one year or more. Managers call this threshold the MFMT and express it as a ratio,  $F/F_{MSY} = 1.0$ . Thus, if the  $F/F_{MSY}$  ratio exceeds 1.0 for one year or more, overfishing is occurring. Fishery managers consider a stock overfished when its biomass (B) declines below the level necessary to

produce MSY on a continuing basis ( $B_{MSY}$ ). NMFS considers stocks overfished when  $B < (1-M) \cdot B_{MSY}$  where M equals the natural mortality of the stock. The SSC defined M for bottomfish complexes as 0.3. Therefore, stocks become overfished when  $B < 0.7 \cdot B_{MSY}$ .  $0.7 \cdot B_{MSY}$  is also known as the minimum stock size threshold (MSST) for bottomfish. MSST may also be expressed as the ratio  $B / B_{MSY} = 0.7$ . Thus, if the  $B / B_{MSY}$  ratio decreases below 0.7, the stock complex is considered overfished. Whenever possible, NMFS applies status determination criteria (SDC) of MFMT and MSST to individual species within the multi-species stock complex. When that is not possible, fishery managers apply SDCs to indicator species for the multi-species stock complex. Current data preclude either approach; therefore, for all island areas, the Council and NMFS apply SDCs to entire bottomfish multi-species complexes.

### **2.1.1 American Samoa Bottomfish MUS**

#### ***Estimation of OFL***

The PIFSC 2015 bottomfish stock assessment update (Yau et al. 2016), estimates the long-term MSY for American Samoa bottomfish at  $76,740 \pm 14,060$  lb, slightly higher than the previous MSY estimate of  $76,200 \pm 14,300$  lb reported in Brodziak et al. (2012). Stock projection results, which assume that a two-year bottomfish catch limit would be harvested in its entirety in 2016 and again in 2017, indicate that an ACL set at approximately 115,000 lb would result in a 30.2 percent probability of overfishing in 2016 and 50 percent probability of overfishing in 2017 (Table 1). The maximum risk allowable under Federal law (74 FR 3178, January 9, 2011) is 50 percent. Therefore, while 76,740 lb is the long-term estimate of MSY, 115,000 lb is the OFL proxy for the two-year period. As a reference, NMFS estimated the average annual total catch from 2011-2013 at 21,005 lb, with an estimated 23,630 lb landed in 2013 (Table 2). This suggests fishery landings are substantially below the OFL and below the MSY by a factor of three.

**Table 1. American Samoa probability of overfishing in 2016 and 2017 for a range of ACLs**

| <b>ACL (lb)</b> | <b>% Probability of Overfishing (2016)</b> | <b>% Probability of Overfishing (2017)</b> |
|-----------------|--------------------------------------------|--------------------------------------------|
| <b>50,000</b>   | 1.0                                        | 1                                          |
| <b>69,000</b>   | 4.2                                        | 5                                          |
| <b>80,000</b>   | 7.7                                        | 10                                         |
| <b>87,000</b>   | 10.9                                       | 15                                         |
| <b>92,000</b>   | 13.5                                       | 20                                         |
| <b>97,000</b>   | 16.6                                       | 25                                         |
| <b>101,000</b>  | 19.3                                       | 30                                         |
| <b>102,000</b>  | 19.9                                       | 31                                         |
| <b>103,000</b>  | 20.7                                       | 33                                         |
| <b>104,000</b>  | 21.5                                       | 34                                         |
| <b>105,000</b>  | 22.3                                       | 35                                         |
| <b>106,000</b>  | 22.9                                       | 37                                         |
| <b>107,000</b>  | 23.7                                       | 38                                         |
| <b>108,000</b>  | 24.5                                       | 40                                         |
| <b>109,000</b>  | 25.4                                       | 41                                         |
| <b>110,000</b>  | 26.1                                       | 42                                         |
| <b>111,000</b>  | 26.9                                       | 44                                         |
| <b>112,000</b>  | 27.8                                       | 45                                         |
| <b>113,000</b>  | 28.6                                       | 47                                         |
| <b>114,000</b>  | 29.4                                       | 48                                         |
| <b>115,000</b>  | 30.2                                       | 50                                         |

Source: Yau et al. (2016)

### ***Stock Status***

2013 is the most recent year for which stock status information is available,  $F_{2013}/F_{MSY} = 0.17$  while  $B_{2013}/B_{MSY} = 1.98$  (Yau et al. 2016). The production model results indicate that the American Samoa bottomfish complex was not overfished and did not experience overfishing at any point between the periods 1986 and 2013 (Figure 2). Stock projections show that annual catches would need to exceed 102,000 lb in 2016 and again in 2017 for the  $F/F_{MSY}$  ratio to exceed 1.0 (i.e., overfishing) for year 2.

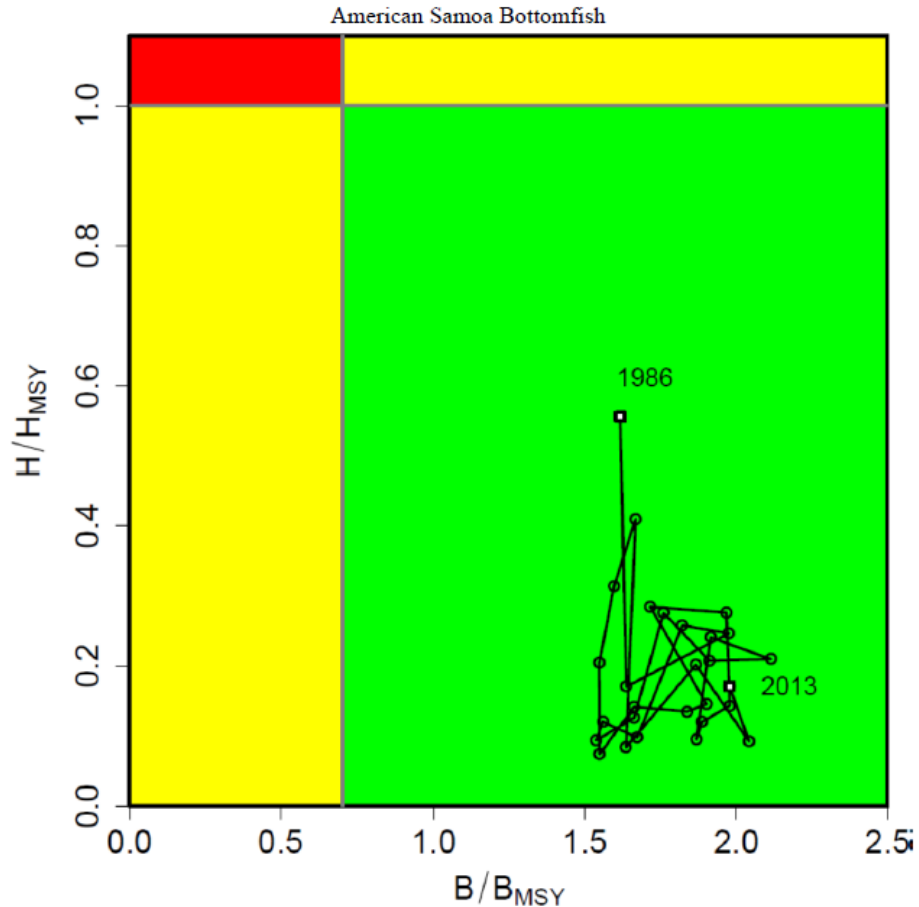


**Figure 2.** Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for American Samoa, 1986-2013 (Source: Yau et al. 2016, Figure 15)

### ***SSC Calculation of ABC***

Because the PIFSC 2015 stock assessment updates used statistical-based models to estimate OFL and uncertainty in OFL for the American Samoa bottomfish stock complex, the assessment qualifies as a Tier 1-2 assessment.<sup>4</sup> Therefore, in accordance with the Council’s ACL mechanism, the Council must advise the SSC on the acceptable probability of overfishing or  $P^*$  to apply in the Tier 1-2 ABC control rule to calculate ABC.  $P^*$  cannot exceed 50 percent as described in the National Standard 1 guidelines (74 FR 3178, January 11, 2009).

Upon evaluation of the PIFSC 2015 stock assessment, the SSC determined that catch equal to a  $P^*$  of 37 percent applied in 2017 is appropriate for the fishery and presented its methodologies, rationale and findings at the 161<sup>st</sup> Council meeting (see Appendix B). Based on risk projections contained in Table 1, the SSC determined a catch of 106,000 lb, equaling ABC for the stock complex, would correspond to a  $P^*$  of 22.9 percent in 2016 and would rise to 37 percent in 2017. The SSC set the ABC for the American Samoa bottomfish stock complex at that level for both

<sup>4</sup> A “Tier 1-2” assessment refers to a stock assessment that has a moderate to high level of information available for a given fish stock. Each FEP describes the specified approach the SSC must use to calculate an ABC for stocks with a Tier 1-2 assessment (76 FR 14367, March 16, 2011).



2016 and 2017. At its 164<sup>th</sup> meeting, the Council found these overfishing probabilities acceptable given that the fishery would not likely exceed the proposed ACL.

**Table 2. Annual estimated catch of BMUS in American Samoa (2000-2013)**

| <b>Year</b>                     | <b>Estimated Total Catch (lb)<sup>1</sup></b> | <b>Estimated Commercial Catch (lb)<sup>2</sup></b> |
|---------------------------------|-----------------------------------------------|----------------------------------------------------|
| 2000                            | 19,816                                        | 13,319                                             |
| 2001                            | 37,847                                        | 21,439                                             |
| 2002                            | 34,149                                        | 16,603                                             |
| 2003                            | 19,199                                        | 4,645                                              |
| 2004                            | 17,206                                        | 11,469                                             |
| 2005                            | 16,329                                        | 5,649                                              |
| 2006                            | 7,913                                         | 5,252                                              |
| 2007                            | 21,874                                        | 13,092                                             |
| 2008                            | 34,812                                        | 24,585                                             |
| 2009                            | 47,458                                        | 34,360                                             |
| 2010                            | 9,509                                         | 8,667                                              |
| 2011                            | 26,277                                        | 15,413                                             |
| 2012                            | 13,110                                        | 3,389                                              |
| 2013                            | 23,630                                        | 7,833                                              |
| <b>Ave. Catch<br/>2011-2013</b> | <b>21,005</b>                                 | <b>8,878</b>                                       |

<sup>1</sup>Source: Table 3 in Yau et al. (2016)

<sup>2</sup> Source: NMFS WPacFIN website <http://www.pifsc.noaa.gov/wpacfin> (accessed 09/17/2015)

## **2.1.2 Guam Bottomfish MUS**

### ***Estimation of OFL***

In its 2015 bottomfish stock assessment (Yau et al. 2016), PIFSC estimates the long-term MSY for Guam bottomfish at 56,130 lb  $\pm$  7,790 lb, slightly higher than the previous MSY estimate of 55,000 lb  $\pm$  7,900 lb in Brodziak et al. (2012). Stock projection results, which assume that a two-year bottomfish catch limit would be harvested in its entirety in 2016 and again in 2017, indicate that an ACL set at approximately 71,000 lb would result in a 32.1 percent probability of overfishing in 2016, rising in 2017 to an overfishing probability of about 49 percent (Table 3). Forty-nine percent is one percent below the maximum risk. While 56,130 lb is the long-term estimate of MSY, 71,000 lb is the OFL proxy for the two year period. Total catches averaged 37,183 lb during the period 2011-2013 with 29,848 lb landed in 2013, the most recent year for which complete catch data (i.e., total and commercial catch) (Table 4). Therefore, the most recent average catch data suggest the fishery would need to harvest nearly 33 percent more to reach MSY. However, in order for overfishing to occur, the fishery has to harvest more than twice the recent average catch in 2016 and again in 2017.

**Table 3. Guam probabilities of overfishing in 2016 and 2017 for a range of ACLs**

| <b>ACL (lb)</b> | <b>% Probability of Overfishing (2016)</b> | <b>% Probability of Overfishing (2017)</b> |
|-----------------|--------------------------------------------|--------------------------------------------|
| <b>33,000</b>   | 1.2                                        | 1                                          |
| <b>45,000</b>   | 5.0                                        | 5                                          |
| <b>51,000</b>   | 8.9                                        | 10                                         |
| <b>55,000</b>   | 12.3                                       | 15                                         |
| <b>58,000</b>   | 15.2                                       | 20                                         |
| <b>61,000</b>   | 18.6                                       | 25                                         |
| <b>62,000</b>   | 19.8                                       | 26                                         |
| <b>63,000</b>   | 21.0                                       | 29                                         |
| <b>64,000</b>   | 22.3                                       | 31                                         |
| <b>65,000</b>   | 23.7                                       | 33                                         |
| <b>66,000</b>   | 25.0                                       | 36                                         |
| <b>67,000</b>   | 26.4                                       | 38                                         |
| <b>68,000</b>   | 27.8                                       | 41                                         |
| <b>69,000</b>   | 29.2                                       | 44                                         |
| <b>70,000</b>   | 30.7                                       | 46                                         |
| <b>71,000</b>   | 32.1                                       | 49                                         |

Source: Yau et al. (2016)

### ***Stock Status***

In 2013, the most recent year for which stock status information is available,  $F_{2013}/F_{MSY} = 0.356$  while  $B_{2013}/B_{MSY} = 1.63$  (Table 8 in Yau et al. 2016). The production model results indicate that during the period 1982 through 2013, the Guam bottomfish complex has not been overfished and has not experienced overfishing, except perhaps in 2000 (Figure 3). Based on stock projections, an annual catch of 71,000 lb in 2016 and again in 2017 would be necessary to produce an  $F/F_{MSY}$  ratio of 1.0 (i.e., overfishing) for year 2.

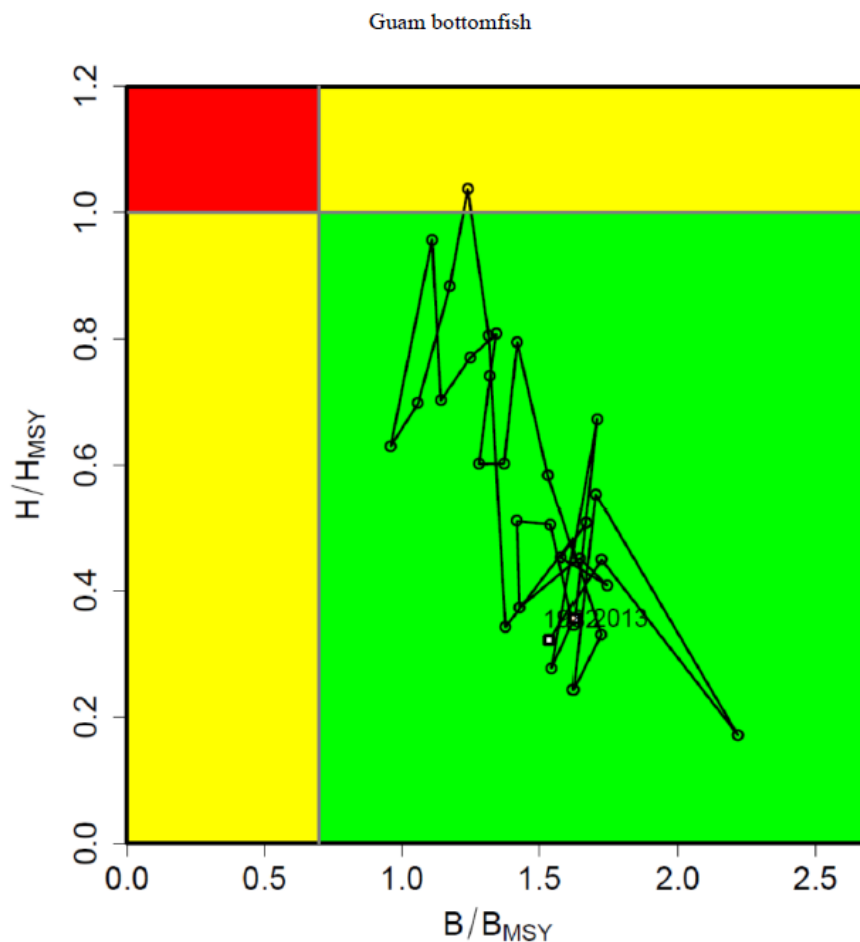


**Figure 3.** Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for Guam, 1982-2013 (Source: Yau et al. 2016, Figure 21)

### ***SSC's Calculation of ABC***

Because the PIFSC 2015 stock assessment used statistical-based models to estimate OFL and uncertainty in OFL for the Guam bottomfish stock complex, the assessment qualifies as a Tier 1-2 assessment. Therefore, in accordance with the Council's ACL mechanism, the Council must advise the SSC on the acceptable probability of overfishing or  $P^*$  to apply in the Tier 1-2 ABC control rule to calculate the ABC.

Upon evaluation of the PIFSC 2015 stock assessment, the SSC determined that catch equal to a  $P^*$  of 36 percent applied in 2017 was appropriate for the fishery and presented its methodologies, rationale and findings at the 161<sup>st</sup> Council meeting (see Appendix B). Based on risk projections contained in Table 3, the SSC determined a catch of 66,000 lb corresponds to a  $P^*$  of 25 percent in 2016 rising to 36 percent in 2017 and set the ABC for the Guam bottomfish stock complex at that level for both 2016 and 2017.

**Table 4. Annual estimated catch of BMUS in Guam (2000-2013)**

| <b>Year</b>                     | <b>Estimated Total Catch (lb)<sup>1</sup></b> | <b>Estimated Commercial Catch (lb)<sup>2</sup></b> |
|---------------------------------|-----------------------------------------------|----------------------------------------------------|
| 2000                            | 66,000                                        | 20,371                                             |
| 2001                            | 54,352                                        | 23,690                                             |
| 2002                            | 24,044                                        | 17,561                                             |
| 2003                            | 43,253                                        | 10,841                                             |
| 2004                            | 36,915                                        | 24,947                                             |
| 2005                            | 36,529                                        | 23,002                                             |
| 2006                            | 38,054                                        | 17,100                                             |
| 2007                            | 27,459                                        | 16,074                                             |
| 2008                            | 37,316                                        | 11,484                                             |
| 2009                            | 40,222                                        | 15,867                                             |
| 2010                            | 28,958                                        | 13,810                                             |
| 2011                            | 59,618                                        | 15,985                                             |
| 2012                            | 22,085                                        | 10,000                                             |
| 2013                            | 29,848                                        | 4,891                                              |
| <b>Ave. Catch<br/>2011-2013</b> | <b>37,183</b>                                 | <b>10,292</b>                                      |

<sup>1</sup>Source: Table 3 in Yau et al. (2016).

<sup>2</sup> Source: NMFS WPacFIN website <http://www.pifsc.noaa.gov/wpacfin> (accessed 09/17/2015)

### **2.1.3 CNMI Bottomfish MUS**

#### ***Estimation of OFL***

In its 2015 bottomfish stock assessment update (Yau et al. 2016), PIFSC estimates the long-term MSY for CNMI bottomfish at 173,100 ± 32,190 lb, higher than the previous MSY estimate of 172,900 ± 32,200 lb reported in Brodziak et al. (2012). Stock projection results, which assume that a two-year bottomfish catch limit would be harvested in its entirety in 2016 and again in 2017, indicate that an ACL set at approximately 250,000 lb would result in a 31.2 percent probability of overfishing in 2016, rising in 2017 to approximately a 50 percent probability of overfishing (Table 5). Therefore, while 173,100 lb is the long-term estimate of MSY, 250,000 lb is considered to be the OFL proxy for the two-year period. Estimated average annual total catch during the period 2011-2013 was 20,009 lb with 22,510 lb landed in 2013, the most recent year for which complete catch data (i.e., total and commercial catch) are available (Table 6). This suggests the fishery would need to harvest nearly eight times the recent average catch of 20,009 lb for overfishing to occur.

**Table 5. CNMI probabilities of overfishing in 2016 and 2017 for a range of ACLs**

| <b>ACL (lb)</b> | <b>% Probability of Overfishing (2016)</b> | <b>% Probability of Overfishing (2017)</b> |
|-----------------|--------------------------------------------|--------------------------------------------|
| <b>78,000</b>   | 1.0                                        | 1                                          |
| <b>134,000</b>  | 4.7                                        | 5                                          |
| <b>162,000</b>  | 8.5                                        | 10                                         |
| <b>180,000</b>  | 12.1                                       | 15                                         |
| <b>208,000</b>  | 18.7                                       | 26                                         |
| <b>212,000</b>  | 19.7                                       | 28                                         |
| <b>214,000</b>  | 20.2                                       | 29                                         |
| <b>218,000</b>  | 21.3                                       | 31                                         |
| <b>220,000</b>  | 21.9                                       | 32                                         |
| <b>224,000</b>  | 23.1                                       | 34                                         |
| <b>228,000</b>  | 24.2                                       | 36                                         |
| <b>230,000</b>  | 24.9                                       | 37                                         |
| <b>232,000</b>  | 25.6                                       | 38                                         |
| <b>236,000</b>  | 26.8                                       | 41                                         |
| <b>240,000</b>  | 28.1                                       | 43                                         |
| <b>242,000</b>  | 28.7                                       | 45                                         |
| <b>246,000</b>  | 30.0                                       | 47                                         |
| <b>248,000</b>  | 30.6                                       | 48                                         |
| <b>250,000</b>  | 31.2                                       | 50                                         |

Source: Yau et al. (2016)

### ***Stock Status***

In 2013, the most recent year for which stock status information is available,  $F_{2010}/F_{MSY} = 0.088$  while  $B_{2010}/B_{MSY} = 1.85$  (Table 7 in Yau et al. 2016). The production model results indicate that the CNMI bottomfish complex was not overfished and did not experience overfishing at any point between the periods 1986 and 2013 (Figure 4). Based on stock projections, an annual catch of 250,000 lb in 2016 and again in 2017 would be necessary to produce an  $F/F_{MSY}$  ratio of 1.0 (i.e., overfishing) on the second year.

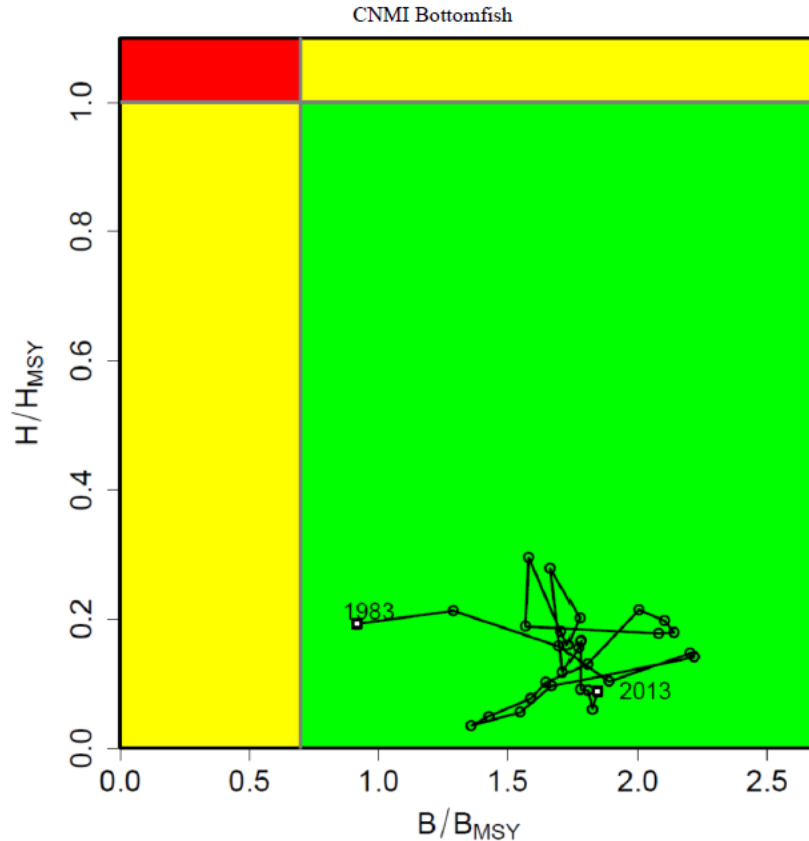


**Figure 4.** Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for CNMI, 1983-2013 (Source: Yau et al. 2016, Figure 18)

#### ***SSC's Calculation of ABC***

Because the PIFSC 2015 stock assessment used statistical models to estimate OFL and uncertainty in OFL for the CNMI bottomfish stock complex, the assessment qualifies as a Tier 1-2 assessment. Therefore, in accordance with the Council's ACL mechanism, the Council must advise the SSC on the acceptable probability of overfishing  $P^*$  to apply in the Tier 1-2 ABC control rule to calculate the ABC. Upon evaluation of the PIFSC 2015 stock assessment, the SSC determined that catch equal to a  $P^*$  of 36 percent applied in 2017 is appropriate for the fishery and presented its methodologies, rationale and findings at the 161<sup>th</sup> Council meeting (see Appendix B). The SSC determined a catch of 228,000 lb would correspond to a  $P^*$  of 24.2 percent in 2016 and rise to 36 percent in 2017 (Table 6). The SSC set the ABC for the CNMI bottomfish stock complex at that level for both 2016 and 2017.

**Table 6. Annual estimated catch of BMUS in CNMI (2000-2011)**

| <b>Year</b>                     | <b>Estimated Total Catch (lb)<sup>1</sup></b> | <b>Estimated Commercial Catch (lb)<sup>2</sup></b> |
|---------------------------------|-----------------------------------------------|----------------------------------------------------|
| 2000                            | 45,258                                        | 14,968                                             |
| 2001                            | 71,256                                        | 25,303                                             |
| 2002                            | 46,765                                        | 18,816                                             |
| 2003                            | 41,903                                        | 18,063                                             |
| 2004                            | 54,475                                        | 12,973                                             |
| 2005                            | 70,404                                        | 16,538                                             |
| 2006                            | 29,340                                        | 12,262                                             |
| 2007                            | 39,476                                        | 18,606                                             |
| 2008                            | 42,070                                        | 18,389                                             |
| 2009                            | 41,176                                        | 20,418                                             |
| 2010                            | 22,395                                        | 14,729                                             |
| 2011                            | 22,487                                        | 16,930                                             |
| 2012                            | 15,302                                        | 11,746                                             |
| 2013                            | 22,510                                        | 17,796                                             |
| <b>Ave. Catch<br/>2011-2013</b> | <b>20,099</b>                                 | <b>15,491</b>                                      |

<sup>1</sup>Source: Table 3 in Yau et al. (2016).

<sup>2</sup> Source: NMFS WPacFIN website <http://www.pifsc.noaa.gov/wpacfin> (accessed 09/25/2015)

## **2.2 ACL Alternatives for Bottomfish MUS in 2016 and 2017**

### ***Features common to all alternatives***

The alternatives considered in this document are limited to ACLs and AMs, as they are the management measures that require annual decision-making based on the best available science for the BMUS fisheries in American Samoa, Guam, and the CNMI. We analyze here the potential environmental effects of specifying ACLs and AMs for the 2016 and 2017 fishing years under the various alternatives. In accordance with the Magnuson-Stevens Act and the ACL mechanism described here and in all western Pacific FEPs, the ACL specification may not exceed the ABC recommendation made by the Council's SSC.

In each of the three archipelagic areas, the fishing year begins January 1 and ends on December 31. NMFS would begin counting catches towards the ACL for each bottomfish stock complex starting on January 1 using data collected by local resource management agencies through their respective fishery monitoring programs and NMFS Federal logbook reports. In accordance with 50 CFR 665.4, when NMFS projects that catches will reach an ACL for any stock or stock complex, the agency must restrict fishing for that stock or stock complex in the applicable U.S. EEZ to prevent catches from exceeding the ACL. The restriction may include, but is not limited to, closing the fishery, closing specific areas, or restricting effort (76 FR 37286, June 27, 2011). However, NMFS cannot implement in-season restrictions for any Pacific Island bottomfish fishery because catch statistics only become available about six months after local management agencies collect the data (see Sections 2.3.2 and 2.4.0 for more details on data collection). For this reason, under all ACL alternatives described here, NMFS proposes to implement the

Council's recommended AM. This AM requires the Council to conduct a post-season accounting of the annual catch for a stock complex relative to its ACL immediately after the end of the fishing year, or as soon as possible, given the limitations in the data collection and processing methods. Additionally, if landings of any stock complex exceed the specified ACL in a fishing year, the AM requires the Council to take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. This may include a recommendation that NMFS implement a downward adjustment to the ACL in the subsequent fishing year, or other measures, as appropriate. As an additional performance measure specified in each FEP, if catches exceed any ACL more than once in a four-year period, the Council must re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Future changes to an ACL would be reviewed under separate environmental review, at such time as changes are proposed and are not part of the current proposed action.

Each alternative assumes continuation of all existing Federal and local resource management laws and regulations, including non-regulatory monitoring of catch by the local resource management agencies with assistance from NMFS PIFSC's Western Pacific Fisheries Information Network (WPacFIN).

### **2.2.1 Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)**

In a final rule published on August 31, 2015, NMFS specified the 2015 ACLs for BMUS in American Samoa, Guam and the CNMI as follows: American Samoa bottomfish ACL = 101,000 lb, Guam bottomfish ACL = 66,800 lb, and CNMI bottomfish ACL = 228,000 lb (80 FR 52415). The Status Quo alternative assumes the current management regime would continue; therefore, under this alternative, the ACL for 2016 and 2017 would replicate the 2015 specifications. Table 7 lists the ACLs under the Status Quo alternative and their associated probabilities of overfishing in 2016 and 2017.

For American Samoa bottomfish, NMFS would implement ACL of 101,000 lb for 2016 and 2017. This ACL would present overfishing probabilities of 19.3 percent 2016 and 30 percent in 2017.

For Guam bottomfish, NMFS would implement an ACL of 66,800 lb for 2016 and 2017. This would present overfishing probabilities of approximately 26 percent in 2016 and approximately 38 percent in 2017.

For CNMI bottomfish, NMFS would implement an ACL of 228,000 lb for 2016 and 2017. This would present overfishing probabilities of 24.2 percent in 2016 and 38 percent in 2017.

Alternative 1 serves as the environmental baseline for this environmental assessment and is the "no change" or "Status Quo."



## **2.2.2 Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)**

Under Alternative 2, the Council would recommend and NMFS would specify the 2016 and 2017 ACLs at the level equal to the SSC-recommended ABCs. Table 8 lists the ACLs under Alternative 2 and their associated probabilities of overfishing in 2016 and 2017.

For American Samoa bottomfish, NMFS would implement an ACL of 106,000 lb in 2016 and 2017. This would result in overfishing probabilities of 22.9 percent in 2016 and 37 percent in 2017.

For Guam bottomfish, NMFS would implement an ACL of 66,000 lb for 2016 and 2017. This would present overfishing probabilities of 25 percent in 2016 and 36 percent in 2017.

For CNMI bottomfish, NMFS would implement an ACL of 228,000 lb for 2016 and 2017. This would present overfishing probabilities of 24.2 percent in 2016 and 36 percent in 2017.

The changes to the ACLs from Alternative 1 to Alternative 2 reflect consideration of the updated stock assessment model with three additional years of CPUE data.

## **2.2.3 Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities**

Under Alternative 3, the Council would specify the 2016 and 2017 bottomfish ACL in each archipelagic area at a level lower than the SSC-recommended ABC. Table 8 identifies the range of ACLs under Alternative 3 and their associated probabilities of overfishing in 2016 and 2017. The level of reduction would be derived from the evaluation of the social, economic, ecological, and management uncertainties by the SEEM working group that met September 25, 2015 (see Appendix C). The SEEM working group recommended a 5 percent reduction in overfishing probabilities for American Samoa and Guam and a 6 percent reduction in overfishing probability for CNMI. The Council would use this reduction to recommend an ACL lower than the SSC-recommended ABC.

For American Samoa bottomfish, NMFS would set the 2016 and 2017 ACL between 102,000 lb and 103,000 lb. An ACL set at 102,000 lb would present overfishing probabilities of 19.9 percent in 2016 and 31 percent in 2017. An ACL set at 103,000 lb would present overfishing probabilities of 20.7 percent in 2016 and 33 percent in 2017.

For Guam bottomfish, NMFS would implement ACLs of 64,000 lb in 2016 and 2017. An ACL set at 64,000 lb would present overfishing probabilities of 22.3 percent in 2016 and 31 percent in 2017.

For CNMI bottomfish, NMFS would implement ACLs of 216,000 lb in 2016 and 2017. An ACL set at 216,000 lb would present overfishing probabilities of 20.8 percent in 2016 and 31 percent in 2017.

Alternative 3 differs from Alternatives 1 and 2 in that the ACLs would be set lower to account for additional uncertainties, as evaluated by the SEEM working group.

#### **2.2.4 Fishery Outcomes under Alternatives 1-3**

Because Alternatives 1–3 are within a fairly narrow range of ACLs (from 101,000 to 106,000 lb), and because all of the potential ACLs are several times higher than any recent catches in the territories (Table 2–4), the fishery outcomes are expected to be very similar for all alternatives. None of the above alternatives would be expected to cause changes in the way people fish for bottomfish in any of the three archipelagic areas. Based on recent catch history, and the overall level of fishing capacity in the three archipelagic areas, fishery outcomes would be expected to be similar as in previous years. The fisheries will likely catch far fewer bottomfish than any of the first three ACL alternatives would allow. The ACLs under each of the first 3 alternatives are all far higher than recent landings.

#### **2.2.5 Alternative 4: No ACL Specification Action by NMFS**

Under this alternative NMFS would not specify an ACL or AM for any BMUS in American Samoa, Guam, or CNMI in fishing years 2016 and 2017. The Council did not consider this alternative because the Magnuson-Stevens Act and the FEPs for American Samoa and the Mariana Archipelago require the Council and NMFS to specify and implement ACL and AM. The “No action” alternative would not be in compliance with the Magnuson-Stevens Act, or the provisions of the FEPs and implementing Federal regulations.

#### **2.2.6 Fishery Outcomes under Alternative 4**

Under Alternative 4, the manner in which bottomfish fishing is conducted in the three archipelagic areas is not expected to change because having an ACL has not constrained, and is not expected to constrain, fishery participation in any of the three areas. Fishery participants would continue to abide by all applicable fishing regulations and the fisheries would continue to be monitored. There would not be an ACL specified for any of the three areas against which the Council and NMFS could compare fishery catches to.

### **2.3 Alternatives Not Considered in Detail**

#### **2.3.1 Specification of ACLs Higher than ABCs**

Pursuant to Federal law, NMFS cannot specify an ACL that exceeds an ABC. Therefore, NMFS would not consider any ACL that exceeds the SSC’s recommended ABC, as described in Section 2.1. However, Table 8 identifies a range of ACLs for each island area that include ACLs which are higher than ABC and the Council’s ACL recommendations, and which are associated with a probability of overfishing of up to 50 percent, the maximum risk allowed under Federal law. If bottomfish catches in 2016 or 2017 were to exceed an ACL described in Alternative 2 and if catches were to fall within this range, NMFS does not expect overfishing would occur.

Because ACLs that exceed an ABC are not allowed under existing regulations, this alternative was not considered in further detail.

### **2.3.2 Specification of In-Season AMs**

To prevent fisheries from exceeding an ACL, Federal regulations implementing Pacific Island FEPs in 50 CFR 665.4 state that when NMFS projects any fishery will reach its ACL, the Regional Administrator must inform permit holders that NMFS will restrict fishing for that stock on a specified date. Restrictions may include, but are not limited to, closing the fishery, closing specific areas, changing bag limits, or otherwise restricting effort or catch. However, fishery managers cannot process catch information in near-real time in any Pacific Island bottomfish fishery except for the MHI Deep 7 bottomfish fishery (not included in this action). Therefore, the Council and NMFS cannot currently implement any in-season AM to prevent an ACL from being exceeded (e.g., fishery closures in Federal waters) for the three fisheries affected by the proposed specifications.

While Federal regulations require permitting and reporting for commercial bottomfish vessels in CNMI and all bottomfish vessels greater than 50 ft in length in Guam, Federally permitted bottomfish vessels comprise only a small portion of the total estimated vessels participating in Pacific Island bottomfish fisheries. Specifically, of the 10 estimated vessels participating in the CNMI bottomfish fishery in 2014, NMFS only issued seven Federal permits (Sustainable Fisheries Division, Pacific Islands Regional Office, NMFS). In Guam, only two of the estimated 254 bottomfish vessels were large vessels (greater than 50 ft long), thus requiring Federal permits in 2014. See the overview of fisheries in Sections 3.1 – 3.4 for more information pertaining to vessel participation in Pacific Island bottomfish fisheries. There are no requirements for Federal permits or reporting in American Samoa. For these reasons, NMFS relies primarily on the fishery data collection programs administered by the respective local resource management agencies to obtain bottomfish catch and effort data. However, these agencies presently do not have the personnel or resources to process catch data in near-real time. In general, fishery statistics only become available at least six months after local agencies collect the data. Supporting near-real time in-season monitoring capabilities in American Samoa, Guam and the CNMI would require substantial resources unavailable at this time. Until resources become available to allow in-season monitoring of bottomfish fisheries, NMFS anticipates continuing to use only AMs that consist of post-season management measures.

**Table 7. Summary of Alternatives not Considered in Detail.**

|                                                                   | <b>American Samoa Bottomfish</b>          |                                               |                                               | <b>Guam Bottomfish</b>                    |                                               |                                               | <b>CNMI Bottomfish</b>                    |                                               |                                               |
|-------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------------------------------|-----------------------------------------------|-----------------------------------------------|
|                                                                   | <i>MSY = 76,740 ± 14,060 lb</i>           |                                               |                                               | <i>MSY = 56,130 lb ± 7,790 lb</i>         |                                               |                                               | <i>MSY = 173,100 lb ± 32,190 lb</i>       |                                               |                                               |
|                                                                   | <i>Ave. Catch (2011-2013) = 21,005 lb</i> |                                               |                                               | <i>Ave. Catch (2011-2013) = 37,183 lb</i> |                                               |                                               | <i>Ave. Catch (2011-2013) = 20,009 lb</i> |                                               |                                               |
|                                                                   | <i>ACL (lb)</i>                           | <i>Probability of Overfishing in 2016 (%)</i> | <i>Probability of Overfishing in 2017 (%)</i> | <i>ACL (lb)</i>                           | <i>Probability of Overfishing in 2016 (%)</i> | <i>Probability of Overfishing in 2017 (%)</i> | <i>ACL (lb)</i>                           | <i>Probability of Overfishing in 2016 (%)</i> | <i>Probability of Overfishing in 2017 (%)</i> |
| <b>Not Considered in Detail</b><br><i>(Higher than Preferred)</i> | <b>110,000</b>                            | 26.1                                          | 42                                            | <b>67,000</b>                             | 26.4                                          | 38                                            | <b>236,000</b>                            | 26.8                                          | 41                                            |
|                                                                   | <b>111,000</b>                            | 26.9                                          | 44                                            | <b>68,000</b>                             | 27.8                                          | 41                                            | <b>240,000</b>                            | 28.1                                          | 43                                            |
|                                                                   | <b>112,000</b>                            | 27.8                                          | 45                                            | <b>69,000</b>                             | 29.2                                          | 44                                            | <b>242,000</b>                            | 28.7                                          | 45                                            |
|                                                                   | <b>113,000</b>                            | 28.6                                          | 47                                            | <b>70,000</b>                             | 30.7                                          | 46                                            | <b>246,000</b>                            | 30                                            | 47                                            |
|                                                                   | <b>114,000</b>                            | 29.4                                          | 48                                            | <b>71,000</b>                             | 32.1                                          | 49                                            | <b>248,000</b>                            | 30.6                                          | 48                                            |
|                                                                   | <b>115,000</b>                            | 30.2                                          | 50                                            |                                           |                                               |                                               | <b>250,000</b>                            | 31.2                                          | 50                                            |

Source: Values based on Yau et al. (2016).

**Table 8. ACL Alternatives and Probabilities of Overfishing Bottomfish Stock Complexes in American Samoa, Guam and the CNMI in 2016 and 2017 (Alternative 2- Preferred).**

|                                                              | <b>American Samoa Bottomfish</b>          |                                               |                                               | <b>Guam Bottomfish</b>                    |                                               |                                               | <b>CNMI Bottomfish</b>                    |                                               |                                               |
|--------------------------------------------------------------|-------------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------------------------------|-----------------------------------------------|-----------------------------------------------|
|                                                              | <i>MSY = 76,740 ± 14,060 lb</i>           |                                               |                                               | <i>MSY = 56,130 lb ± 7,790 lb</i>         |                                               |                                               | <i>MSY = 173,100 lb ± 32,190 lb</i>       |                                               |                                               |
|                                                              | <i>Ave. Catch (2011-2013) = 21,005 lb</i> |                                               |                                               | <i>Ave. Catch (2011-2013) = 37,183 lb</i> |                                               |                                               | <i>Ave. Catch (2011-2013) = 20,009 lb</i> |                                               |                                               |
|                                                              | <i>ACL (lb)</i>                           | <i>Probability of Overfishing in 2016 (%)</i> | <i>Probability of Overfishing in 2017 (%)</i> | <i>ACL (lb)</i>                           | <i>Probability of Overfishing in 2016 (%)</i> | <i>Probability of Overfishing in 2017 (%)</i> | <i>ACL (lb)</i>                           | <i>Probability of Overfishing in 2016 (%)</i> | <i>Probability of Overfishing in 2017 (%)</i> |
| <b>Alternative 1</b><br><i>(Status Quo)</i>                  | <b>101,000</b>                            | 19.3                                          | 30                                            | <b>66,800</b>                             | Approx. 26                                    | Approx. 38                                    | <b>228,000</b>                            | 24.2                                          | 36                                            |
| <b>Alternative 2</b><br><b>(preferred)</b><br><i>ACL=ABC</i> | <b>106,000</b>                            | 22.9                                          | 37                                            | <b>66,000</b>                             | 25                                            | 36                                            | <b>228,000</b>                            | 24.2                                          | 36                                            |
| <b>Alternative 3</b><br><i>(ACL&lt;ABC)</i>                  | <b>102,000</b>                            | 19.9                                          | 31                                            | <b>64,000</b>                             | 22.3                                          | 31                                            | <b>216,000</b>                            | 20.8                                          | 30                                            |
|                                                              | <b>103,000</b>                            | 20.7                                          | 33                                            |                                           |                                               |                                               |                                           |                                               |                                               |

Source: Values based on Yau et al. (2016).

Note: The No-action Alternative (4), is likely to have similar outcomes as under Alternative 1, the most recent fishing year for which we have catch data.

## 2.4 Decisions Made After Considering Input

After considering public comments on the proposed action and alternatives considered, NMFS is specifying ACLs and AMs for BMUS in American Samoa, CNMI, and Guam for fishing years 2016 and 2017. The Regional Administrator of the NMFS Pacific Islands Regional Office (PIRO) used the information in this environmental assessment to make a determination about whether the selected ACL specifications and AMs would be a major Federal action with the potential to have a significant environmental impact; which, if so, would require the preparation of an environmental impact statement.

## 3 Affected Environment and Potential Effects of the Alternatives

This section describes the affected fisheries, fishery resources, protected species, and habitats and the potential environmental effects of the proposed ACL and AM specifications on these resources. We consider climate change and environmental justice, along with potential effects to fishing communities, special marine areas and other resources, and potential effects on fishery administration and enforcement. Potential cumulative effects are also considered.

### *Overview of Bottomfish Fisheries*

Descriptions of traditional fishing practices indicate that indigenous people in American Samoa and the Mariana Islands harvested the same bottomfish species and used some of the same gears and techniques employed today (WPFMC 2009a; WPFMC 2009b; WPFMC 2009c). Bottomfish management unit species (BMUS) are generally targeted in deep-waters, but some of the BMUS are caught over reefs or at shallower depths. The eteline snappers (*Etelis* and *Pristipomoides* spp.) primarily inhabit high-relief, deep slopes ranging from 80-400 m deep. Fishermen catch bottomfish with a vertical handline described below. In addition to the deep-water eteline snappers, fishermen catch other species such as jacks, emperors, and lutjanid snappers at shallower depths. Fishermen also catch the gray jobfish (*Aprion virescens*) by vertical handline, but fishermen frequently use drifting or slowly moving vessels and trolling gear and fish over relatively flat-bottom areas for this species. Bottomfish fishers generally employ a vertical hook-and-line method of fishing in which they lower and raise weighted and baited lines with electric, hydraulic, or hand-powered reels. The main line is typically 400–450-pound test, with hook leaders of 80–120-pound test monofilament. The hooks are circle hooks, generally of the Mustad (conventional scale) sizes 11/0, 12/0 and 13/0, and a typical rig uses six to eight hooks branching off the main line. The terminal weight is typically 5–6 lb. The hook leaders are typically 2–3 ft long and separated by about 6 ft along the main line. Depending on the archipelagic area, fishermen may bait hooks with fish such as the big-eye scad (*Selar crumenophthalmus*); however, fishermen also typically use squid as bait. Fishermen also sometimes supplement lines with a chum bag containing chopped fish or squid suspended above the highest hook. Regulations prohibit bottom trawls, bottom gillnets, explosives, and poisons (50 CFR Parts 665.104 and 665.406). In each archipelagic area, commercial and non-commercial fisheries for bottomfish occur primarily in nearshore waters from 0-3 nm, although some fishermen make longer trips to specific bank areas (Brodziak et al. 2012).

## ***Overview of fishery data collection systems in American Samoa, Guam and the CNMI***

In American Samoa, Guam and the CNMI, local resource management agencies, with assistance from NMFS PIFSC WPacFIN, collect bottomfish fisheries information through three primary fisheries monitoring programs. These programs include: (1) the boat-based creel survey program; (2) the shore-based creel survey program, and (3) the commercial purchase system or trip ticket invoice program.

### **Boat-based creel survey program**

The boat-based creel survey program collects catch, effort, and participation data on offshore fishing activities conducted by commercial, recreational, subsistence and charter fishing vessels. Program staff conduct surveys at boat ports or ramps, and data collection consists of two main components - participation counts (trips) and fisher interviews. Staff randomly select survey days, and the number of survey days range from 3-8 per month. Staff stratify the surveys by week-days, weekend-days and day- and night-time. NMFS WPacFIN applies data expansion algorithms to estimate 100% “coverage” and include port, type of day, and fishing method (Impact Assessment 2008).

### **Shore-based creel survey program**

The shore-based creel survey program randomly samples inshore fishing trip information and consists of two components - participation counts and fishers interviews. Program staff base participation counts on a ‘bus route’ method, with predefined stopping points and time constraints. Staff randomly select survey days ranging from 2-4 times per week. NMFS WPacFIN apply data expansion algorithms to estimate 100% “coverage” and include island region, type of day (e.g., weekday/weekend) and fishing method (Impact Assessment 2008). The shore-based creel surveys cover fishing by persons engaged in commercial, recreational, and subsistence fishing activities.

### **Commercial purchase system**

The commercial purchase system or “trip ticket invoice” monitors fish sold locally and collects information submitted by vendors (fish dealers, hotels and restaurants) who purchase fish directly from fishers. Each invoice usually compiles daily trip landings. Only American Samoa has mandatory requirements for vendors to submit invoice reports. All other islands have voluntary programs (Impact Assessment 2008).

## ***Overview of Federal permit and reporting requirements***

In 2006, NMFS established Federal permit and reporting requirements for large vessels greater than 50 ft in length fishing in the U.S. EEZ around Guam (71 FR 64474, November 2, 2006). Federal permit and reporting requirements are also in place for all commercial bottomfish vessels fishing in the U.S. EEZ around the CNMI (73 FR 75615, December 12, 2008). Regulations require all permitted vessel operators to submit catch information to NMFS within 72 hours after landing BMUS. In 2014, 7 vessels in the CNMI had a Federal commercial bottomfish fishing

permit. In Guam, NMFS issued 2 large vessel bottomfish permits in 2014. (Kawamoto and Sender 2015). Federal permit or reporting is not required in American Samoa. As previously noted in Section 2.3.4, Federally-permitted bottomfish vessels comprise only a small portion of the total estimated vessels participating in Pacific Island bottomfish fisheries.

### ***Overview of the Post-season AM***

NMFS applies catches of all BMUS toward the BMUS ACL regardless of whether catch occurred in Federal or local waters. However, as noted in Section 2.3, local resource management agencies presently do not have the personnel or resources to process catch data in near-real time, and so fisheries statistics are generally not available until at least six months after data collection. Therefore, in-season AMs (e.g., fishery closure) are not possible at this time. NMFS applies a post-season AM by accounting of catch towards every ACL specification once data are available. If catch exceeds an ACL and affects the sustainability of that stock or stock complex, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council. The action could include a downward adjustment to the ACL for that stock or stock complex in the subsequent fishing year.

### **3.1 American Samoa Bottomfish Fishery, Marine Resources and Potential Effects**

The Samoa Archipelago is located in the western portion of the South Pacific Ocean and consists of seven major volcanic islands, several small islets and two coral atolls. The largest islands in this chain are Upolu and Savaii, which belong to the independent state of Samoa with a population of approximately 194,515 people (<http://www.worldometers.info/world-population/samoa-population/>, accessed June 29, 2016). The Territory of American Samoa includes Tutuila, the Manua Island group of Ofu, Olosega and Tau, and two coral atolls (Rose Atoll and Swains Island). The largest island, Tutuila, is the center of government and business and features Pago Pago Harbor, the deepest and one of the most sheltered bays in the South Pacific. More than 90 percent of American Samoa's total population of 56,491 people ([http://countrymeters.info/en/American\\_Samoa](http://countrymeters.info/en/American_Samoa), accessed June 29, 2016) lives on Tutuila.

The U.S. EEZ around American Samoa is approximately 156,246 mi<sup>2</sup> and extends from 3–200 nm from shore. Because of the steepness of the offshore slope around Tutuila and other islands, most of the available benthic habitat is fringing coral reefs, a limited reef slope, and a few offshore banks (Craig et al. 2005).

NMFS and the Council manage bottomfish fishing in Federal waters around American Samoa in accordance with the FEP for the American Samoa Archipelago (WPFMC 2009a), developed by the Council, and implemented by NMFS under the authority of the Magnuson-Stevens Act. The American Samoa Department of Wildlife and Marine Resources (DMWR) manages bottomfish fisheries occurring from 0 to 3 nm from shore. The management structure of the FEP emphasizes community participation and enhanced consideration of the habitat and ecosystem, and other elements not typically incorporated in fishery management decision-making. A joint Federal-territorial partnership enforces Federal fishery regulations, and the FEP requires the Council to produce an annual performance report on the fishery.



### 3.1.1 Overview of American Samoa's Bottomfish Fishery

The American Samoa bottomfish fishery consists of fewer than 30 part-time relatively small commercial vessels landing between 6,000–35,000 lb annually. Most vessels are aluminum *alia* (pronounced ah-lee-ah) catamarans less than 32 ft long, outfitted with outboard engines and wooden hand reels that fishermen use for both trolling and bottomfish fishing. Because few boats carry ice, they typically fish within 20 miles of shore (WPFMC 2009a).

In 2009, a tsunami struck American Samoa causing large-scale damage and effects to the territory's bottomfish fishing fleet. In 2010, 16 vessels participated in the fishery, and participation dropped in 2011 to just 12 vessels (Carroll et al. 2012). In 2014, the vessels that reported BMUS landings increased to 24 vessels (WPacFIN: <http://www.pifsc.noaa.gov/wpacfin/as/Data/Bottomfish/abot4main.htm>, accessed December 4, 2015).

At the present time there is no Federal permit or reporting requirements for bottomfish fishing in Federal waters around American Samoa. Therefore, monitoring of the American Samoa bottomfish fishery depends on data voluntarily provided by fishermen to DMWR, through the boat-based creel survey program. Additionally, DMWR reviews commercial sales data the mandatory commercial purchase system. Currently, because of limited DMWR staff resources, catch information is not available until at least 6 months to a year after the fishing year has ended.

Table 2 shows that between 2011 and 2013, American Samoa bottomfish fishermen caught an average of 21,005 lb of BMUS annually, of which they sold 42 percent (8,878 lb). Based on the 2013 commercial catch estimate of 7,833 lb and the average price of all BMUS at \$3.22 per pound, the annual commercial value of the American Samoa bottomfish fishery in 2013 was \$25,222. Assuming participation and effort were equal throughout the 17 vessel fleet in 2013, each vessel would have sold approximately 461 lb of bottomfish valued at \$1,484.

### 3.1.2 Potential Effects of the Alternatives on American Samoa's Bottomfish Fishermen

#### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, fishing for American Samoa BMUS would be subject to an ACL of 101,000 lb for fishing years 2016 and 2017. This is the same ACL specified for 2013, 2014, and 2015. Between 2000 and 2013, the greatest estimated total annual catch of BMUS in American Samoa occurred in 2009 at 47,458 lb while the average total annual catch for the period 2011-2013 is 21,005 lb (Table 2). Both the average recent catch (2011-2013) and the 14 year record high catch of 47,458 lb in 2009 are below the ACL proposed under this alternative.

After 2009's devastating tsunami effects on American Samoa's bottomfish fleet, the estimated total catch in 2010 dropped to 9,509 lb and rebounded in 2011 to an estimated 26,277 lb. Assuming some rebuilding of the fleet continued until 2013, as indicated by the increased level of vessel participation, bottomfish catch is likely to continue increasing; however, it is unlikely that total catch in 2016 or 2017 would approach the historically high 2009 level (47,458 lb),

which is less than half the ACL proposed under this alternative. In the decade before 2009 (i.e., before a devastating tsunami), the highest annual catch of American Samoa BMUS was 37,847 lb in 2001, and catches in more than half of those years (1999–2008) were less than 20,000 lb (Table 2).

Because there are no landings data available quickly enough to allow NMFS to implement an in-season closure to prevent American Samoa fishermen from exceeding the ACL, under all alternatives considered, NMFS would evaluate the need for a post-season AM by reviewing catch data to determine whether fishermen exceeded the bottomfish ACL for American Samoa. If fishermen exceeded the ACL, NMFS, as recommended by the Council, would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the bottomfish ACL in the subsequent fishing year to help ensure the fishery remains sustainable. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental effects of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Because the ACL in Alternative 1 is more than double the highest bottomfish catch in the last 14 years (Table 2), NMFS does not expect the ACL and AM proposed under this alternative to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation. Consequently, NMFS does not expect implementation of Alternative 1 to adversely affect American Samoa bottomfish fishermen.

Continued management of the American Samoa bottomfish fishery under ACLs and AMs is expected to benefit American Samoa bottomfish fishermen by helping to provide for management review and long-term sustainability of BMUS.

### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for American Samoa BMUS would be subject to an ACL of 106,000 lb for the 2016 and 2017 fishing years as recommended by the Council. This specification would set the ACL slightly higher than the current status quo (Alternative 1 = 101,000 lb). Given the current state of American Samoa's bottomfish fleet, it is unlikely that total catch in 2016 or 2017 would approach the proposed ACL.

After 2009's devastating tsunami effects on American Samoa's bottomfish fleet, the estimated total catch in 2010 dropped to 9,509 lb, rebounding in 2011 to an estimated 26,277 lb of BMUS. Assuming some rebuilding of the fleet continued until 2013, bottomfish catch is likely to continue increasing; however, it is unlikely that total catch in 2016 or 2017 would approach the historically high 2009 level (47,458 lb), which is less than half the ACL proposed under this alternative. In the decade before 2009 (i.e., before a devastating tsunami), the highest annual catch of American Samoa BMUS was 37,847 lb in 2001, and catches in more than half of those years (1999–2008) were less than 20,000 lb (Table 2).

Therefore, over the next two years, the fishery is not expected to attain a catch of 106,000 lb. This ACL is not expected to result in a race to the fish.

Because landings data for American Samoa bottomfish are not available quickly enough to allow NMFS to implement an in-season closure to prevent fishermen from exceeding the ACL, the AM under this alternative would be a post-season AM similar to those described under Alternative 1. Therefore, the effects to fishermen would be similar to those described in Alternative 1.

Because the ACL in Alternative 2 is more than double the highest bottomfish catch in the last 14 years (Table 2), NMFS does not expect the ACL and AM proposed under this alternative to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation. Consequently, NMFS does not expect implementation of Alternative 2 to adversely affect American Samoa bottomfish fishermen.

Continued management of the American Samoa bottomfish fishery under ACLs and AMs is expected to benefit American Samoa bottomfish fishermen by helping to provide for management review and long-term sustainability of BMUS.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for American Samoa BMUS would be subject to an ACL between 102,000 and 103,000 lb for the 2016 and 2017 fishing years, respectively. Based on past fishery performance shown in Table 2, it is unlikely that total catch in 2016 or 2017 would approach the historically high 2009 level (47,458 lb), which is less than half the ACL proposed under this alternative.

After 2009's devastating tsunami effects on American Samoa's bottomfish fleet, the estimated total catch in 2010 dropped to 9,509 lb, rebounding in 2011 to an estimated 26,277 lb of BMUS. Assuming some rebuilding of the fleet continued until 2013, bottomfish catch is likely to continue increasing; however, it is unlikely that total catch in 2016 or 2017 would approach the historically high 2009 level (47,458 lb), which is less than half the ACL proposed under this alternative. In the decade before 2009 (i.e., before a devastating tsunami), the highest annual catch of American Samoa BMUS was 37,847 lb in 2001, and catches in more than half of those years (1999–2008) were less than 20,000 lb (Table 2).

Therefore, over the next two years, the fishery is not expected to attain a catch between 102,000 lb and 103,000 lb and an ACL within this range is not expected to result in a race to the fish.

Additionally, because there is no data that would allow NMFS to implement an in-season closure to prevent the ACL from being exceeded, an ACL under this alternative is not expected to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation. In short, effects to fisheries participants would be generally the same as those described under the Alternative 1 and 2 and no adverse economic impact to fishery participants would likely result from implementation of any ACL under Alternative 3.

Continued management of the American Samoa bottomfish fishery under ACLs and AMs is expected to benefit American Samoa bottomfish fishermen by helping to provide for management review and long-term sustainability of BMUS.

#### **Alternative 4. No ACL Specification Action by NMFS**

Under this alternative, catches would be similar to those made in recent years and catches would not differ from catches made under any of the other three alternatives. The lack of an ACL or AM would not result in a change to the fishery and BMUS harvests and fishery effort are likely to be similar to those recently observed in the fishery. Between 2000 and 2013, the greatest estimated total annual catch of BMUS in American Samoa occurred in 2009 at 47,458 lb while the average total annual catch for the period 2011-2013 is 21,005 lb (Table 2).

The American Samoa bottomfish fishery would continue to be subject to management oversight, collection of data, and enforcement. Without ACLs or AMs, there would be less management review of fishery performance. However, because management oversight would continue by Federal and territorial resource managers and fishery scientists and the Council, this alternative is not expected to result in large adverse effects on long term sustainability of BMUS.

#### **3.1.3 Target, Non-target and Bycatch Species in American Samoa**

The bottomfish fishery in the American Samoa generally targets 17 BMUS that comprise both shallow and deepwater bottomfish species (Table 9).

**Table 9. American Samoa Bottomfish MUS**

| <b>American Samoa Bottomfish MUS</b> |                            |                     |
|--------------------------------------|----------------------------|---------------------|
| <b>Scientific Name</b>               | <b>English Common Name</b> | <b>Samoan Name</b>  |
| <i>Aphareus rutilans</i>             | red snapper/silvermouth    | palu-gutusaliva     |
| <i>Aprion virescens</i>              | gray snapper/jobfish       | asoama              |
| <i>Caranx ignobilis</i>              | Giant trevally/jack        | sapoanae            |
| <i>Caranx lugubris</i>               | Black trevally/jack        | tafauli             |
| <i>Epinephelus fasciatus</i>         | blacktip grouper           | fausi               |
| <i>Variola louti</i>                 | lunartail grouper          | papa, velo          |
| <i>Etelis carbunculus</i>            | red snapper                | palu malau          |
| <i>Etelis coruscans</i>              | red snapper                | palu-loa            |
| <i>Lethrinus amboinensis</i>         | ambon emperor              | filoa-gutumumu      |
| <i>Lethrinus rubrioperculatus</i>    | redgill emperor            | filoa-paomumu       |
| <i>Lutjanus kasmira</i>              | blueline snapper           | savane              |
| <i>Pristipomoides auricilla</i>      | yellowtail snapper         | palu-i'usama        |
| <i>Pristipomoides filamentosus</i>   | pink snapper               | palu-'ena'ena       |
| <i>Pristipomoides flavipinnis</i>    | yelloweye snapper          | palu-sina           |
| <i>Pristipomoides seiboldii</i>      | pink snapper               | palu                |
| <i>Pristipomoides zonatus</i>        | snapper                    | palu-ula, palu-sega |
| <i>Seriola dumerili</i>              | amberjack                  | malauli             |

##### **3.1.3.1 Current status and effects of the fishery: target, non-target and bycatch species**

Information on target, non-target and bycatch species in American Samoa comes from the latest NMFS benchmark stock assessment completed by Brodziak et al. (2012). Key points from the

discussion in Section 2.1.1 is that PIFSC estimated MSY to be  $76,740 \pm 14,060$  lb and that the production model results indicate that the American Samoa bottomfish complex was found to be healthy, was not overfished and did not experience overfishing between the period 1986 and 2011. Between 2007 and 2011, total harvest of American Samoa BMUS averaged 21,005 lb annually or about 27 percent of the long term MSY.

While the boat-based and shore-based creel survey programs administered by DMWR provide for the collection of bycatch information, detailed information is not currently available. This may indicate that fishermen retain most of the catch. However, like other Pacific Islands, discards, if they occur, are usually due to legal requirements, cultural reasons (i.e., taboo), or practical reasons such as toxicity (e.g., ciguatera poison), or shark damage.

Bottomfish fishing is fairly target-specific with most of the catch retained and to date neither the Council nor the American Samoa DMWR have brought forward any concerns about non-target species and bycatch in the fishery. NMFS does not have any information to indicate that there are unresolved issues about non-target species and bycatch in the American Samoa bottomfish fishery. Because none of the alternatives would change the conduct of the American Samoa bottomfish fishery, we would expect no change to catches of non-target species, or discards; therefore, we focus our effects analysis on effects of the alternatives on BMUS (target stocks).

### **3.1.3.2 Potential environmental effects of the proposed alternatives on American Samoa BMUS**

#### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, the ACL for 2016 and 2017 would be 101,000 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner described above, and fisheries monitoring programs administered by the DMWR with assistance from WPacFIN would continue to monitor catches. Under this alternative, we expect fishermen to catch similar amounts of bottomfish as recent years, an average catch of 21,005 lb for the period 2011-2013.

Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 1, an ACL of 101,000 lb would result in a 19.3 percent probability of overfishing in 2016, rising in 2017 to a 30 percent probability of overfishing. Consequently, we would expect no adverse effects to the health of BMUS from implementation of Alternative 1. DMWR, with assistance from WPacFIN, will monitor the catch annually, and NMFS PIFSC stock assessment scientists will review stock status periodically.

Under Alternative 1 the Council and NMFS would review fishery catches against the ACL annually; and, in accordance with the AM, would consider further modifications to the ACLs, if required. The ACL and AM are not expected to result in large changes to catches by the fishery, and the ACL is not expected to be approached in either year. For these reasons, American Samoa BMUS stock complex is expected to remain healthy, and would not become overfished or be subject to overfishing under this alternative.

### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for American Samoa BMUS would be subject to an ACL of 106,000 lb for the 2016 and 2017 fishing years as recommended by the Council. This ACL is slightly higher than alternative 1, and considers the best available information on stock status. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 1, this ACL would have a 22.9 percent probability of causing overfishing in 2016, rising in 2017 to a 37 percent probability of overfishing.

Based on past fishery performance shown in Table 2, the fishery would need to harvest more than double the 2009 record catch of 47,458 lb in 2013 and 2014 to attain the ACL and more than 7,000 lb over the ACL for overfishing to occur. This level of catch is highly unlikely given that the 2010 post-tsunami catch totaled only 9,509 lb rising in 2013 to 23,630 lb. Consequently, we would expect no adverse effects to target stocks to result from implementation of Alternative 2. DMWR, with assistance from WPacFIN, would continue to monitor the catch annually, and NMFS PIFSC stock assessment scientists would continue to review stock status periodically.

Under Alternative 2 the Council and NMFS would review fishery catches against the ACL annually; and, in accordance with the AM, would consider further modifications to the ACLs, if required. The ACL and AM are not expected to result in large changes to catches by the fishery, and the ACL is not expected to be approached in either year. For these reasons, the American Samoa BMUS stock complex is expected to remain healthy, and would not become overfished or be subject to overfishing under this alternative.

### ***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for American Samoa BMUS would be subject to an ACL between 102,000 and 103,000 lb for the 2016 and 2017 fishing years. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 1, none would result in a probability of overfishing greater than 37 percent. Consequently, no adverse effects to target BMUS stocks would be expected to result from implementation of Alternative 3. Just as for Alternatives 1 and 2, DMWR with assistance from WPacFIN would monitor catch annually, and NMFS PIFSC stock assessment scientists would review stock status periodically.

Under Alternative 3 the Council and NMFS would review fishery catches against the ACL annually, and, in accordance with the AM, would consider further modifications to the ACLs, if required. The ACL and AM are not expected to result in large changes to catches by the fishery, and the ACL is not expected to be approached in either year. For these reasons, American Samoa BMUS stock complex is expected to remain healthy, and would not become overfished or be subject to overfishing under this alternative.

### ***Alternative 4: No ACL Specification Action by NMFS***

Under a “No Action” alternative, no ACL or AM would be implemented for the fishery. Because the landings of BMUS have been much lower than recent and proposed ACLs, the ACLs are not

constraining the American Samoa fishery; therefore, the effect of this alternative on target BMUS stocks would be the same as for Alternatives 1-3. Fishing effort and the capacity of the fishery to catch BMUS in American Samoa would remain well below the amount needed to catch the entire ACL.

Harvests of BMUS would remain sustainable under Alternative 4. Catch and other fishery data would continue to be evaluated by fishery managers on an ad-hoc basis.

### ***All ACL Alternatives***

Under all alternatives considered, including the preferred alternative, no new monitoring would be implemented; however, a post-season review of the catch data would be conducted as soon as possible after the fishing year for Alternatives 1, 2, and 3 to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year. While the lack of in-season catch monitoring ability precludes in-season measures (such as a fishery closure) to prevent the ACL from being exceeded, none of the ACLs considered have greater than a 37 percent probability of overfishing American Samoa bottomfish in 2013 and 2014.

#### **3.1.4 Protected Resources in American Samoa**

A number of protected species are known or believed to occur in the waters around American Samoa and, therefore, they could potentially interact with the bottomfish fishery. NMFS evaluated the bottomfish fisheries for effects on protected species and manages these fisheries in compliance with the requirements of the Magnuson-Stevens Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and other applicable statutes. For the reader's interest, more detailed descriptions of these species and their life histories are found in section 3.3.4 of the FEP for the American Samoa Archipelago (WPFMC 2009a) and online on NMFS website ([http://www.fpir.noaa.gov/PRD/prd\\_index.html](http://www.fpir.noaa.gov/PRD/prd_index.html)).

#### **Applicable ESA Coordination – American Samoa Bottomfish Fisheries**

In a biological opinion covering the Fishery Management Plan (FMP) for Bottomfish and Seamount Groundfish Fisheries of the Western Pacific, dated March 8, 2002, NMFS determined that bottomfish and seamount groundfish fisheries of the western Pacific region (including the bottomfish fishery of American Samoa) that operate in accordance with regulations implementing the FMP were not likely to adversely affect ESA-listed sea turtle and marine mammal species or their designated critical habitat. This is largely due to the fact that bottomfish fishing vessels are anchored or moving slowly while engaging in fishing, and there are no reports or observations of substantial interactions between bottomfish fisheries in American Samoa and protected species.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based FEPs including the FEP for the American Samoa Archipelago. The FEP incorporated and

reorganized elements of the Council's species-based FMPs, including the Bottomfish and Seamount Groundfish Fisheries FMP into a spatially-oriented management plan (75 FR 2198, January 14, 2010). The Council retained all applicable regulations concerning bottomfish fishing through the development and implementation of the FEP for the American Samoa Archipelago.

Several new species were added to the list of threatened and endangered species since the 2002 biological opinion. On July 3, 2014, NMFS published a final rule that listed four distinct population segments (DPSs) of scalloped hammerhead shark under the ESA (79 FR 38213). The threatened Indo-West Pacific DPS is the only DPS that occurs around American Samoa. On September 10, 2014, NMFS published a final rule that listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Of the 20 listed species, six may occur in American Samoa.

On April 9, 2015, NMFS determined that the continued authorization of the coral reef, bottomfish, crustacean, and precious coral fisheries under the FEP for the American Samoa Archipelago is not likely to adversely affect the Indo-West Pacific DPS of scalloped hammerhead shark or reef-building corals. More detail is provided below.

#### **3.1.4.1 Sea Turtles in American Samoa**

All six sea turtle species occurring in U.S. waters are listed under the ESA. Of these, five species' ranges overlap with the EEZ around American Samoa and bottomfish fishermen could encounter them. Table 10 lists the sea turtle species reasonably likely to occur in American Samoa. No critical habitat has been established for any sea turtle in American Samoa.



**Table 10. ESA-listed sea turtles known to occur or reasonably expected to occur in waters round the American Samoa Archipelago**

| Common name                                                            | Scientific Name               | ESA listing status in American Samoa | Occurrence in American Samoa                                                                                | Interactions with the American Samoa bottomfish fishery |
|------------------------------------------------------------------------|-------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Green sea turtle (laumei enaena and fonu)<br>Central South Pacific DPS | <i>Chelonia mydas</i>         | Endangered DPS                       | Frequently seen. Nest at Rose Atoll. Known to migrate to feeding grounds.                                   | No interactions observed or reported.                   |
| Hawksbill sea turtle (laumei uga)                                      | <i>Eretmochelys imbricata</i> | Endangered                           | Frequently seen. Nest at Rose Atoll and Swain's Island.                                                     | No interactions observed or reported.                   |
| Leatherback sea turtle                                                 | <i>Dermochelys coriacea</i>   | Endangered                           | Very rare in American Samoa. One recovered dead in experimental longline fishing.                           | No interactions observed or reported.                   |
| Olive ridley sea turtle                                                | <i>Lepidocheyls olivacea</i>  | Threatened                           | Uncommon in American Samoa. Three sightings.                                                                | No interactions observed or reported.                   |
| South Pacific Loggerhead sea turtle DPS                                | <i>Caretta caretta</i>        | Endangered DPS                       | American Samoa is within the species nesting range, but the species has not been observed in the territory. | No interactions observed or reported.                   |

On September 22, 2011, NMFS published a final rule determining that the world loggerhead turtle population was comprised of nine distinct population segments (DPS) (five Endangered and four Threatened). The South Pacific Loggerhead turtle DPS distribution overlaps with the EEZ around American Samoa. The DPS nests on beaches from eastern Australia to Tokelau several hundred nm north of American Samoa (NMFS 2009). There are no records of this species nesting in American Samoa; however, loggerheads do transit the EEZ around American Samoa (Seminoff et al. 2015).

The presence of green turtles, hawksbill turtles, and olive ridley turtles in the EEZ around American Samoa is well-documented (Seminoff et al. 2015).

On April 6, 2016, NMFS and USFWS published a final rule finding that the green sea turtle is composed of 11 DPSs and proposed to replace the current range-wide listing with listing of the DPSs as threatened or endangered (81 FR 20057). The population around American Samoa is part of the Central South Pacific DPS, which is now listed as endangered. However, none of the alternatives considered would modify operations of the American Samoa bottomfish fishery in

any way, and there is no additional information that would change the conclusions of previous informal consultations which determined that the American Samoa bottomfish fishery is not likely to adversely affect green sea turtles.

#### **3.1.4.1.1 Current Effects on Sea Turtles from the American Samoa Bottomfish Fishery**

Sea turtles face many threats including: 1) direct harvest of animals and eggs or predation; 2) incidental interactions with fisheries; 3) collisions with vessels and automobiles; 4) urban development / loss of habitat; 5) pollution (e.g., plastics); and 5) climate change. Sea turtle conservation initiatives are also in place, including restoration of habitats, laws to protect turtles, and management of threats to help provide for recovery. More information is available on NMFS website at: [http://www.fpir.noaa.gov/DIR/dir\\_mammal\\_turtle\\_seabird.html#SeaTurtles](http://www.fpir.noaa.gov/DIR/dir_mammal_turtle_seabird.html#SeaTurtles).

In American Samoa, all sea turtles are subject to protection. Both direct harvest, and direct and indirect harm, are prohibited unless otherwise authorized. NMFS has coordinated the continued authorization of the American Samoa bottomfish fishery under Section 7 of the Endangered Species Act (ESA).

Both commercial and non-commercial fisheries have the potential to cause adverse effects to sea turtles, including injuries and mortalities that occur incidental to fishing including incidental fishing gear or vessel interactions. As Table 10 indicates, no records exist of interactions between the American Samoa bottomfish fishery and sea turtles.

The most likely effect of the bottomfish fishery is the potential for vessel collisions with sea turtles causing injuries and mortalities in American Samoa. The frequency of this type of effect is unknown in American Samoa. However, given the very limited number of bottomfish fishing vessels in American Samoa (between 16 and 30 vessels), and the fact that bottomfish fishing occurs while either at anchor or slowly drifting over fishing grounds, sea turtle collisions with vessels in this fishery are expected to be very rare.

A 2002 NMFS Biological Opinion on the FMP for Bottomfish and Seamount Groundfish Fisheries in the Western Pacific Region found that “although hawksbill, leatherback, loggerhead, and olive ridley turtles may be found within the action area and could interact with the FMP bottomfish fishery, there have been no reported or observed incidental takes of these species in the history of the bottomfish fisheries. In addition, hawksbill, leatherback, and olive ridley turtle species are likely to occur only very rarely in the action area. Therefore, NMFS concludes that the proposed action is not likely to adversely affect hawksbill, leatherback, loggerhead, and olive ridley turtles.” Similarly, the 2002 BiOp found that “prior biological opinions discussed the potential for adverse effects from vessel lighting and activity near and around nesting beaches utilized by the green turtle. There are no documented green turtle takes resulting from past fishery operations near nesting beaches. There are also no documented takes of green turtles from past fishing operations. Therefore, NMFS concludes that the proposed action is not likely to adversely affect green turtles.”

### **3.1.4.1.2 Potential Effects of the Alternatives on Sea Turtles in American Samoa**

#### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, NMFS and the Council would set the ACL for 2016 and 2017 at 101,000 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish in the same way as described above, and DMWR with assistance from WPacFIN would continue to monitor catches.

Because there are no in-season fishery closures and catches are not expected to be constrained, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the potential for, or severity of, interactions between the fishery and listed sea turtles in any way not already considered in prior consultations. As described above, the fishery is not likely to adversely affect any listed sea turtle species and vessel collisions would be rare.

#### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for American Samoa BMUS would be subject to an ACL of 106,000 lb for the 2016 and 2017 fishing years as recommended by the Council. This ACL is much higher than recent catches, so the fishery is not expected to change as a result of the proposed specification.

Because there are no in-season fishery closures and catches are not expected to be constrained, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the potential for or severity of interactions between the fishery and listed sea turtles in any way not already considered in prior consultations. As described above, the fishery is not likely to adversely affect any listed sea turtle species and vessel collisions would be rare.

#### ***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for American Samoa BMUS would be subject to an ACL between 102,000 and 103,000 lb for the 2016 and 2017 fishing years. This ACL is higher than recent catches, so the fishery is not expected to change as a result of the proposed specification.

Because there are no in-season fishery closures and catches are not expected to be constrained, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the potential for or severity of interactions between the fishery and listed sea turtles in any way not already considered in prior consultations. As described above, the fishery is not likely to adversely affect any listed sea turtle species and vessel collisions are expected to be rare.

#### **Alternative 4: No ACL Specification Action by NMFS**

Under this alternative, NMFS would not specify any ACL or AM for the fishery. Even if NMFS does not specify an ACL or AM for the fishery, the alternative would not change the conduct of the fishery in any way. Given recent catches, we would not expect the fishery to reach the ACL, or a race to fish. Therefore, this alternative would not increase the frequency or intensity of any of the above threats to sea turtles.

#### **All Alternatives**

In summary, none of the alternatives would change the conduct of the fishery, so there would be no effects on listed sea turtles that have not already been considered in existing reviews of the fishery under the ESA. Given the very limited number of bottomfish fishing vessels in American Samoa (between 16 and 30 vessels), and the fact that bottomfish fishing occurs while either at anchor or slowly drifting over fishing grounds, sea turtle collisions with vessels in this fishery are expected to be very rare.

#### **3.1.4.2 Marine Mammals in American Samoa**

Table 11 lists marine mammal species reasonably likely to occur in American Samoa. The MMPA protects all marine mammals. The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Additionally, the ESA lists five whale species known to occur in the EEZ around American Samoa (see asterisks in Table 11).

**Table 11. Marine mammals known to occur or reasonably expected to occur in waters around American Samoa**

| <b>Marine mammals known to occur or reasonably expected to occur in waters around American Samoa</b> |                                |                                                                |
|------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------|
| <b>Common Name</b>                                                                                   | <b>Scientific Name</b>         | <b>Interactions with the American Samoa bottomfish Fishery</b> |
| Humpback whale*<br>(tafolā or i'a manu)                                                              | <i>Megaptera novaeangliae</i>  | No interactions observed or reported.                          |
| Sperm whale*                                                                                         | <i>Physeter macrocephalus</i>  | No interactions observed or reported.                          |
| Blue whale*                                                                                          | <i>Balaenoptera musculus</i>   | No interactions observed or reported.                          |
| Fin Whale*                                                                                           | <i>Balaenoptera physalus</i>   | No interactions observed or reported.                          |
| Sei whale*                                                                                           | <i>Balaenoptera borealis</i>   | No interactions observed or reported.                          |
| Blainville's beaked whale                                                                            | <i>Mesoplodon densirostris</i> | No interactions observed or reported.                          |
| Bottlenose dolphin                                                                                   | <i>Tursiops truncatus</i>      | No interactions observed or reported.                          |

| <b>Marine mammals known to occur or reasonably expected to occur in waters around American Samoa</b> |                                   |                                                                |
|------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------|
| <b>Common Name</b>                                                                                   | <b>Scientific Name</b>            | <b>Interactions with the American Samoa bottomfish Fishery</b> |
| Bryde's whale                                                                                        | <i>Balaenoptera edeni</i>         | No interactions observed or reported.                          |
| Common dolphin                                                                                       | <i>Delphinus delphis</i>          | No interactions observed or reported.                          |
| Cuvier's beaked whale                                                                                | <i>Ziphius cavirostris</i>        | No interactions observed or reported.                          |
| Dwarf sperm whale                                                                                    | <i>Kogia sima</i>                 | No interactions observed or reported.                          |
| False killer whale                                                                                   | <i>Pseudorca crassidens</i>       | No interactions observed or reported.                          |
| Fraser's dolphin                                                                                     | <i>Lagenodelphis hosei</i>        | No interactions observed or reported.                          |
| Killer whale                                                                                         | <i>Orcinus orca</i>               | No interactions observed or reported.                          |
| Melon-headed whale                                                                                   | <i>Peponocephala electra</i>      | No interactions observed or reported.                          |
| Minke whale                                                                                          | <i>Balaenoptera acutorostrata</i> | No interactions observed or reported.                          |
| Pygmy killer whale                                                                                   | <i>Feresa attenuata</i>           | No interactions observed or reported.                          |
| Pygmy sperm whale                                                                                    | <i>Kogia breviceps</i>            | No interactions observed or reported.                          |
| Risso's dolphin                                                                                      | <i>Grampus griseus</i>            | No interactions observed or reported.                          |
| Rough-toothed dolphin                                                                                | <i>Steno bredanensis</i>          | No interactions observed or reported.                          |
| Short-finned pilot whale                                                                             | <i>Globicephala macrorhynchus</i> | No interactions observed or reported.                          |
| Spinner dolphin                                                                                      | <i>Stenella longirostris</i>      | No interactions observed or reported.                          |
| Spotted dolphin<br>(Pantropical spotted dolphin)                                                     | <i>Stenella attenuata</i>         | No interactions observed or reported.                          |
| Striped dolphin                                                                                      | <i>Stenella coeruleoalba</i>      | No interactions observed or reported.                          |
| Longman's beaked whale                                                                               | <i>Indopacetus pacificus</i>      | No interactions observed or reported.                          |

\*Species is also listed under the Endangered Species Act.

Sources: NMFS PIRO and PIFSC unpublished data; Council website: <http://www.wpcouncil.org>

## Marine Mammal Protection Act Coordination

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). NMFS classifies the American Samoa bottomfish fishery as a Category III fishery under Section 118 of the MMPA (81 FR 20550, April 8, 2016). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals.

### **3.1.4.2.1 Current Effects on Marine Mammals in American Samoa**

In accordance with ESA Section 7(a)(2), NMFS previously evaluated the potential impacts of Mariana fisheries to ESA-listed marine mammals, and determined that these fisheries are not likely to adversely affect any species or critical habitat in the action area. NMFS documented its determinations in a Biological Opinion for bottomfish fisheries on March 8, 2002 and a Letter of Concurrence for bottomfish fisheries on June 3, 2008.

No new information indicates that these Mariana fisheries may affect ESA-listed marine mammals and turtles, or critical habitat in a manner or to an extent not previously considered in previous consultations. Accordingly, all prior consultations for ESA-listed marine mammal and turtle species remain valid and effective.

### **3.1.4.2.2 Potential Effects of the Alternatives on Marine Mammals in American Samoa**

#### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, the ACL for 2016 and 2017 would be set at 101,000 lb, the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring programs administered by the DMWR with assistance from WPacFIN. The level of catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 21,005 lb for the period 2011-2013.

The bottomfish fishery is not known, or believed, to adversely affect marine mammals in terms of noise, water pollution, accidental entanglement, or competition for food resources. No interactions have been reported between the fishery and marine mammals (Table 11).

#### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for American Samoa BMUS would be subject to an ACL of 106,000 lb for the 2016 and 2017 fishing years as recommended by the Council.

The ACL is higher than recent catches and there is no proposal for an in-season fishery closure. For these reasons, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in changes to interactions with marine mammals and therefore there would be no effects on marine mammals.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for American Samoa BMUS would be subject to an ACL between 102,000 and 103,000 lb for the 2016 and 2017 fishing years.

The ACL is higher than recent catches and there is no proposal for an in-season fishery closure. For these reasons, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in changes to interactions with marine mammals and therefore there would be no effects on marine mammals.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL of AM for the fishery. As described above, the American Samoa bottomfish fishery would continue to fish in the same way as it has in recent years, and as described above. Therefore, this alternative would not result in changes to interactions with marine mammals and therefore there would be no effects on marine mammals.

In sum, because the fishery has had no known interactions with marine mammals, and interactions with marine mammals are expected to remain rare; and given the fact that none of the alternatives would change the conduct of the fishery, none of the alternatives would adversely affect marine mammals.

**3.1.4.3 Seabirds in American Samoa**

Seabird species that are considered residents or visitors of American Samoa are listed in Table 12. Of these, only the Newell's shearwater is listed as threatened under the ESA.

**Table 12. Seabirds occurring in American Samoa**

| <b>Samoan name</b>                     | <b>English name</b>                  | <b>Scientific name</b>              |
|----------------------------------------|--------------------------------------|-------------------------------------|
| Residents (i.e., breeding)             |                                      |                                     |
| ta'i'o                                 | Wedge-tailed shearwater              | <i>Puffinus pacificus</i>           |
| ta'i'o                                 | Audubon's shearwater                 | <i>Puffinus lherminieri</i>         |
| ta'i'o                                 | Christmas shearwater                 | <i>Puffinus nativitatis</i>         |
| ta'i'o                                 | Tahiti petrel                        | <i>Pterodroma rostrata</i>          |
| ta'i'o                                 | Herald petrel                        | <i>Pterodroma heraldica</i>         |
| ta'i'o                                 | Collared petrel                      | <i>Pterodroma brevipes</i>          |
| fua'o                                  | Red-footed booby                     | <i>Sula</i>                         |
| fua'o                                  | Brown booby                          | <i>Sula leucogaster</i>             |
| fua'o                                  | Masked booby                         | <i>Sula dactylatra</i>              |
| tava'esina                             | White-tailed tropicbird              | <i>Phaethon lepturus</i>            |
| tava'e'ula                             | Red-tailed tropicbird                | <i>Phaethon rubricauda</i>          |
| atafa                                  | Great frigatebird                    | <i>Fregata minor</i>                |
| atafa                                  | Lesser frigatebird                   | <i>Fregata ariel</i>                |
| gogouli                                | Sooty tern                           | <i>Onychoprion fuscatus</i>         |
| gogo                                   | Brown noddy                          | <i>Anous stolidus</i>               |
| gogo                                   | Black noddy                          | <i>Anous minutus</i>                |
| laia                                   | Blue-gray noddy                      | <i>Procelsterna cerulea</i>         |
| manu sina                              | Common fairy-tern (white tern)       | <i>Gygis alba</i>                   |
| Visitors/vagrants/accidental visitors: |                                      |                                     |
| ta'i'o                                 | Short-tailed shearwater              | <i>Puffinus tenuirostris</i>        |
| ta'i'o                                 | Newell's shearwater (ESA threatened) | <i>Puffinus auricularis newelli</i> |
| ta'i'o                                 | Mottled petrel                       | <i>Pterodroma inexpectata</i>       |
| ta'i'o                                 | Phoenix petrel                       | <i>Pterodroma alba</i>              |
| ta'i'o                                 | White-bellied storm petrel           | <i>Fregetta grallaria</i>           |
| ta'i'o                                 | Polynesian storm petrel              | <i>Nesofregetta fuliginosa</i>      |
| -----                                  | Laughing gull                        | <i>Larus atricilla</i>              |
| gogosina                               | Black-naped tern                     | <i>Sterna sumatrana</i>             |

Source: WPFMC 2009a; online sources.

There has only been one confirmed sighting of the threatened Newell's shearwater in American Samoa (Grant et al.1994) and it appears to be an uncommon visitor to the archipelago. There have been no reports of interactions between the American Samoa bottomfish fishery and seabirds (WPFMC 2009a).

### **3.1.4.3.1 Potential Effects of the Alternatives on Seabirds in American Samoa**

Because the American Samoa bottomfish fishery is not known to affect seabirds through gear interactions or through disruptions in or adverse effects on seabird prey, and because none of the alternatives would change the bottomfish fishery, none of the alternatives would affect seabirds.



#### 3.1.4.4 ESA-listed Reef Building Corals in American Samoa

On September 10, 2014, NMFS listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Six species of listed corals are known to occur in waters around American Samoa from 0–50 m deep. None of the species have common names. Table 13 lists the ESA-listed coral species found in American Samoa. Corals usually live in colonies and form “heads” or “shelves.” Often thousands of individual coral organisms (polyps) live together in a single structure that grows over time. Recently, many nearshore coral reefs have died through a process called bleaching when coral expel algae that live within them. Bleaching often leads to death for coral colonies by causing malnutrition and increasing the colony’s susceptibility to disease. Some coral species populations have suffered declines.

Table 13. ESA-listed Coral in American Samoa

| Common name | Scientific Name              | ESA listing status in American Samoa | Occurrence in American Samoa | Interactions with the American Samoa bottomfish fishery |
|-------------|------------------------------|--------------------------------------|------------------------------|---------------------------------------------------------|
| None        | <i>Acropora globiceps</i>    | Threatened                           | Present                      | No interactions observed or reported                    |
| None        | <i>A. jacquelineae</i>       | Threatened                           | Present                      | No interactions observed or reported                    |
| None        | <i>A. retusa</i>             | Threatened                           | Present                      | No interactions observed or reported                    |
| None        | <i>A. speciosa</i>           | Threatened                           | Present                      | No interactions observed or reported                    |
| None        | <i>Euphyllia paradivisa</i>  | Threatened                           | Present                      | No interactions observed or reported                    |
| None        | <i>Isopora crateriformis</i> | Threatened                           | Present                      | No interactions observed or reported                    |

##### 3.1.4.4.1 Potential Effects of the Alternatives on ESA-listed Corals

###### **Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)**

Under the Status Quo alternative, the ACL for 2016 and 2017 would be set at 101,000 lb, the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by the DMWR with assistance from WPacFIN. The level of catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 21,005 lb for the period 2011-2013.

Bottomfish fishing is a hook-and-line fishery that has minimal impact to the benthic habitat. Some damage to corals and the bottom are possible via anchoring, or entanglement of bottomfish fishing tackle on the bottom. Yet fishermen have an interest in minimizing both of these interactions, not only for the conservation benefit, but because they do not want to lose their gear. The FEP protects corals and habitat through prohibitions on the use of bottom-set nets,

bottom trawls, explosives, and poisons. It is unlawful for any person to fish for, take, or retain any wild live rock or live hard coral except under a valid special permit for scientific research, aquaculture seed stock collection or traditional and ceremonial purposes by indigenous people (50 CFR 665.125).

On April 9, 2015, NMFS determined that the continued authorization of the bottomfish fishery under the FEP for the American Samoa Archipelago is not likely to adversely affect reef-building corals. This specification, and any of the 4 alternatives evaluated, would not significantly change the fishery from what was evaluated in 2015.

***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for American Samoa BMUS would be subject to an ACL of 106,000 lb for the 2016 and 2017 fishing years as recommended by the Council. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not impact ESA listed corals in any way not already considered in April, 2015.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for American Samoa BMUS would be subject to an ACL between 102,000 and 103,000 lb for the 2016 and 2017 fishing years. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not impact ESA listed corals in any way not already considered in April, 2015.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL of AM for the fishery. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not impact ESA listed corals in any way not already considered in April, 2015.

***All Alternatives***

In sum, the rate at which the American Samoa bottomfish fishery interacts with ESA-listed coral species in Table 13 is unknown; however, given the fact that bottomfish fishermen purposefully avoid snagging their gear on bottom habitats, and in view of the fact that none of the alternatives would affect the conduct of the fishery, none of the alternatives is expected to affect listed corals in any way not already considered by fishery consultations under the ESA.

**3.1.4.5 Scalloped Hammerhead Sharks in American Samoa**

On July 3, 2014, NMFS listed the Indo-West Pacific scalloped hammerhead shark DPS under the ESA (79 FR 38213). The Indo-West Pacific scalloped hammerhead shark DPS occurs in all U.S. Pacific Islands territories except Hawaii. Scalloped hammerhead sharks range widely from nearshore to pelagic environments and from the surface to 500 meters (m) deep. Because the shark is listed in American Samoa, it is illegal to target or retain the shark.

#### **3.1.4.5.1 Current status and effects of the fishery on Scalloped Hammerhead Sharks in American Samoa**

As noted in the final rule (79 FR 38213, July 3, 2014), the significant operative threats to the listed scalloped hammerhead DPSs are overutilization by foreign industrial, commercial, and artisanal fisheries and inadequate regulatory mechanisms in foreign nations to protect these sharks from the heavy fishing pressure and related mortality, with illegal fishing identified as a significant problem in areas outside of U.S. jurisdiction. Some fishermen target sharks, including the scalloped hammerhead, to harvest their fins. Incidental capture in fisheries also contributes increased mortality in this species (79 FR 38213, July 3, 2014).

Conservation initiatives for scalloped hammerhead sharks are in place and include, in addition to the Federal prohibition on retention of the scalloped hammerhead DPS, territorial prohibitions on the retention or transport of any sharks. Fishermen in American Samoa likely catch smooth hammerhead sharks incidentally in fishing operations; however, the territorial government passed a law in 2012 (A.S.A.C. § 24.0961) stating that no person shall:

- “1) possess, deliver, carry, transport or ship by any means whatsoever any shark species or the body parts of any such species;
- (2) Import, export, sell or offer for sale any such species or body parts of such species; or
- (3) Take or kill any such species in American Samoa”.

#### **3.1.4.5.2 Potential Effects of the Alternatives on Scalloped Hammerhead Sharks**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, the ACL for 2016 and 2017 would be set at 101,000 lb, the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by the DMWR with assistance from WPacFIN. The level of BMUS catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 21,005 lb for the period 2011-2013.

NMFS recently completed a consultation under the ESA to evaluate the potential effects of the American Samoa bottomfish fisheries on scalloped hammerhead sharks. On April 9, 2015, NMFS concluded that the continued authorization of the bottomfish fishery under the Fishery Ecosystem Plan (FEP) for American Samoa is not likely to adversely affect the Indo-west Pacific scalloped hammerhead shark DPS. Their conclusion was based on the finding that the effects of reauthorizing the fishery were expected to be insignificant and discountable because fishery participants are very unlikely interact with Indo-West Pacific scalloped hammerhead sharks because of limited distribution, selective fishing techniques, and the small scale and scope of these fisheries.

***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for American Samoa BMUS would be subject to an ACL of 106,000 lb for the 2016 and 2017 fishing years as recommended by the Council. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April 2015.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for American Samoa BMUS would be subject to an ACL between 102,000 and 103,000 lb for the 2016 and 2017 fishing years. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April 2015.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL of AM for the fishery. Even if NMFS does specify an ACL or AM for the fishery, the alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April 2015.

***All Alternatives***

There are no targeted shark fisheries in American Samoa, and regulations prohibit take or killing of any shark species, along with possession and sale of shark fins and shark products. In sum, the rate at which the American Samoa bottomfish fishery interacts with scalloped hammerhead sharks is unknown; however, the likelihood of interactions is low and a recent consultation found that American Samoa fisheries did not have any recorded or observed catches of scalloped hammerhead sharks based on boat-based creel surveys conducted from 2002 to 2013 (NMFS 2015). For comparison purposes, the authors reviewed observer data from the Hawaii bottomfish fishery that has a similar gear type and the fishery overlaps with hammerhead sharks. The Hawaii bottomfish fishery did not have any catches of hammerhead sharks when it was observed from 2004 to 2006 (NMFS observer program, unpublished data). Because Hawaii and American Samoa bottomfish fisheries have similar gear types and overlap with sharks, it is unlikely that the American Samoa fisheries would catch hammerhead sharks.

None of the alternatives would change the manner in which the fishery is conducted and none of the alternatives would result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April 2015.

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### **3.1.5 American Samoa Fishing Community**

#### ***Overview***

The Magnuson-Stevens Act defines a fishing community as “a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities” (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is “a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops)”.

National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of the Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic effects on such communities.

The Council, in 1998, identified American Samoa as a fishing community and requested the Secretary of Commerce concur with this determination. American Samoa was recognized in regulation as a fishing community under the Magnuson-Stevens Act on April 19, 1999 (64 FR 19067).

#### **3.1.5.1 Potential Effects of the Alternatives on the American Samoa Fishing Community**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Fishing community members are not expected to be affected by specifying the same ACLs and AM as have been in place since 2013. The fishery would continue to fish at levels recently estimated. Catches are expected to remain below the ACL and result in sustainable management of the bottomfish stock complex.

##### ***Alternatives 2 and 3***

None of the rest of the ACL and AM alternatives would change the American Samoa bottomfish fishery. The proposed ACL specifications, which provide for the long-term availability of bottomfish resources to the American Samoa fishing community, are substantially higher than recent harvests. Thus, the Council and NMFS have no reason to expect any disruption to the fishery from any of the alternatives that would result in any social or economic effects to the American Samoa fishing community.

In terms of management, American Samoa BMUS would continue to be subject to an ACL and post-season review of fishery performance against the ACL. Under the management system, ongoing monitoring of catch toward the ACL and future ACL adjustments would benefit people

who rely on fishing by providing additional review of fishing and catch levels, which, in turn, should enhance the management and sustainability of the fishery.

***Alternative 4: No ACL Specification Action by NMFS***

The American Samoa bottomfish fishery is not expected to change if no ACL or AM is specified. Catches would continue to be monitored. There would be no opportunity for the Council and NMFS to compare catches to an established ACL. However, catch monitoring would continue and fishing is expected to remain sustainable and this alternative would not result in adverse effects to American Samoa bottomfish resources that would, in turn, adversely affect the fishing community.

### **3.2 Guam Bottomfish Fishery, Marine Resources and Potential Effects**

The Mariana Archipelago (approximately 396 mi<sup>2</sup>) is composed of 15 volcanic islands that are part of a submerged mountain chain stretching nearly 1,500 miles from Guam to Japan, and is comprised of two political jurisdictions: the CNMI and the Territory of Guam, both of which are U.S. possessions. Guam is the southernmost island of the archipelago and 30 miles (48 km) long and 4 mi (6 km) to 12 mi (19 km) wide and is also the largest island in Micronesia with an area of 209 sq. miles (541 km<sup>2</sup>). Guam's population was estimated to be 172,257 people in 2016, which was almost double the 1970 population of 85,000 people

(<http://www.worldometers.info/world-population/guam-population/>; accessed July 26, 2016).

The population is expected to increase with the relocation of certain elements of the U.S. military from Okinawa to Guam, but the numbers of active duty, dependents and other personnel to be relocated to Guam and the timing of the relocation are still under discussion. The U.S. EEZ around Guam is approximately 81,470 mi<sup>2</sup> and extends from 3 to 200 nm offshore. Data collection, compilation, and monitoring responsibilities are shared among territorial and Federal agencies.

NMFS manages bottomfish fishing in Federal waters around Guam in accordance with the FEP for the Mariana Archipelago developed by the Council and implemented by NMFS under the authority of the Magnuson-Stevens Act (WPFMC 2009b). The Guam Division of Aquatic and Wildlife Resources (DAWR) manages the fishery from 0-3 nm. The management structure of the FEP emphasizes community participation and enhanced consideration of the habitat and ecosystem, and other elements not typically incorporated in fishery management decision-making. Enforcement of Federal fishery regulations is handled through a joint Federal-territorial partnership and the Council is required to produce an annual performance report on the fishery.

#### ***Overview of Guam's Bottomfish Fishery***

Recreational, subsistence, and small-scale commercial fishing sectors comprise Guam's bottomfish fishery. It can be separated into two distinct fisheries targeting species complexes separated by depth and species composition: shallow-water and deep-water complexes. The shallow water complex (<500 ft) makes up a larger portion of the total bottomfish effort and harvest and is comprised primarily of reef-dwelling species under genus *Lutjanus*, *Lethrinus*, *Aprion*, *Epinephelus*, *Variola*, *Cephalopholis* and *Caranx*. The deepwater complex (>500 ft) consists primarily of groupers and snappers of the genera *Pristipomoides*, *Etelis*, *Aphareus*,

*Epinephelus*, and *Cephalopholis* (WPFMC 2011). The majority of participants in Guam's bottomfish fishery are either subsistence or part-time commercial that operate boats less than 25 ft in length and primarily target the shallow water bottomfish complex. Approximately 254 vessels participated in the Guam bottomfish fishery in 2014, the most recent year vessel numbers are available (Source: WPacFIN, <http://www.pifsc.noaa.gov/frmd/wpacfin.php>, accessed December 10, 2015).

Regulations prohibit vessels longer than 50 ft from fishing for bottomfish in Federal waters within 50 nm around Guam, although these larger vessels must have a Federal permit and file logbooks when fishing seaward of the closed area which helps resource managers monitor harvests. Federal regulations for permit and reporting requirements do not apply to vessels less than 50 ft fishing in Federal waters around Guam.

As of 2014, there are two Federally permitted bottomfish vessels in Guam. Therefore, monitoring of the Guam bottomfish fishery is dependent on data voluntarily provided by fishermen to DAWR through the boat-based creel survey program. DAWR monitors commercial sales data provided by fish dealers through the commercial purchase system. Currently, DAWR staff resources limit the ability to process data so catch information is not available until at least 6 months to a year after the fishing year has ended.

Table 4 shows that between 2011 and 2013, the Guam bottomfish fishery caught an average of 37,183 lb of BMUS annually and sold 28 percent (10,292 lb). The Guam bottomfish fishery caught a total of 292,848 lb of BMUS in 2013. The 2013 average commercial price per pound for BMUS is \$3.52.

Based on the 2013 commercial catch estimate of 4,891 lb and the average price of all BMUS at \$3.52 per pound, the annual commercial value of the bottomfish fishery in 2013 was \$17,216. Assuming that all 254 vessels engaged in commercial fishing and that fishing effort by each vessel was equal throughout the fleet in 2013, each vessel would have sold approximately 19 lb of bottomfish valued at \$67.

### **3.2.1 Potential Effects of the Alternatives on Guam's Bottomfish Fishermen**

#### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, fishing for Guam BMUS would be subject to an ACL of 66,800 lb for fishing years 2016 and 2017. This is the same ACL specified for 2015. Between 2000 and 2013, total annual catch of BMUS in Guam came close to but did not exceed 66,800 lb only twice, once in 2000 and the other in 2011 when 66,000 lb and 59,618 lb were caught, respectively (Table 4). In more recent years, total annual catch fluctuated between 22,000 and 60,000 lb with the recent average catch for 2011-2013 around 37,183 lb.

So, under this alternative, catch in 2016 or 2017 may potentially be more than 50 percent of the ACL at 66,800 lb. However, because there is no data that would allow NMFS to implement an in-season closure to prevent the ACL from being exceeded, under all alternatives the AM for the Guam bottomfish fishery would require a post-season review of the catch data to determine

whether the ACL was exceeded. If the landings exceed the ACL, NMFS, as recommended by the Council, would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the bottomfish ACL in the subsequent fishing year to help ensure the fishery remains sustainable. NMFS cannot speculate on the change in operational measures or the magnitude of the overage adjustment they might require; therefore, the fishery effects of future actions such as changes to the ACL or AM would be evaluated separately, once details are available. However, if an ACL is exceeded a second time, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

NMFS does not expect the ACL and AM proposed under this alternative to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation. Consequently, NMFS does not expect implementation of Alternative 1 to adversely affect Guam bottomfish fishermen.

Continued management of the Guam bottomfish fishery under ACLs and AMs is expected to benefit Guam bottomfish fishermen by helping to provide for management review and long-term sustainability of BMUS.

***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for Guam BMUS would be subject to an ACL of 66,000 lb for the 2016 and 2017 fishing years. This specification reduces the catch by 800 lb from the current status quo (Alternative 1). An ACL of 66,000 lb is equal to the 2000 record catch of 66,000 lb and is unlikely to be reached in 2016 or 2017 due to reduced fishery participation compared to 2000. In earlier years, there were approximately more than 300 boats documented to have caught and landed BMUS. Recent years, showed only 254 boats documented to have landed BMUS.

Because there is no data that would allow NMFS to implement an in-season closure to prevent the ACL from being exceeded, the AM under this alternative would be the same as under Alternative 1; therefore, the effects to fishermen would be similar to those described in Alternative 1.

Because the ACL in Alternative 2 is more than double the highest Guam bottomfish catch in the last two years (Table 4), NMFS does not expect the ACL and AM proposed under this alternative to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation. Consequently, NMFS does not expect implementation of Alternative 2 to adversely affect Guam bottomfish fishermen.

Continued management of the Guam bottomfish fishery under ACLs and AMs is expected to benefit Guam bottomfish fishermen by helping to provide for management review and long-term sustainability of BMUS.



***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for Guam BMUS would be subject to an ACL of 64,000 lb for the 2016 and 2017 fishing years. Based on past fishery performance shown in Table 4, it is possible that the fishery could exceed this ACL since historically 66,000 lb was taken in 2000. However, because there is no data that would allow NMFS to implement an in-season closure ability to prevent the ACL from being exceeded, an ACL under this alternative is not expected to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation. In short, effects to fisheries participants would be generally the same as those described under Alternative 1, and no adverse economic impact to fishermen would likely result from implementation of any ACL under Alternative 3.

Continued management of the Guam bottomfish fishery under ACLs and AMs is expected to benefit Guam bottomfish fishermen by helping to provide for management review and long-term sustainability of BMUS.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL or AM for the fishery. This alternative would violate the Magnuson-Stevens Act and the management requirements in the FEP for the Mariana Archipelago. Nonetheless, if there were no ACL, the fishery would be expected to operate in the same manner as in previous years, and as it would under all alternatives. Therefore, the effects to fishermen would be similar to those described in Alternative 1.

**3.2.2 Target, Non-target and Bycatch Species in Guam**

The bottomfish fishery in the Mariana Archipelago, including Guam, generally targets 17 bottomfish management unit species including both shallow and deepwater bottomfish species (Table 14). While the boat-based and shore-based creel survey programs administered by Guam DAWR provide for the collection of bycatch information, no such information is currently available indicating that fishermen keep most of the fish they catch. However, like other Pacific Islands, discards, if they occur, are usually due to cultural reasons (i.e., taboo) or practical reasons such as toxicity (e.g., ciguatera and poison), or shark damage. Bottomfish fishing is fairly target-specific, and to date, neither the Council nor the Guam DAWR has raised concerns about bycatch in the fishery. NMFS does not have any information to indicate that there are large unresolved issues about bycatch in the Guam bottomfish fishery.

**Table 14. Mariana Bottomfish MUS (Guam)**

| <b>Mariana Bottomfish MUS (Guam)</b> |                                           |                                           |
|--------------------------------------|-------------------------------------------|-------------------------------------------|
| <b>Scientific Name</b>               | <b>English Common Name</b>                | <b>Local Name<br/>Chamorro/Carolinian</b> |
| <i>Aphareus rutilans</i>             | red snapper/<br>silvermouth               | lehi/maroobw                              |
| <i>Aprion virescens</i>              | gray snapper/jobfish                      | gogunafon/aiwe                            |
| <i>Caranx ignobilis</i>              | giant trevally/jack                       | tarakitu/etam                             |
| <i>C. lugubris</i>                   | black trevally/jack                       | tarakiton attelong/orong                  |
| <i>Epinephelus fasciatus</i>         | blacktip grouper                          | gadao/meteyil                             |
| <i>Variola louti</i>                 | lunartail grouper                         | bueli/bwele                               |
| <i>Etelis carbunculus</i>            | red snapper/ehu                           | buninas agaga/falaghal<br>maroobw         |
| <i>Etelis coruscans</i>              | red snapper/onaga                         | buninas/taighulupegh                      |
| <i>Lethrinus rubrioperculatus</i>    | redgill emperor                           | mafuti atigh                              |
| <i>Lethrinus amboinensis</i>         | ambon emperor                             | mafuti/loot                               |
| <i>Lutjanus kasmira</i>              | blueline snapper                          | funai/saas                                |
| <i>Pristipomoides auricilla</i>      | yellowtail snapper                        | buninas/falaghal-maroobw                  |
| <i>Pristipomoides filamentosus</i>   | pink snapper/<br>opakapaka                | buninas/falaghal-maroobw                  |
| <i>Pristipomoides flavipinnis</i>    | yelloweye snapper/<br>yelloweye opakapaka | buninas/falaghal-maroobw                  |
| <i>Pristipomoides seiboldi</i>       | pink snapper/kalekale                     | N/A                                       |
| <i>Pristipomoides zonatus</i>        | Snapper/gindai                            | buninas rayao<br>amiriyu/falaghal-maroobw |
| <i>Seriola dumerili</i>              | amberjack                                 | tarakiton tadong/meseyugh                 |

### 3.2.2.1 Current effects of the fishery: target, non-target and bycatch species

The information used in developing the proposed ACL for the Guam bottomfish stock complex is based on the most recent bottomfish stock assessment (Yau et al. 2016) conducted by NMFS PIFSC using data through 2013. Key points from the discussion in Section 2.1.2 include PIFSC's estimated MSY at 56,130 ± 7,790 lb and that production model results suggest that during the period 1982 through 2013, the Guam bottomfish complex has not been overfished and has not experienced overfishing, except perhaps in 2000 when total catch was 66,000 lb. Between 2011 and 2013, total harvest of Guam BMUS averaged 37,183 lb annually.

### 3.2.2.2 Potential Effects of the Alternatives on Target, Non-target and Bycatch Species in Guam

#### *Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)*

Under the no-action alternative, the ACL for 2016 and 2017 would be 66,800 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish as described above, and catches would continue to be monitored through fisheries monitoring program administered by

the DAWR with assistance from WPacFIN. The level of catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 37,183 lb for the period 2011-2013, which is approximately 66 percent of MSY (56,130 lb) and is sustainable. However, Tibbatts and Flores (2012) showed that 59,618 lb was caught in 2011 which is more than double the previous years' catch and exceeds MSY by 3,488 lb. This level of catch is still below the proposed ACL.

Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 3, an ACL of 66,800 lb would result in a 26.4 to 27.8 percent probability of overfishing in 2016, rising in 2017 to a 38 to 41 percent probability of overfishing. Consequently, no large and adverse effects to target species would be expected to result from implementation of Alternative 1. DAWR would monitor catch annually, with assistance from WPacFIN, and NMFS stock assessment scientists would periodically review stock status.

Under Alternative 1 the Council and NMFS would review fishery catches against the ACL annually; and, in accordance with the AM, would consider further modifications to the ACLs, if required. The ACL and AM are not expected to result in large changes to catches by the fishery, and the ACL is not expected to be approached in either year. For these reasons, the Guam BMUS stock complex is expected to remain healthy, and would not become overfished or be subject to overfishing under this alternative.

#### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for Guam BMUS would be subject to an ACL of 66,000 lb for the 2016 and 2017 fishing years. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 3, this ACL would have a 25 percent probability of causing overfishing in 2016, rising in 2017 to a 36 percent probability of overfishing.

Based on past fishery performance shown in Table 4, the fishery has come close but has never achieved this level of catch and would need to harvest nearly twice the recent average total catch of 37,183 lb in 2016 and again in 2017 for overfishing to occur. Because this level of catch would be sustainable, and the fishery is not expected to exceed the ACL, no large and adverse effects to target, non-target or bycatch species would be expected to result from implementation of Alternative 2. DAWR would monitor catch annually, with assistance from WPacFIN, and NMFS stock assessment scientists would periodically review stock status.

Under Alternative 2 the Council and NMFS would review fishery catches against the ACL annually; and, in accordance with the AM, would consider further modifications to the ACLs, if required. The ACL and AM are not expected to result in large changes to catches by the fishery, and the ACL is not expected to be approached in either year. For these reasons, the Guam BMUS stock complex is expected to remain healthy, and would not become overfished or be subject to overfishing under this alternative.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for Guam BMUS would be subject to an ACL of 64,000 lb for the 2016 and 2017 fishing years. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 3, an ACL of 64,000 lb would result in a probability of overfishing of 22.3 percent in 2016, rising to 31 percent in 2017. Consequently, no adverse effects to target BMUS would be expected to result from implementation of Alternative 3. Just as for Alternatives 1 and 2, DAWR with assistance from WPacFIN would monitor catch annually, and NMFS PIFSC stock assessment scientists would review stock status periodically.

Under all alternatives considered, including the preferred alternative, no new monitoring would be implemented; however, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year. While the lack of in-season catch monitoring ability precludes in-season measures (such as a fishery closure) that would prevent the ACL from being exceeded, none of the ACLs considered have greater than a 38 percent probability of causing overfishing for Guam bottomfish in 2016 and 2017 (Table 8).

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL or AM for the fishery. Therefore, fishing would continue throughout the entire fishing year, just as it would for Alternatives 1-3. Catches would be expected to be the same as for all other alternatives, and therefore the expected effect on target, non-target and bycatch species would be the same.

While the boat-based and shore-based creel survey programs administered by Guam DAWR provide for the collection of bycatch information, no such information is currently available indicating that fishermen keep most of the fish they catch. However, like other Pacific Islands, discards, if they occur, are usually due to cultural reasons (i.e., taboo) or practical reasons such as toxicity (e.g., ciguatera and poison), or shark damage. Bottomfish fishing is fairly target-specific, and to date, neither the Council nor the Guam DAWR has raised concerns about bycatch in the fishery. NMFS does not have any information to indicate that there are large unresolved issues about bycatch in the Guam bottomfish fishery.

### **3.2.3 Protected Resources in Guam**

A number of protected species are reported from the waters around the Mariana Islands and there is, therefore, the potential for interactions with the bottomfish fisheries of Guam. NMFS has evaluated the bottomfish fisheries for effects on protected resources. The bottomfish fisheries are managed in compliance with the requirements of the Magnuson-Stevens Act, the MMPA, the ESA, the MBTA, and other applicable statutes. You can find additional detailed descriptions of potentially affected protected resources and their life histories in Section 3.3.3 of the FEP for the

Mariana Archipelago (WPFMC 2009b) and online on NMFS website ([http://www.fpir.noaa.gov/PRD/prd\\_index.html](http://www.fpir.noaa.gov/PRD/prd_index.html)).

### ***Applicable ESA Coordination – Guam Bottomfish Fisheries***

In an informal consultation letter dated June 3, 2008, NMFS determined that the continued authorization of bottomfish fisheries of the Mariana Archipelago, including the bottomfish fishery around Guam, as managed under the Bottomfish and Seamount Groundfish FMP, was not likely to adversely affect ESA-listed sea turtle and marine mammal species or their designated critical habitat.

Since that 2008 consultation, other species have been listed. On July 3, 2014, NMFS published a final rule that listed four distinct population segments (DPSs) of scalloped hammerhead shark under the ESA (79 FR 38213). The threatened Indo-West Pacific DPS is the only DPS that occurs around Guam. On September 10, 2014, NMFS published a final rule that listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Of the 20 listed species, three are thought to occur in the Mariana Archipelago.

On April 29, 2015, NMFS determined that the continued authorization of the coral reef, bottomfish, crustacean, and precious coral fisheries under the FEP for the Mariana Archipelago may affect, but is not likely to adversely affect the Indo-West Pacific DPS of scalloped hammerhead shark and reef-building corals. More information is provided below on sea turtles, marine mammals, seabirds, corals and sharks in Guam.

#### **3.2.3.1 Sea Turtles in Guam**

All six sea turtle species occurring in U.S. waters are listed under the ESA. Of those, five species' ranges overlap with the EEZ around Guam and bottomfish fishermen could encounter them. Table 15 identifies sea turtles species known to occur, or reasonably expected to occur, in marine waters around the Mariana Archipelago, including Guam. Green turtle and hawksbill turtles nest on Guam (Seminoff et al. 2015).

Based on nearshore surveys conducted jointly between the CNMI–DFW and NMFS around the Southern Mariana Islands (Rota and Tinian 2001; Saipan 1999), an estimated 1,000 to 2,000 green sea turtles forage in these areas (Kolinski et al. 2001). Nesting beaches and seagrass beds on Tinian and Rota are in good condition but beaches and seagrass beds on Saipan have been impacted by hotels, golf courses and general tourist activities. Nesting surveys for green sea turtles have been done on Guam since 1973 with the most consistent data collected between 1990 and 2001 (Cummings 2002). Survey results show nesting in Guam to be generally increasing with 1997 having the most numerous nesting females at 60 (Cummings 2002). From October 1, 2006 through July 31, 2008, 55 green turtle nests were counted at various beaches during opportunistic surveys throughout Guam (DAWR 2009). Aerial surveys done in 1990–2000 also found an increase in green sea turtle sightings around Guam with over 200 turtles counted in 2000 (Cummings 2002). There have been occasional sightings of leatherback turtles around Guam (Eldredge 2003); however, the extent to which leatherback turtles are present around the Mariana Archipelago is unknown. There are no known reports of loggerhead sea

turtles in waters around the Mariana Archipelago (WPFMC 2009b). Olive ridley sea turtles are believed to occasionally transit the area (Starmer et al. 2005). There have been no reported or observed interactions with sea turtles in the Mariana Archipelago bottomfish fisheries.

**Table 15. Sea Turtle Species s Reasonably Expected to Occur in the Mariana Archipelago (Guam)**

| Common name                                                     | Scientific Name               | ESA listing status in Guam | Occurrence in Guam                                                                                                            | Interactions with the Guam bottomfish fishery |
|-----------------------------------------------------------------|-------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Green sea turtle<br>Haggan Betde<br>Central West<br>Pacific DPS | <i>Chelonia mydas</i>         | Endangered<br>DPS          | Most common turtle in the Mariana Archipelago. Foraging and minor nesting confirmed on Guam, Rota, Tinian and Saipan.         | No interactions observed or reported.         |
| Hawksbill sea turtle<br>Haggan Karai                            | <i>Eretmochelys imbricata</i> | Endangered                 | Small population foraging around Guam and suspected low level around southern islands of the CNMI. Low level nesting on Guam. | No interactions observed or reported.         |
| Leatherback sea turtle                                          | <i>Dermochelys coriacea</i>   | Endangered                 | Occasional sightings around Guam. Not known to what extent they are present around Guam and CNMI.                             | No interactions observed or reported.         |
| Olive ridley sea turtle                                         | <i>Lepidochelys olivacea</i>  | Threatened                 | Range across Pacific: not confirmed in the Mariana Archipelago.                                                               | No interactions observed or reported.         |

On September 22, 2011, NMFS published a final rule determining that the world loggerhead population was comprised of nine distinct population segments DPSs (five endangered and four

threatened). The north Pacific Loggerhead sea turtle DPS may range into the waters around Guam (NMFS 2009).

On April 6, 2016, NMFS and USFWS published a final rule finding that the green sea turtle is composed of 11 DPSs and proposed to replace the current range-wide listing with listing of the DPSs as threatened or endangered (81 FR 20057). The population around Guam is part of the Central West Pacific DPS, which is now listed as endangered. However, none of the alternatives considered would modify operations of the Guam bottomfish fishery in any way, and there is no additional information that would change the conclusions of the June 3, 2008, and April 29, 2015, informal consultations which determined that the Guam bottomfish fishery is not likely to adversely affect green sea turtles.

#### **3.2.3.1.1 Current Effects on Sea Turtles from the Guam bottomfish fishery**

Sea turtle populations occurring in Guam face many threats including: 1) direct harvest of animals and eggs or predation; 2) incidental interactions with fisheries; 3) collisions with vessels and automobiles; 4) urban development / loss of habitat; 5) pollution (e.g., plastics); and 5) climate change. Sea turtle conservation initiatives are also in place, including restoration of habitats, laws to protect turtles, and management of threats to help provide for recovery. More information is available on NMFS website at:

[http://www.fpir.noaa.gov/DIR/dir\\_mammal\\_turtle\\_seabird.html#SeaTurtles](http://www.fpir.noaa.gov/DIR/dir_mammal_turtle_seabird.html#SeaTurtles).

In many areas of the world, humans directly harvest sea turtles for meat, for consumption, and shells, used for decorative purposes. In many areas humans also harvest sea turtle eggs for consumption. Some species in the Pacific such as leatherback turtles, green turtles, and hawksbill turtles have suffered serious population declines from direct harvests of animals and eggs (Seminoff et al. 2015).

In Guam, all sea turtles are subject to protection. Both direct harvest, and direct and indirect harm, are prohibited unless otherwise authorized. NMFS has coordinated the continued authorization of the Guam bottomfish fishery under Section 7 of the Endangered Species Act (ESA).

Both commercial and non-commercial fisheries have the potential to cause adverse effects to sea turtles, including injuries and mortalities that occur incidental to fishing including incidental fishing gear or vessel interactions. As Table 10 indicates, no records exist of interactions between the American Samoa bottomfish fishery and sea turtles.

The most likely effect of the bottomfish fishery is the potential for vessel collisions with sea turtles causing injuries and mortalities around Guam. The frequency of this type of effect is unknown in Guam. However, given the fairly small number of bottomfish fishing vessels in Guam (approximately 400 vessels, almost exclusively under 21 feet long, according to Hospital and Beaver (2012)), and the fact that bottomfish fishing occurs while either at anchor or slowly drifting over fishing grounds, sea turtle collisions with vessels in this fishery are expected to be very rare.

A 2002 NMFS Biological Opinion on the FMP for Bottomfish and Seamount Groundfish Fisheries in the Western Pacific Region found that “although hawksbill, leatherback, loggerhead, and olive ridley turtles may be found within the action area and could interact with the FMP bottomfish fishery, there have been no reported or observed incidental takes of these species in the history of the bottomfish fisheries. In addition, hawksbill, leatherback, and olive ridley turtle species are likely to occur only very rarely in the action area. Therefore, NMFS concludes that the proposed action is not likely to adversely affect hawksbill, leatherback, loggerhead, and olive ridley turtles.” Similarly, the 2002 BiOp found that “prior biological opinions discussed the potential for adverse effects from vessel lighting and activity near and around nesting beaches utilized by the green turtle. There are no documented green turtle takes resulting from past fishery operations near nesting beaches. There are also no documented takes of green turtles from past fishing operations. Therefore, NMFS concludes that the proposed action is not likely to adversely affect green turtles.”

Consultations completed since the 2002 Biological Opinion (in 2008 and again in 2015 upon ESA listing of reef corals and scalloped hammerhead sharks) have come to the same conclusion that the current bottomfish fishery is unlikely to adversely affect sea turtles.

#### **3.2.3.1.2 Potential Effects of the Alternatives on Sea Turtles in Guam**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the no-action alternative, the ACL for 2016 and 2017 would be set at 66,800 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by the DAWR with assistance from WPacFIN. The level of catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 37,183 lb for the period 2011-2013.

Because there are no in-season fishery closures and catches are not expected to be constrained, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the potential for, or severity of, interactions between the fishery and listed sea turtles in any way not already considered in prior consultations. As described above, the fishery is not likely to adversely affect any listed sea turtle species, and vessel collisions would be rare.

##### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for Guam BMUS would be subject to an ACL of 66,000 lb for the 2016 and 2017 fishing years. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to sea turtles. This alternative is nearly identical to Alternative 1; the ACL would be only 800 lb less than Alternative 1. The potential effect on sea turtles is the same as Alternative 1.



***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for Guam BMUS would be subject to an ACL of 64,000 lb for the 2016 and 2017 fishing years. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 3, this ACL would result in a probability of overfishing of 22.3 percent in 2016, rising to 31 percent in 2017. Consequently, no adverse effects to target, non-target or bycatch species would be expected to result from implementation of Alternative 3. Just as for Alternatives 1 and 2, DAWR with assistance from WPacFIN would monitor catch annually, and NMFS PIFSC stock assessment scientists would review stock status periodically.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to sea turtles. This alternative is also very similar to Alternative 1; the ACL would be only 2800 lb less than Alternative 1. The potential effect on sea turtles is the same as Alternative 1.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL of AM for the fishery. This alternative would violate the Magnuson-Stevens Act and the management requirements in the FEP for the Mariana Archipelago. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to sea turtles. The conclusions of the 2008 and 2015 informal consultations that the Guam bottomfish fishery is not likely to adversely affect green sea turtles would remain valid for all alternatives.

**3.2.3.2 Marine Mammals in Guam**

***Marine Mammals***

Several species of whales, dolphins and porpoises, and the dugong occur in waters around Guam and are protected under the MMPA. Table 16, provides a list of marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago that have the potential to interact with the bottomfish fishery. A single ESA-listed dugong (Endangered), listed as endangered, was observed in Cocos Lagoon, Guam in 1975 (Randall et al.1975). Several sightings were reported in 1985 on the southeastern side of Guam (Eldredge 2003). Since that time, no reports of dugong sightings have been made. Additionally, five ESA-listed whales may frequent the waters around the Mariana Archipelago.

**Table 16. Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)**

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)</b> |                                   |                                                      |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>            | <b>Interactions with the Guam Bottomfish Fishery</b> |
| Humpback whale*                                                                                                      | <i>Megaptera novaeangliae</i>     | No interactions observed or reported.                |
| Sperm whale*                                                                                                         | <i>Physeter macrocephalus</i>     | No interactions observed or reported.                |
| Sei whale*                                                                                                           | <i>Balaenoptera borealis</i>      | No interactions observed or reported.                |
| Fin whale*                                                                                                           | <i>Balaenoptera physalus</i>      | No interactions observed or reported.                |
| Blue whale*                                                                                                          | <i>Balaenoptera musculus</i>      | No interactions observed or reported.                |
| Blainville's beaked whale                                                                                            | <i>Mesoplodon densirostris</i>    | No interactions observed or reported.                |
| Bottlenose dolphin                                                                                                   | <i>Tursiops truncatus</i>         | No interactions observed or reported.                |
| Bryde's whale                                                                                                        | <i>Balaenoptera edeni</i>         | No interactions observed or reported.                |
| Common dolphin                                                                                                       | <i>Delphinus delphis</i>          | No interactions observed or reported.                |
| Cuvier's beaked whale                                                                                                | <i>Ziphius cavirostris</i>        | No interactions observed or reported.                |
| Dwarf sperm whale                                                                                                    | <i>Kogia sima</i>                 | No interactions observed or reported.                |
| Dugong*                                                                                                              | <i>Dugong dugong</i>              | No interactions observed or reported.                |
| False killer whale                                                                                                   | <i>Pseudorca crassidens</i>       | No interactions observed or reported.                |
| Fraser's dolphin                                                                                                     | <i>Lagenodelphis hosei</i>        | No interactions observed or reported.                |
| Killer whale                                                                                                         | <i>Orcinus orca</i>               | No interactions observed or reported.                |
| Longman's beaked whale                                                                                               | <i>Indopacetus pacificus</i>      | No interactions observed or reported.                |
| Melon-headed whale                                                                                                   | <i>Peponocephala electra</i>      | No interactions observed or reported.                |
| Minke whale                                                                                                          | <i>Balaenoptera acutorostrata</i> | No interactions observed or reported.                |
| Pygmy killer whale                                                                                                   | <i>Feresa attenuata</i>           | No interactions observed or reported.                |

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)</b> |                                   |                                                      |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>            | <b>Interactions with the Guam Bottomfish Fishery</b> |
| Pygmy sperm whale                                                                                                    | <i>Kogia breviceps</i>            | No interactions observed or reported.                |
| Risso's dolphin                                                                                                      | <i>Grampus griseus</i>            | No interactions observed or reported.                |
| Rough-toothed dolphin                                                                                                | <i>Steno bredanensis</i>          | No interactions observed or reported.                |
| Short-finned pilot whale                                                                                             | <i>Globicephala macrorhynchus</i> | No interactions observed or reported.                |
| Sperm whale                                                                                                          | <i>Physeter macrocephalus</i>     | No interactions observed or reported.                |
| Spinner dolphin                                                                                                      | <i>Stenella longirostris</i>      | No interactions observed or reported.                |
| Spotted dolphin                                                                                                      | <i>Stenella attenuata</i>         | No interactions observed or reported.                |
| Striped dolphin                                                                                                      | <i>Stenella coeruleoalba</i>      | No interactions observed or reported.                |

\*ESA-listed species

Source: Eldredge 2003, Randall et al. 1975, Guam DAWR 2005, Council website:

<http://www.wpcouncil.org>

### ***Marine Mammal Protection Act Coordination***

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). NMFS classifies the Guam bottomfish fishery as a Category III fishery under Section 118 of the MMPA (81 FR 20550, April 8, 2016). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals.

Because none of the alternatives would modify vessel operations or other aspects of any fishery, NMFS does not anticipate that the Guam bottomfish fishery, would affect marine mammals in any manner not previously considered under section 118 of the MMPA.

#### **3.2.3.2.1 Potential Effects of the Alternatives on Marine Mammals in Guam**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, the ACL for 2016 and 2017 would be set at 66,800 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by the DAWR with assistance from WPacFIN. The level of catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 37,183 lb for the period 2011-2013.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to marine mammals. The bottomfish fishery is not known, or expected, to adversely affect marine mammals in terms of noise, water pollution, accidental entanglement, or competition for food resources. The conclusions of the 2008 and 2015 informal consultations that the Guam bottomfish fishery is not likely to adversely affect marine mammals remain valid for Alternative 1.

***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for Guam BMUS would be subject to an ACL of 66,000 lb for the 2016 and 2017 fishing years. This alternative is nearly identical to Alternative 1; the ACL would be only 800 lb less than Alternative 1. The potential effect on marine mammals is the same as Alternative 1.

This alternative would not change the conduct of the fishery in any way. The bottomfish fishery is not known, or believed, to adversely affect marine mammals in terms of noise, water pollution, accidental entanglement, or competition for food resources.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for Guam BMUS would be subject to an ACL of 64,000 lb for the 2016 and 2017 fishing years. This alternative is also very similar to Alternative 1; the ACL would be only 2800 lb less than Alternative 1. The potential effect on marine mammals is the same as Alternative 1.

This alternative would not change the conduct of the fishery in any way. The bottomfish fishery is not known, or believed, to adversely affect marine mammals in terms of noise, water pollution, accidental entanglement, or competition for food resources.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL or AM for the fishery. This alternative would violate the Magnuson-Stevens Act and the management requirements in the FEP for the Mariana Archipelago.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to marine mammals. The conclusions of the 2008 and 2015 informal consultations that the Guam bottomfish fishery is not likely to adversely affect marine mammals would remain valid for all alternatives.

In sum, because the fishery has had no known interactions with marine mammals, and interactions with marine mammals are expected to remain rare; and given the fact that none of

the alternatives would change the conduct of the fishery, none of the alternatives would adversely affect marine mammals.

### 3.2.3.3 Seabirds in Guam

The following seabirds are considered residents of the Mariana Archipelago: wedge-tailed shearwater (*Puffinus pacificus*), white-tailed tropicbird (*Phaethon lepturus*), red-tailed tropicbird (*Phaethon rubricauda*), masked booby (*Sula dactylatra*), brown booby (*Sula leucogaster*), red-footed booby (*Sula sula*), white tern (*Gygis alba*), sooty tern (*Sterna fuscata*), brown noddy (*Anous stolidus*), black noddy (*Anous minutus*), and the great frigatebird (*Fregata minor*). However, according to Wiles (2003), the only resident seabirds on Guam are the brown noddy and the white tern.

The following seabirds in Table 17 have been sighted and are considered visitors (some more common than others) to the Mariana Archipelago; short-tailed shearwater (*Puffinus tenuirostris*; common visitor), Newell's shearwater (*Puffinus newelli*; rare visitor), Audubon's shearwater (*Puffinus iherminieri*), Leach's storm-petrel (*Oceanodroma leucorhoa*), and the Matsudaira's storm-petrel (*Oceanodroma matsudairae*). Of these, only the Newell's shearwater is listed as threatened under the ESA. There have been no sightings of the endangered short-tailed albatross (*Phoebastria albatrus*) in the Mariana Archipelago although the Mariana Archipelago is within the range of the only breeding colony at Torishima, Japan (WPFMC 2009b).

**Table 17. Seabirds occurring in the Mariana Archipelago (Guam)**

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                                |                                               |
|-------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------------------------|
|                                                                                                             | Common name                    | Scientific name                               |
| Vr                                                                                                          | Newell's shearwater            | <i>Puffinus newelli</i> (ESA: Threatened)     |
| Vr                                                                                                          | Wedge-tailed shearwater        | <i>Puffinus pacificus</i>                     |
| V                                                                                                           | Audubon's shearwater           | <i>Puffinus iherminieri</i>                   |
| Vc                                                                                                          | Short-tailed shearwater        | <i>Puffinus tenuirostris</i> (common visitor) |
| V                                                                                                           | Leach's storm-petrel           | <i>Oceanodroma leucorhoa</i>                  |
| Vr                                                                                                          | Matsudaira's storm-petrel      | <i>Oceanodroma matsudairae</i>                |
| Vr                                                                                                          | Red-footed booby               | <i>Sula sula</i>                              |
| Vr                                                                                                          | Brown booby                    | <i>Sula leucogaster</i>                       |
| V                                                                                                           | Masked booby                   | <i>Sula dactylatra</i>                        |
| Vr                                                                                                          | White-tailed tropicbird        | <i>Phaethon lepturus</i>                      |
| Vr                                                                                                          | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>                    |
| Vr                                                                                                          | Great frigatebird              | <i>Fregata minor</i>                          |
| Vr                                                                                                          | Sooty tern                     | <i>Sterna fuscata</i>                         |
| R                                                                                                           | Brown noddy                    | <i>Anous stolidus</i>                         |
| V                                                                                                           | Black noddy                    | <i>Anous minutus</i>                          |
| R                                                                                                           | White tern / Common fairy-tern | <i>Gygis alba</i>                             |

Source: WPFMC 2009b

### 3.2.3.3.1 Potential Effects of the Alternatives on Seabirds in Guam

There have been no reports of interactions between seabirds and any of the Mariana Archipelago bottomfish fisheries (WPFMC 2009b) and the species is not known to prey on bottomfish. Because the proposed action would not modify fishing operations, NMFS expects that the fishery, as conducted under the proposed action, would not affect seabirds.

### 3.2.3.4 ESA-listed Corals in Guam

On September 10, 2014, NMFS listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Three of the species live in Guam. None of the species have common names. Table 18 lists the ESA-listed coral species found in Guam. Corals usually live in colonies form “heads” or “shelves.” Often thousands of individual coral organisms (polyps) live together in a single structure that grows over time. Recently, many nearshore coral reefs have died through a process called bleaching when coral expel algae that live within them. Bleaching often leads to death for coral colonies by causing malnutrition and increasing the colony’s susceptibility to disease. Some coral species populations have suffered declines.

**Table 18. ESA-listed Corals in Guam**

| Common name | Scientific Name             | ESA listing status in Guam | Occurrence in Guam | Interactions with the Guam bottomfish fishery |
|-------------|-----------------------------|----------------------------|--------------------|-----------------------------------------------|
| None        | <i>Acropora globiceps</i>   | Threatened                 | Present            | No interactions observed or reported          |
| None        | <i>A. retusa</i>            | Threatened                 | Present            | No interactions observed or reported          |
| None        | <i>Seriatopora aculeata</i> | Threatened                 | Present            | No interactions observed or reported          |

#### 3.2.3.4.1 Potential Effects of the Alternatives on ESA-listed Corals in Guam

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the no-action alternative, the ACL for 2016 and 2017 would be set at 66,800 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by the DAWR with assistance from WPacFIN. The level of catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 37,183 lb for the period 2011-2013.

Bottomfish fishing is a hook-and-line fishery that has minimal impact to the benthic habitat. Some damage to corals and the bottom are possible via anchoring, or entanglement of bottomfish fishing tackle on the bottom. Yet fishermen have an interest in minimizing both of these interactions, not only for the conservation benefit, but because they do not want to lose their gear. The FEP protects corals and habitat through prohibitions on the use of bottom-set nets, bottom trawls, explosives, and poisons. It is unlawful for any person to fish for, take, or retain

any wild live rock or live hard coral except under a valid special permit for scientific research, aquaculture seed stock collection or traditional and ceremonial purposes by indigenous people (50 CFR 665.125).

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to ESA-listed corals. The conclusion of the April 29, 2015, informal consultation that the Guam bottomfish fishery is not likely to adversely affect listed corals remain valid for Alternative 1.

***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for Guam BMUS would be subject to an ACL of 66,000 lb for the 2016 and 2017 fishing years. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 3, this ACL would have a 25 percent probability of causing overfishing in 2016, rising in 2017 to a 36 percent probability of overfishing. This alternative is nearly identical to Alternative 1; the ACL would be only 800 lb less than Alternative 1. The potential effect on corals is the same as Alternative 1.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to ESA-listed corals.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for Guam BMUS would be subject to an ACL of 64,000 lb for the 2016 and 2017 fishing years. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 3, none would result in a probability of overfishing 22.3 percent in 2016, rising to 31 percent in 2017. Consequently, no adverse effects to target, non-target or bycatch species would be expected to result from implementation of Alternative 3. Just as for Alternatives 1 and 2, DAWR with assistance from WPacFIN would monitor catch annually, and NMFS PIFSC stock assessment scientists would review stock status periodically.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to ESA-listed corals. This alternative is also very similar to Alternative 1; the ACL would be only 2800 lb less than Alternative 1. The potential effect on listed corals is the same as Alternative 1.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL or AM for the fishery. This alternative would violate the Magnuson-Stevens Act and the management requirements in the FEP for the Marianna Archipelago.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to ESA-listed

corals. The conclusion of the April 29, 2015, informal consultation that the Guam bottomfish fishery is not likely to adversely affect listed corals would remain valid for all alternatives.

### **3.2.3.5 Scalloped Hammerhead Sharks in Guam**

On July 3, 2014, NMFS listed the Indo-West Pacific scalloped hammerhead shark DPS under the ESA (79 FR 38213). The Indo-West Pacific scalloped hammerhead shark DPS occurs in all U.S. Pacific Islands territories except Hawaii. Scalloped hammerhead sharks range widely from nearshore to pelagic environments and from the surface to 500 meters (m) deep.

#### **3.2.3.5.1 Potential Threats to Scalloped Hammerhead Sharks**

Overharvest in fisheries represents the greatest threat to scalloped hammerhead sharks. Some fishermen target sharks, including the scalloped hammerhead, to harvest their fins. Incidental capture in fisheries also contributes increased mortality in this species (79 FR 38213, July 3, 2014). Fishermen in Guam are likely to catch this species incidentally to fishing operations; however, the territorial government prohibits the shark fin trade, and fishermen return most incidentally caught sharks to the sea.

#### **3.2.3.5.2 Potential Effects of the Alternatives on Scalloped Hammerhead Sharks**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the no-action alternative, the ACL for 2016 and 2017 would be set at 66,800 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by the DAWR with assistance from WPacFIN. The level of catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 37,183 lb for the period 2011-2013.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to scalloped hammerhead sharks. The conclusion of the April 29, 2015, informal consultation that the Guam bottomfish fishery is not likely to adversely affect scalloped hammerhead sharks remains valid for Alternative 1.

##### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for Guam BMUS would be subject to an ACL of 66,000 lb for the 2016 and 2017 fishing years.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to scalloped hammerhead sharks. This alternative is nearly identical to Alternative 1; the ACL would be only 800 lb less than Alternative 1. The potential effect on scalloped hammerhead sharks is the same



as for Alternative 1. Therefore, this alternative would not result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April, 2015.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for Guam BMUS would be subject to an ACL of 64,000 lb for the 2016 and 2017 fishing years.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to scalloped hammerhead sharks. Therefore, this alternative would not result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April, 2015

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL of AM for the fishery. This alternative would violate the Magnuson-Stevens Act and the management requirements in the FEP for the Marianna Archipelago.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the frequency or intensity of any potential threats to scalloped hammerhead sharks.

***All Alternatives***

The conclusion of the April 29, 2015, informal consultation that the Guam bottomfish fishery is not likely to adversely affect scalloped hammerhead sharks would remain valid for all alternatives.

### **3.2.4 Guam Fishing Community**

The Magnuson-Stevens Act defines a fishing community as “a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities” (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is “a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops)”.

National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained

participation of such communities and (b) to the extent practicable, minimize adverse economic effects on such communities.

The Council, in 1998, identified Guam as a fishing community and requested the Secretary of Commerce concur with this determination. Guam was recognized in regulation as a fishing community under the Magnuson-Stevens Act on April 19, 1999 (64 FR 19067).

#### **3.2.4.1 Potential Effects of the Alternatives on the Guam Fishing Community**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Fishing community members are not expected to be affected by specifying the same ACLs and AM as have been in place since 2013. The fishery would continue to fish at levels recently estimated. Catches are expected to remain below the ACL and result in sustainable management of the bottomfish stock complex.

##### ***Alternatives 2 and 3***

No change to the Guam bottomfish fishery is expected under any of the alternatives. The proposed ACL specifications, which are intended to provide for the long-term availability of bottomfish resources to the Guam fishing community, are more than twice the amount of harvests in the last 2 fishing years for which data is available. Thus, the Council and NMFS would not expect any disruption to the fishery that would result in any social or economic effects to the Guam fishing community.

In terms of management, Guam BMUS would continue to be subject to an ACL and post-season review of fishery performance against the ACL. Under the management system, ongoing monitoring of catch toward the ACL and future ACL adjustments are expected to benefit people who rely on fishing by providing additional review of fishing and catch levels, which, in turn, should enhance the sustainability of the fishery.

##### ***Alternative 4: No ACL Specification Action by NMFS***

The Guam bottomfish fishery is not expected to change if no ACL or AM is specified. Catches would continue to be monitored. There would be no opportunity for the Council and NMFS to compare catches to an established ACL. However, catch monitoring would continue and fishing is expected to remain sustainable and this alternative would not result in adverse effects to Guam bottomfish resources that would, in turn, adversely affect the fishing community.

The community continues to participate in the Council decision-making process through its representatives on the Council, its Advisory Panel members, and through opportunities for public input at both the Council's deliberations and NMFS's proposed rulemaking stage.

### **3.3 CNMI Bottomfish Fishery, Marine Resources and Potential Effects**

The Mariana Archipelago (approximately 396 mi<sup>2</sup> land area) is composed of 15 volcanic islands that are part of a submerged mountain chain stretching nearly 1,500 miles from Guam to Japan,

and is comprised of two political jurisdictions: the CNMI, and the Territory of Guam, both of which are U.S. possessions. The CNMI is comprised of 14 islands with a total land area of 179 sq. miles spread over 264,000 mi<sup>2</sup> of ocean. The highest elevation is 3,166 ft (965 m). The southern islands (Rota, Saipan and Tinian) are limestone with fringing coral reefs; the northern islands from Farallon de Medinilla to Uracus are volcanic, with active volcanoes on Anatahan, Pagan and Agrihan. Ninety percent of the 55,413 residents (<http://www.worldometers.info/world-population/northern-mariana-islands-population/>; accessed July 26, 2016) live on the island of Saipan and almost all the rest on Tinian and Rota. The population fell by 50% compared to the 2005 estimate due to changes in immigration laws. After government removal of residents following volcanic activity, only a half dozen people remain in the northern islands.

The U.S. EEZ around the CNMI is approximately 292,717 mi<sup>2</sup>, but unlike other U.S. Pacific islands, Federal jurisdiction extends from the shoreline to 200 nm offshore. For this reason, the Federal bottomfish management area around the CNMI is further divided into the inshore area (0-3 nm) and the offshore area (3-200 nm). Bottomfish fishery data collection, compilation and monitoring responsibilities are shared among territorial and Federal agencies. The Northern Mariana Islands Division of Fish and Wildlife (DFW) handles fishery management in CNMI.

Bottomfish fishing in Federal waters around the CNMI is managed in accordance with the FEP for the Mariana Archipelago developed by the Council and implemented by NMFS under the authority of the Magnuson-Stevens Act (WPFMC 2009b). However, the Council is working to incorporate locally developed regulations for CNMI near-shore fisheries into Federal management measures in the FEP for the Mariana Archipelago (WPFMC 2011; Council website). This FEP includes a management structure that emphasizes community participation and enhanced consideration of the habitat and ecosystem, and other elements not typically incorporated in fishery management decision-making. Enforcement of Federal fishery regulations is handled through a joint Federal-territorial partnership and the Council is required to produce an annual performance report on the fishery.

### ***Overview of the CNMI Bottomfish Fishery***

CNMI's bottomfish fishery still consists primarily of small-scale local boats engaged in commercial and subsistence fishing, although a few (generally <5) larger vessels (30– 60 ft) also participate in the fishery. The bottomfish fishery can be broken down into two sectors: deep-water (>500 ft) and shallow-water (100–500 ft) fisheries. The deep-water fishery is primarily commercial, targeting snappers and groupers (WPFMC 2009) while, the shallow-water fishery, which targets the redgill emperor (*Lethrinus rubrioperculatus*) is mostly commercial, but also includes subsistence fishermen (WPFMC 2011). Hand lines, home-fabricated hand reels and small electric reels are the commonly used gear for small-scale fishing operations, whereas electric reels and hydraulics are the commonly used gear for the larger operations in this fishery. People mostly fish during daylight hours, although larger vessels have made multi-day trips to the Northern Islands (north of Saipan) in the past.

CNMI's bottomfish fishery continues to show a high turnover with changes in the number of participants in the fishery. In the early 1980s, there were over 100 vessels participating in the

fishery. In 2014, only 10 vessels reported bottomfish landings which are offloaded at Saipan or other CNMI commercial ports. (WPacFIN unpublished data, CNMI Bottomfish Module).

To help conserve bottomfish fishery resources at nearshore seamounts and banks, any vessel greater than 40 ft in length overall is prohibited from engaging in fishing for bottomfish within 50 nm around the CNMI's Southern Islands and within 10 nm around the island of Alamagan in the Northern Islands. Additionally, a Federal bottomfish fishing permit is required for any vessel used in commercially fishing for BMUS in the EEZ around the CNMI which includes both inshore and offshore waters. Other requirements affecting the CNMI's bottomfish fishery can be found in the FEP for the Mariana Archipelago (WPFMC 2009b).

Of the estimated 10 vessels reported to engage in bottomfish fishing in 2014, only 7 vessels were Federally permitted. The monitoring of the total CNMI bottomfish fishery is primarily dependent on data voluntarily provided by fishermen to the CNMI Division of Fish and Wildlife through the boat-based creel survey program. Monitoring of commercial sales data is provided to DFW by fish dealers through the commercial purchase system. Currently, DFW staff resources limit the ability to process data so catch information is not available until at least 6 months to a year after the fishing year has ended.

Table 6 shows that between 2011 and 2013, the CNMI bottomfish fishery caught an average of 20,099 lb of BMUS annually of which 77 percent (15,491 lb) was sold. In 2013, the commercial price per pound for BMUS in the CNMI was \$3.79.

Based on the 2013 commercial catch estimate of 17,796 lb and the average price of all BMUS at \$3.79 per pound, the annual commercial value of the bottomfish fishery in 2013 was \$67,446. Assuming that the 10 vessels engaged in commercial fishing for BMUS in 2013, and that fishing effort by each vessel were equal, NMFS estimates each commercial fishing vessel would have caught 1,779 lb valued at \$6,742.

### **3.3.1 Potential Effects of the Alternatives on CNMI's Bottomfish Fishermen**

#### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, fishing for CNMI BMUS would be subject to an ACL of 228,000 lb for the 2016 and 2017 fishing years. This is the same ACL specified for 2015. Between 2000 and 2013, the greatest total annual catch of BMUS in the CNMI occurred in 2001 at 71,256 lb (Table 6). After 2001, total annual catch declined slightly, rebounded back to 70,000 lb in 2005, and declined again with the average total annual catch for the period 2011-2013 at 20,099 lb. Because the ACL proposed under this alternative is more than three times greater than the highest level of catch ever recorded, harvest in 2016 and 2017 is not expected to exceed the ACL, and the ACL is not expected to result in a race to the fish over each of the next two years.

Because there is no data that would allow NMFS to implement an in-season closure to prevent the ACL from being exceeded, under all alternatives including the Status Quo alternative, the AM for the CNMI bottomfish fishery would require a post-season review of the catch data to determine whether the bottomfish ACL for the CNMI was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council, would take action to correct the operational issue that

caused the ACL overage to help ensure the fishery remains sustainable. This could include a downward adjustment to the bottomfish ACL in the subsequent fishing year. NMFS cannot speculate on the operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery effects of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

NMFS does not expect the ACL and AM proposed under this alternative to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation. Consequently, NMFS does not expect implementation of Alternative 1 to adversely affect CNMI bottomfish fishermen.

***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for CNMI BMUS would be subject to an ACL of 228,000 lb for the 2016 and 2017 fishing years as recommended by the Council. This specification is the same as Alternative 1 but the risk of overfishing level is different. In Brodziak et al. (2012), a catch level of 228,000 lb is associated with a 28 and 39 percent risk of overfishing for 2013 and 2014, respectively. The most recent stock assessment update by Yau et al. (2016), a catch level of 228,000 lb is associated with a 24.2 and 36 percent risk of overfishing, lower than the previous stock assessment update.

Based on past fishery performance, the bottomfish fleet is very unlikely to achieve the ACL in 2016 or 2017. Because there is no data that would allow NMFS to implement an in-season closure, the AM under this alternative would be the same as under Alternative 1. Therefore, the effects to fishermen would be the same to those described in Alternative 1.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for CNMI BMUS would be subject to an ACL of 216,000 lb for the 2016 and 2017 fishing years. Based on past fishery performance shown in

Table 6, the bottomfish fleet is very unlikely to achieve the ACL in 2016 or 2017. Because there is no data that would allow NMFS to implement an in-season closure to prevent the ACL from being exceeded, an ACL under this alternative is not expected to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation. No adverse economic impact to fishermen would result from implementation of any ACL under Alternative 3.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL of AM for the fishery. This alternative would violate the Magnuson-Stevens Act and the management requirements in the FEP for the Marianna Archipelago. Based on past fishery performance, the bottomfish fleet is very unlikely to achieve the ACL in 2016 or 2017. Because there is no data that would allow NMFS to implement an in-season closure, the AM under this alternative would be the same as under

Alternative 1. Therefore, the effects to fishermen would be the same to those described in Alternative 1.

### 3.3.2 Target, Non-target and Bycatch Species in the CNMI

The bottomfish fishery in the Mariana Archipelago, including CNMI, generally targets 17 bottomfish management unit species including both shallow and deepwater bottomfish species (Table 19).

**Table 19. Mariana Bottomfish MUS (CNMI)**

| <b>Mariana Bottomfish MUS (CNMI)</b> |                                           |                                           |
|--------------------------------------|-------------------------------------------|-------------------------------------------|
| <b>Scientific Name</b>               | <b>English Common Name</b>                | <b>Local Name<br/>Chamorro/Carolinian</b> |
| <i>Aphareus rutilans</i>             | red snapper/<br>silvermouth               | lehi/maroobw                              |
| <i>Aprion virescens</i>              | gray snapper/jobfish                      | gogunafon/aiwe                            |
| <i>Caranx ignobilis</i>              | giant trevally/jack                       | tarakitu/etam                             |
| <i>C. lugubris</i>                   | black trevally/jack                       | tarakiton attelong/orong                  |
| <i>Epinephelus fasciatus</i>         | blacktip grouper                          | gadao/meteyil                             |
| <i>Variola louti</i>                 | lunartail grouper                         | bueli/bwele                               |
| <i>Etelis carbunculus</i>            | red snapper/Ehu                           | buninas agaga/falaghal<br>moroobw         |
| <i>Etelis coruscans</i>              | red snapper/Onaga                         | buninas/taighulupegh                      |
| <i>Lethrinus rubrioperculatus</i>    | redgill emperor                           | mafuti atigh                              |
| <i>Lethrinus amboinensis</i>         | ambon emperor                             | mafuti/loot                               |
| <i>Lutjanus kasmira</i>              | blueline snapper                          | funai/saas                                |
| <i>Pristipomoides auricilla</i>      | yellowtail snapper                        | buninas/falaghal-maroobw                  |
| <i>Pristipomoides filamentosus</i>   | pink snapper/<br>opakapaka                | buninas/falaghal-maroobw                  |
| <i>Pristipomoides flavipinnis</i>    | yelloweye snapper/<br>yelloweye opakapaka | buninas/falaghal-maroobw                  |
| <i>Pristipomoides seiboldi</i>       | pink snapper/kalekale                     | N/A                                       |
| <i>Pristipomoides zonatus</i>        | Snapper/gindai                            | buninas rayao<br>amiriyu/falaghal-maroobw |
| <i>Seriola dumerili</i>              | amberjack                                 | tarakiton tadong/meseyugh                 |

#### 3.3.2.1 Current effects of the fishery: target, non-target and bycatch species

The information used in developing the proposed ACL for the CNMI bottomfish stock complex is based on the most recent bottomfish stock assessment (Yau et al. 2016) conducted by NMFS PIFSC using data through 2013. Key points from the discussion in Section 2.1.3 are that PIFSC estimated MSY to be 173,100 ± 32,190 lb and that the production model results suggest that the CNMI bottomfish complex was not overfished and did not experience overfishing during the period 1986-2013. Between 2011 and 2013, the average catch of CNMI BMUS was 20,099 lb.

Almost all of the fishes caught in the CNMI are considered food fishes and available data show less than 1 percent of the total catch from the non-charter bottomfish sector is bycatch (WPFMC 2011). In the charter sector, bycatch rises to a little more than 2 percent and is mostly attributed to smaller food fishes that were released alive.

### **3.3.2.2 Potential Effects of the Alternatives on Target, Non-target and Bycatch Species in the CNMI**

#### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, the ACL for 2016 and 2017 would be set at 228,000 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by DFW with assistance from WPacFIN. The current level of catch under this alternative is expected to continue as it currently has in recent years with average total catch estimated to be 20,099 lb for the period 2011-2013. This level of catch is approximately 12 percent of MSY (173,100 lb) and is sustainable.

Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 5, an ACL of 228,000 lb would result in less than a 24.2 percent probability of overfishing in 2016, rising in 2017 to a 36 percent probability of overfishing. Consequently, no adverse effects to target, non-target or bycatch species would be expected to result from implementation of Alternative 1. Monitoring of catch would be conducted annually by the DFW with assistance from WPacFIN and stock status would be reviewed periodically by NMFS PIFSC stock assessments.

Given such small percentages of the catch are bycatch, NMFS and the Council would expect no adverse effects to non-target species for any of the alternatives.

#### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for CNMI BMUS would be subject to an ACL of 228,000 lb for the 2016 and 2017 fishing years. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 5, this ACL would have a 24.2 percent probability of causing overfishing in 2016, rising in 2017 to a 36 percent probability of overfishing.

Based on past fishery performance shown in Table 6, the fishery would need to harvest more than three times the record 2001 catch of 71,256 to attain the ACL and more than 18,000 lb over the ACL in 2016 and 2017 for overfishing to occur. This level of catch is extremely unlikely. Consequently, no adverse effects to target, non-target or bycatch species would be expected to result from implementation of Alternative 2. Monitoring of catch would be conducted annually by the DFW with assistance from WPacFIN and stock status would be reviewed periodically by NMFS PIFSC stock assessments.

Given such small percentages of the catch are bycatch, NMFS and the Council would expect no adverse effects to non-target species for any of the alternatives.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for CNMI BMUS would be subject to an ACL of 216,000 lb for the 2016 and 2017 fishing years. Based on the probabilities of overfishing calculated by NMFS PIFSC scientists shown in Table 5, none would result in a probability of overfishing greater than 30 percent. Consequently, no adverse effects to target, non-target or bycatch species would be expected to result from implementation of Alternative 3. Just as for Alternatives 1 and 2, DFW with assistance from WPacFIN would monitor catch annually, and NMFS PIFSC stock assessment scientists would review stock status periodically..

Given such small percentages of the catch are bycatch, NMFS and the Council would expect no adverse effects to non-target species for any of the alternatives.

***Alternative 4: No ACL Specification Action by NMFS***

Under a “No Action” alternative, no ACL or AM would be implemented for the fishery. Because the landings of BMUS have been much lower than recent and proposed ACLs, the ACLs are not constraining the CNMI fishery; therefore, the effect of this alternative on target BMUS stocks would be the same as for Alternatives 1-3. Fishing effort and the capacity of the fishery to catch BMUS in CNMI would remain well below the amount needed to catch the entire ACL.

Harvests of BMUS would remain sustainable under Alternative 4. Catch and other fishery data would continue to be evaluated by fishery managers on an ad-hoc basis.

***All ACL Alternatives***

Under all alternatives considered including the preferred alternative, no new monitoring would be implemented; however, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year. While the lack of in-season catch monitoring ability precludes in-season measures (such as a fishery closure) that would prevent the ACL from being exceeded, none of the ACL considered have greater than a 36 percent probability of causing overfishing for CNMI bottomfish in 2016 and 2017.

**3.3.3 Protected Resources in the CNMI**

A number of protected species are reported from the waters around the Mariana Islands and there is, therefore, the potential for interactions with the bottomfish fisheries of the CNMI. NMFS has evaluated bottomfish fisheries for effects on protected resources and are managed in compliance with the requirements of the Magnuson-Stevens Act, the MMPA, the ESA, the MBTA, and other applicable statutes. Additional detailed descriptions of potentially affected protected resources and their life histories can be found in Section 3.3.4 of the FEP for the Mariana Archipelago (WPFMC 2009b) and online on NMFS website ([http://www.fpir.noaa.gov/PRD/prd\\_index.html](http://www.fpir.noaa.gov/PRD/prd_index.html)).



### **Listed species and ESA review of the CNMI Bottomfish Fisheries**

Table 20 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around the Mariana Archipelago, including the CNMI which may have the potential to interact with fisheries. They include a number of whales, five sea turtles, and a seabird. There is no critical habitat designated for ESA-listed marine species around Guam.

#### **3.3.3.1 Sea Turtles in CNMI**

All six sea turtle species occurring in U.S. waters are listed under the ESA. Of these, five species' ranges overlap with the EEZ around the CNMI and bottomfish fishermen could encounter them. Table 20 lists the sea turtle species reasonably likely to occur in CNMI. No critical habitat has been established for any sea turtle in CNMI.

**Table 20. Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)**

| <b>Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                               |                                       |                                                                                                                               |                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| <b>Common name</b>                                                                                                                                          | <b>Scientific Name</b>        | <b>ESA listing status in the CNMI</b> | <b>Occurrence in the CNMI</b>                                                                                                 | <b>Interactions with the CNMI bottomfish fishery</b> |
| <b>Listed Sea Turtles</b>                                                                                                                                   |                               |                                       |                                                                                                                               |                                                      |
| Green sea turtle<br>Central West Pacific DPS                                                                                                                | <i>Chelonia mydas</i>         | Endangered<br>DPS                     | Most common turtle in the Mariana Archipelago. Foraging and minor nesting confirmed on Guam, Rota, Tinian and Saipan.         | No interactions observed or reported.                |
| Hawksbill sea turtle                                                                                                                                        | <i>Eretmochelys imbricata</i> | Endangered                            | Small population foraging around Guam and suspected low level around southern islands of the CNMI. Low level nesting on Guam. | No interactions observed or reported.                |
| Leatherback sea turtle                                                                                                                                      | <i>Dermochelys coriacea</i>   | Endangered                            | Occasional sightings around Guam. Not                                                                                         | No interactions observed or reported.                |

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI) |                               |                                |                                                                                  |                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------|
| Common name                                                                                                                                          | Scientific Name               | ESA listing status in the CNMI | Occurrence in the CNMI                                                           | Interactions with the CNMI bottomfish fishery |
|                                                                                                                                                      |                               |                                | known to what extent they are present around Guam and CNMI.                      |                                               |
| Olive ridley sea turtle                                                                                                                              | <i>Lepidochelys olivacea</i>  | Threatened                     | Range across Pacific: Not confirmed in the Mariana Archipelago                   | No interactions observed or reported.         |
| North Pacific loggerhead sea turtle DPS                                                                                                              | <i>Caretta caretta</i>        | Endangered DPS                 | No known reports of loggerhead turtles in waters around the Mariana Archipelago. | No interactions observed or reported.         |
| Listed Marine Mammals                                                                                                                                |                               |                                |                                                                                  |                                               |
| Blue whale                                                                                                                                           | <i>Balaenoptera musculus</i>  | Endangered                     | Extremely rare                                                                   | No interactions observed or reported.         |
| Fin whale                                                                                                                                            | <i>Balaenoptera physalus</i>  | Endangered                     | Infrequent sightings.                                                            | No interactions observed or reported.         |
| Humpback whale                                                                                                                                       | <i>Megaptera novaeangliae</i> | Endangered                     | Infrequent sightings. Winter in the CNMI.                                        | No interactions observed or reported.         |
| Sei whale                                                                                                                                            | <i>Balaenoptera borealis</i>  | Endangered                     | Infrequent sightings.                                                            | No interactions observed or reported.         |
| Sperm whale                                                                                                                                          | <i>Physeter macrocephalus</i> | Endangered                     | Regularly sighted; most abundant large cetaceans in the region.                  | No interactions observed or reported.         |
| <b>Listed Sea Birds</b>                                                                                                                              |                               |                                |                                                                                  |                                               |
| Newell's Shearwater                                                                                                                                  | <i>Puffinus newelli</i>       | Threatened                     | Rare visitor                                                                     | No interactions observed or reported.         |
| <b>Listed Sharks</b>                                                                                                                                 |                               |                                |                                                                                  |                                               |

| Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI) |                             |                                |                        |                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------|------------------------|-----------------------------------------------|
| Common name                                                                                                                                          | Scientific Name             | ESA listing status in the CNMI | Occurrence in the CNMI | Interactions with the CNMI bottomfish fishery |
| Scalloped Hammerhead Shark – Indo-West Pacific DPS                                                                                                   | <i>Sphyrna lewini</i>       | Threatened DPS                 | Common                 | No interactions observed or reported          |
| <b>Listed Corals</b>                                                                                                                                 |                             |                                |                        |                                               |
| None                                                                                                                                                 | <i>Acropora globiceps</i>   | Threatened                     |                        | No interactions observed or reported          |
| None                                                                                                                                                 | <i>Seriatopora aculeata</i> | Threatened                     |                        | No interactions observed or reported          |

### **Applicable ESA Coordination – CNMI Bottomfish Fisheries**

In an informal consultation letter dated June 3, 2008, NMFS determined that the continued authorization of bottomfish fisheries of the Mariana Archipelago, including the bottomfish fishery around the CNMI, as managed under the Bottomfish and Seamount Groundfish FMP, was not likely to adversely affect ESA-listed sea turtle and marine mammal species or their designated critical habitat.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based FEPs including the FEP for the Mariana Archipelago. The FEP incorporated and reorganized elements of the Council’s species-based FMPs, including the Bottomfish and Seamount Groundfish Fisheries FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning bottomfish fishing were retained through the development and implementation of the FEP for the Mariana Archipelago, including the CNMI. No substantial changes to the bottomfish fishery around the CNMI have occurred since the FEP was implemented that have required further consultation for species covered under the 2008 informal consultation.

On July 3, 2014, NMFS published a final rule that listed four distinct population segments (DPSs) of scalloped hammerhead shark under the ESA (79 FR 38213). The threatened Indo-West Pacific DPS is the only DPS that occurs around CNMI. On September 10, 2014, NMFS published a final rule that listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Of the 20 listed species, three are thought to occur in the Mariana Archipelago.

On April 29, 2015, NMFS determined that the continued authorization of the coral reef, bottomfish, crustacean, and precious coral fisheries under the FEP for the Mariana Archipelago is not likely to adversely affect the Indo-West Pacific DPS of scalloped hammerhead shark and reef-building corals.

#### **3.3.3.1.1 Current Effects on Sea Turtles from the American Samoa Bottomfish Fishery**

There are five Pacific sea turtles designated under the ESA as either threatened or endangered. Green sea turtles are most likely to frequent nearshore habitat when foraging around the CNMI and other areas in the Mariana Islands. The breeding populations of Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. Green sea turtles (*Chelonia mydas*) are listed as threatened (the green sea turtle is listed as threatened throughout its Pacific range, except for the endangered population nesting on the Pacific coast of Mexico). Loggerhead (*Caretta caretta*) sea turtles in the North Pacific Ocean were recently identified as a distinct population segment and listed as endangered. These five species of sea turtles are highly migratory, or have a highly migratory phase in their life history (NMFS 2001).

Based on nearshore surveys conducted jointly between the CNMI-DFW and NMFS around the Southern Mariana Islands (Rota and Tinian 2001; Saipan 1999), an estimated 1,000 to 2,000 green sea turtles forage in these areas (Kolinski et al. 2001). Nesting beaches and seagrass beds on Tinian and Rota are in good condition but beaches and seagrass beds on Saipan have been impacted by hotels, golf courses and general tourist activities. Intensive monitoring in occurred on Saipan at seven beaches from March 4 to August 31, 2009, resulting in 16 green turtle nests documented. Rapid assessments at Rota beaches by Okgok and Tatgua on July 12, 2009, yielded 13 nests. On Tinian, from July 22-31, 2009, 36 nests at five beaches were documented (Maison et al. 2010). There have been no leatherback turtles reported in the CNMI and the extent to which leatherback turtles are present around the Mariana Archipelago is unknown. There are no known reports of loggerhead sea turtles in waters around the Mariana Archipelago (WPFMC 2009b). Olive ridley sea turtles are believed to occasionally transit the area (Starmer et al. 2005).

Sea turtles face many threats including: 1) direct harvest of animals and eggs or predation; 2) incidental interactions with fisheries; 3) collisions with vessels and automobiles; 4) urban development / loss of habitat; 5) pollution (e.g., plastics); and 5) climate change. Sea turtle conservation initiatives are also in place, including restoration of habitats, laws to protect turtles, and management of threats to help provide for recovery. More information is available on NMFS website at: [http://www.fpir.noaa.gov/DIR/dir\\_mammal\\_turtle\\_seabird.html#SeaTurtles](http://www.fpir.noaa.gov/DIR/dir_mammal_turtle_seabird.html#SeaTurtles).

In CNMI, all sea turtles are subject to protection. Both direct harvest, and direct and indirect harm, are prohibited unless otherwise authorized. NMFS has coordinated the continued authorization of the CNMI bottomfish fishery under Section 7 of the Endangered Species Act (ESA).

Both commercial and non-commercial fisheries have the potential to cause adverse effects to sea turtles, including injuries and mortalities that occur incidental to fishing including incidental fishing gear or vessel interactions. The most likely effect of the bottomfish fishery is the potential for vessel collisions with sea turtles causing injuries and mortalities in CNMI. The frequency of this type of effect is unknown in CNMI. However, given the very limited number of bottomfish fishing vessels in CNMI (between 28 and 50 vessels according to Tibbats and Flores (2012)), and the fact that bottomfish fishing occurs while either at anchor or slowly drifting over fishing grounds, sea turtle collisions with vessels in this fishery are expected to be very rare.

There have been no reported or observed interactions with sea turtles in the Mariana Archipelago bottomfish fisheries (Table 20).

### **3.3.3.1.2 Potential Effects of the Alternatives on Sea Turtles in CNMI**

#### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, NMFS and the Council would set the ACL for 2016 and 2017 at 228,000 lb. This is the same ACL specified for 2015. The fishery would continue to catch bottomfish in the same way as described above, and DFW with assistance from WPacFIN would continue to monitor catches.

Because there are no in-season fishery closures and catches are not expected to be constrained, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the potential for, or severity of, interactions between the fishery and listed sea turtles in any way not already considered in prior consultations. As described above, the fishery is not likely to adversely affect any listed sea turtle species and vessel collisions would be rare.

#### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for CNMI BMUS would be subject to an ACL of 228,000 lb for the 2016 and 2017 fishing years as recommended by the Council. This ACL is much higher than recent catches, so the fishery is not expected to change as a result of the proposed specification.

Because there are no in-season fishery closures and catches are not expected to be constrained, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the potential for or severity of interactions between the fishery and listed sea turtles in any way not already considered in prior consultations. As described above, the fishery is not likely to adversely affect any listed sea turtle species and vessel collisions would be rare.

#### ***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for CNMI BMUS would be subject to an ACL of 216,000 lb for the 2016 and 2017 fishing years. This ACL is higher than recent catches, so the fishery is not expected to change as a result of the proposed specification.

Because there are no in-season fishery closures and catches are not expected to be constrained, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not increase the potential for or severity of interactions between the fishery and listed sea turtles in any way not already considered in prior consultations. As described above, the fishery is not likely to adversely affect any listed sea turtle species and vessel collisions are expected to be rare.

#### ***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL or AM for the fishery. Even if NMFS does not specify an ACL or AM for the fishery, the alternative would not change the conduct of the fishery in any way. Given recent catches, we would not expect the fishery to reach the ACL, or a race to fish. Therefore, this alternative would not increase the frequency or intensity of any of the above threats to sea turtles.

### ***All Alternatives***

In summary, none of the alternatives would change the conduct of the fishery, so there would be no effects on listed sea turtles that have not already been considered in existing reviews of the fishery under the ESA. Given the very limited number of bottomfish fishing vessels in CNMI (between 28 and 50 vessels according to Tibbats and Flores (2012)), and the fact that bottomfish fishing occurs while either at anchor or slowly drifting over fishing grounds, sea turtle collisions with vessels in this fishery are expected to be very rare.

#### **3.3.3.2 Marine Mammals in CNMI**

Several whales, dolphins and porpoises, occur in waters around CNMI and are protected under the MMPA. Table 21 provides a list of marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago that have the potential to interact with the CNMI bottomfish fishery

**Table 21. Non-ESA Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)**

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                                |                                                      |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>         | <b>Interactions with the Guam Bottomfish Fishery</b> |
| Humpback whale*                                                                                                      | <i>Megaptera novaeangliae</i>  | No interactions observed or reported.                |
| Sperm whale*                                                                                                         | <i>Physeter macrocephalus</i>  | No interactions observed or reported.                |
| Sei whale*                                                                                                           | <i>Balaenoptera borealis</i>   | No interactions observed or reported.                |
| Fin whale*                                                                                                           | <i>Balaenoptera physalus</i>   | No interactions observed or reported.                |
| Blue whale*                                                                                                          | <i>Balaenoptera musculus</i>   | No interactions observed or reported.                |
| Blainville's beaked whale                                                                                            | <i>Mesoplodon densirostris</i> | No interactions observed or reported.                |
| Bottlenose dolphin                                                                                                   | <i>Tursiops truncatus</i>      | No interactions observed or reported.                |
| Bryde's whale                                                                                                        | <i>Balaenoptera edeni</i>      | No interactions observed or reported.                |

| <b>Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)</b> |                                   |                                                      |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------|
| <b>Common Name</b>                                                                                                   | <b>Scientific Name</b>            | <b>Interactions with the Guam Bottomfish Fishery</b> |
| Common dolphin                                                                                                       | <i>Delphinus delphis</i>          | No interactions observed or reported.                |
| Cuvier's beaked whale                                                                                                | <i>Ziphius cavirostris</i>        | No interactions observed or reported.                |
| Dwarf sperm whale                                                                                                    | <i>Kogia sima</i>                 | No interactions observed or reported.                |
| False killer whale                                                                                                   | <i>Pseudorca crassidens</i>       | No interactions observed or reported.                |
| Fraser's dolphin                                                                                                     | <i>Lagenodelphis hosei</i>        | No interactions observed or reported.                |
| Killer whale                                                                                                         | <i>Orcinus orca</i>               | No interactions observed or reported.                |
| Longman's beaked whale                                                                                               | <i>Indopacetus pacificus</i>      | No interactions observed or reported.                |
| Melon-headed whale                                                                                                   | <i>Peponocephala electra</i>      | No interactions observed or reported.                |
| Minke whale                                                                                                          | <i>Balaenoptera acutorostrata</i> | No interactions observed or reported.                |
| Pygmy killer whale                                                                                                   | <i>Feresa attenuata</i>           | No interactions observed or reported.                |
| Pygmy sperm whale                                                                                                    | <i>Kogia breviceps</i>            | No interactions observed or reported.                |
| Risso's dolphin                                                                                                      | <i>Grampus griseus</i>            | No interactions observed or reported.                |
| Rough-toothed dolphin                                                                                                | <i>Steno bredanensis</i>          | No interactions observed or reported.                |
| Short-finned pilot whale                                                                                             | <i>Globicephala macrorhynchus</i> | No interactions observed or reported.                |
| Sperm whale                                                                                                          | <i>Physeter macrocephalus</i>     | No interactions observed or reported.                |
| Spinner dolphin                                                                                                      | <i>Stenella longirostris</i>      | No interactions observed or reported.                |
| Spotted dolphin                                                                                                      | <i>Stenella attenuata</i>         | No interactions observed or reported.                |
| Striped dolphin                                                                                                      | <i>Stenella coeruleoalba</i>      | No interactions observed or reported.                |

\*Species is also listed under the ESA.

Source: Eldredge 2003; Randall et al. 1975; Berger et al. 2005; Council website:  
<http://www.wpcouncil.org>

### ***Marine Mammal Protection Act Coordination***

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). NMFS classifies the CNMI bottomfish fishery as a Category III fishery under Section 118 of the MMPA (81 FR 20550, April 8, 2016). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals. Because none of the alternatives would modify vessel operations or other aspects of any fishery, NMFS does not anticipate that the CNMI bottomfish fishery, as conducted under the proposed action, would affect marine mammals in any manner not previously considered under section 118 of the MMPA.

#### **3.3.3.2.1 Current Effects on Marine Mammals in CNMI**

In accordance with ESA Section 7(a)(2), NMFS previously evaluated the potential impacts of Mariana fisheries to ESA-listed marine mammals, and determined that these fisheries are not likely to adversely affect any species or critical habitat in the action area. NMFS documented its determinations in a Biological Opinion for bottomfish fisheries on March 8, 2002, and a Letter of Concurrence for bottomfish fisheries on June 3, 2008.

No new information indicates that these Mariana fisheries may affect ESA-listed marine mammals and turtles, or critical habitat in a manner or to an extent not previously considered in previous consultations. Accordingly, all prior consultations for ESA-listed marine mammal and turtle species remain valid and effective.

#### **3.3.3.2.2 Potential Effects of the Alternatives on Marine Mammals in CNMI**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, the ACL for 2016 and 2017 would be set at 228,000 lb, the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring programs administered by the DFW with assistance from WPacFIN. The level of catch under this alternative is expected to continue as it has in recent years with average total catch estimated to be 20,099 lb for the period 2011-2013.

The bottomfish fishery is not known, or believed, to adversely affect marine mammals in terms of noise, water pollution, accidental entanglement, or competition for food resources. No interactions have been reported between the fishery and marine mammals (Table 21).

##### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for CNMI BMUS would be subject to an ACL of 228,000 lb for the 2016 and 2017 fishing years as recommended by the Council.

The ACL is higher than recent catches and there is no proposal for an in-season fishery closure. For these reasons, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in changes to interactions with marine mammals and therefore there would be no effects on marine mammals.



***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for CNMI BMUS would be subject to an ACL of 216,000 lb for the 2016 and 2017 fishing years.

The ACL is higher than recent catches and there is no proposal for an in-season fishery closure. For these reasons, this alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in changes to interactions with marine mammals and therefore there would be no effects on marine mammals.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL of AM for the fishery. As described above, the CNMI bottomfish fishery would continue to fish in the same way as it has in recent years, and as described above. Therefore, this alternative would not result in changes to interactions with marine mammals and therefore there would be no effects on marine mammals.

In sum, because the fishery has had no known interactions with marine mammals, and interactions with marine mammals are expected to remain rare; and given the fact that none of the alternatives would change the conduct of the fishery, none of the alternatives would adversely affect marine mammals.

**3.3.3.3 Seabirds in CNMI**

The following seabirds in Table 22 are considered residents of the Mariana Archipelago: wedge-tailed shearwater (*Puffinus pacificus*), white-tailed tropicbird (*Phaethon lepturus*), red-tailed tropicbird (*Phaethon rubricauda*), masked booby (*Sula dactylatra*), brown booby (*Sula leucogaster*), red-footed booby (*Sula sula*), white tern (*Gygis alba*), sooty tern (*Sterna fuscata*), brown noddy (*Anous stolidus*), black noddy (*Anous minutus*), and the great frigatebird (*Fregata minor*).

The following seabirds in Table 22 have been sighted and are considered visitors (some more common than others) to the Mariana Archipelago; short-tailed shearwater (*Puffinus tenuirostris*; common visitor), Newell's shearwater (*Puffinus newelli*; rare visitor), Audubon's shearwater (*Puffinus iherminieri*), Leach's storm-petrel (*Oceanodroma leucorhoa*), and the Matsudaira's storm-petrel (*Oceanodroma matsudairae*). Of these, only the Newell's shearwater is listed as threatened under the ESA. There have been no sightings of the endangered short-tailed albatross (*Phoebastria albatrus*) in the CNMI although the CNMI is within the range of the only breeding colony at Torishima, Japan (WPFMC 2009b).

There have been no reports of interactions between seabirds and any of the Mariana Archipelago bottomfish fisheries (WPFMC 2009b) and the species is not known to prey on bottomfish.

**3.3.3.3.1 Potential Effects on Seabirds in CNMI**

Because the proposed action would not modify fishing operations, NMFS expects that the fishery, as conducted under the proposed action, would not affect ESA listed seabirds.

**Table 22. Seabirds occurring in the Mariana Archipelago (CNMI)**

| Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor) |                                |                                                        |
|-------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------|
|                                                                                                             | <b>Common name</b>             | <b>Scientific name</b>                                 |
| Vr                                                                                                          | Newell's shearwater            | <i>Puffinus newelli</i> (ESA: Threatened) rare visitor |
| R                                                                                                           | Wedge-tailed shearwater        | <i>Puffinus pacificus</i>                              |
| V                                                                                                           | Audubon's shearwater           | <i>Puffinus lherminieri</i>                            |
| Vc                                                                                                          | Short-tailed shearwater        | <i>Puffinus tenuirostris</i> (common visitor)          |
| V                                                                                                           | Leach's storm-petrel           | <i>Oceanodroma leucorhoa</i>                           |
| V                                                                                                           | Matsudaira's storm-petrel      | <i>Oceanodroma matsudairae</i>                         |
| V                                                                                                           | Red-footed booby               | <i>Sula sula</i>                                       |
| R                                                                                                           | Brown booby                    | <i>Sula leucogaster</i>                                |
| R                                                                                                           | Masked booby                   | <i>Sula dactylatra</i>                                 |
| R                                                                                                           | White-tailed tropicbird        | <i>Phaethon lepturus</i>                               |
| R                                                                                                           | Red-tailed tropicbird          | <i>Phaethon rubricauda</i>                             |
| R                                                                                                           | Great frigatebird              | <i>Fregata minor</i>                                   |
| R                                                                                                           | Sooty tern                     | <i>Sterna fuscata</i>                                  |
| R                                                                                                           | Brown noddy                    | <i>Anous stolidus</i>                                  |
| R                                                                                                           | Black noddy                    | <i>Anous minutus</i>                                   |
| R                                                                                                           | White tern / Common fairy-tern | <i>Gygis alba</i>                                      |

Source: WPFMC 2009b

### 3.3.3.4 ESA-listed Reef Building Corals in CNMI

On September 10, 2014, NMFS listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Two of the listed species are present in CNMI – *Acropora globiceps* and *Seriatopora aculeata*. Corals usually live in colonies and form “heads” or “shelves.” Often thousands of individual coral organisms (polyps) live together in a single structure that grows over time. Recently, many nearshore coral reefs have died through a process called bleaching when coral expel algae that live within them. Bleaching often leads to death for coral colonies by causing malnutrition and increasing the colony's susceptibility to disease. Some coral species populations have suffered declines.

#### 3.3.3.4.1 Potential Effects of the Alternatives on ESA-listed Corals

##### **Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)**

Under the Status Quo alternative, the ACL for 2016 and 2017 would be set at 101,000 lb, the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by the DMWR with assistance from WPacFIN. The level of catch under

this alternative is expected to continue as it has in recent years with average total catch estimated to be 21,005 lb for the period 2011-2013.

Bottomfish fishing is a hook-and-line fishery that has minimal impact to the benthic habitat. Some damage to corals and the bottom are possible via anchoring, or entanglement of bottomfish fishing tackle on the bottom. Yet fishermen have an interest in minimizing both of these interactions, not only for the conservation benefit, but because they do not want to lose their gear. The FEP protects corals and habitat through prohibitions on the use of bottom-set nets, bottom trawls, explosives, and poisons. It is unlawful for any person to fish for, take, or retain any wild live rock or live hard coral except under a valid special permit for scientific research, aquaculture seed stock collection or traditional and ceremonial purposes by indigenous people (50 CFR 665.125).

On April 29, 2015, NMFS determined that the continued authorization of the bottomfish fishery under the FEP for the Mariana Archipelago is not likely to adversely affect reef-building corals. All of the alternatives would not significantly change the fishery from what was evaluated in 2015.

***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for CNMI BMUS would be subject to an ACL of 228,000 lb for the 2016 and 2017 fishing years as recommended by the Council. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not impact ESA listed corals in any way not already considered in April, 2015.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for CNMI BMUS would be subject to an ACL of 228,000 for the 2016 and 2017 fishing years. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not impact ESA listed corals in any way not already considered in April, 2015.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL or AM for the fishery. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not impact ESA listed corals in any way not already considered in April, 2015.

***All Alternatives***

In sum, the rate at which the CNMI bottomfish fishery interacts with ESA-listed coral species is unknown; however, given the fact that bottomfish fishermen purposefully avoid snagging their gear on bottom habitats, and in view of the fact that none of the alternatives would affect the conduct of the fishery, none of the alternatives is expected to affect listed corals in any way not already considered by fishery consultations under the ESA.

### **3.3.3.5 Scalloped Hammerhead Sharks in CNMI**

On July 3, 2014, NMFS listed the Indo-West Pacific scalloped hammerhead shark DPS under the ESA (79 FR 38213). The Indo-West Pacific scalloped hammerhead shark DPS occurs in all U.S. Pacific Islands territories except Hawaii. Scalloped hammerhead sharks range widely from nearshore to pelagic environments and from the surface to 500 meters (m) deep. Because the shark is listed in CNMI, it is illegal to target or retain the shark.

As noted in the final rule (79 FR 38213, July 3, 2014), the significant operative threats to the listed scalloped hammerhead DPSs are overutilization by foreign industrial, commercial, and artisanal fisheries and inadequate regulatory mechanisms in foreign nations to protect these sharks from the heavy fishing pressure and related mortality, with illegal fishing identified as a significant problem in areas outside of U.S. jurisdiction. Some fishermen target sharks, including the scalloped hammerhead, to harvest their fins. Incidental capture in fisheries also contributes increased mortality in this species (79 FR 38213, July 3, 2014).

Conservation initiatives for scalloped hammerhead sharks are in place and include, in addition to the Federal prohibition on retention of the scalloped hammerhead DPS, territorial prohibitions on the retention or transport of any sharks.

#### **3.3.3.5.1 Potential Effects of the Alternatives on Scalloped Hammerhead Sharks**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, the ACL for 2016 and 2017 would be set at 228,000 lb, the same ACL specified for 2015. The fishery would continue to catch bottomfish in the manner that is described above, and catches would continue to be monitored through fisheries monitoring program administered by the DFW with assistance from WPacFIN.

NMFS recently completed a consultation under the ESA to evaluate the potential effects of the CNMI bottomfish fisheries on scalloped hammerhead sharks. On April 29, 2015, NMFS concluded that the continued authorization of the bottomfish fishery under the Fishery Ecosystem Plan (FEP) for the Mariana archipelago is not likely to adversely affect the Indo-west Pacific scalloped hammerhead shark DPS. NMFS concluded that the fishery is unlikely to interact with Indo-West Pacific scalloped hammerhead sharks because of limited distribution, selective fishing techniques, and the small scale and scope of these fisheries.

##### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, fishing for CNMI BMUS would be subject to an ACL of 228,000 lb for the 2016 and 2017 fishing years as recommended by the Council.

This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April 2015.

***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Under Alternative 3, fishing for American Samoa BMUS would be subject to an ACL of 228,000 lb for the 2016 and 2017 fishing years. This alternative would not change the conduct of the fishery in any way. Therefore, this alternative would not result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April 2015.

***Alternative 4: No ACL Specification Action by NMFS***

Under this alternative, NMFS would not specify any ACL of AM for the fishery. The absence of an ACL or AM is not likely to change the conduct of the fishery in any way. Therefore, this alternative would not result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April 2015.

***All Alternatives***

There are no targeted shark fisheries in CNMI, and regulations prohibit take or killing of any shark species, along with possession and sale of shark fins and shark products. In sum, the rate at which the CNMI bottomfish fishery interacts with scalloped hammerhead sharks is unknown; however, the likelihood of interactions is low and a recent consultation found that CNMI bottomfish fishermen are very unlikely to encounter scalloped hammerhead sharks due to limited distribution, selective fishing techniques, and the small scale and scope of the fisheries. None of the alternatives would change the manner in which the fishery is conducted, and none of the alternatives would result in effects on scalloped hammerhead sharks that have not already been considered in the consultation of April 2015.

***Potential Effects to Protected Resources in the CNMI***

None of the alternatives considered would modify operations of the CNMI bottomfish fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

All of the alternatives would implement ACL and a post season accounting of the catch relative to the ACL. The current inability of in-season tracking of catch towards an ACL prevents in-season closure ability, meaning participants in the CNMI bottomfish fishery would continue as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

On September 22, 2011, NMFS and USFWS determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine DPSs that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the CNMI, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, because loggerhead sea turtles, inclusive of the North Pacific Ocean DPS, are not known to occur around the Mariana Archipelago, and because none of the alternatives considered would modify operations of the CNMI bottomfish fishery in any way, there is no additional information that would change the conclusions of the June 3, 2008, informal consultation which concluded that the CNMI bottomfish fishery was not likely to adversely affect ESA-listed marine species or their designated critical habitat.

On April 6, 2016, NMFS and USFWS published a final rule finding that the green sea turtle is composed of 11 DPSs and proposed to replace the current range-wide listing with listing of the DPSs as threatened or endangered (81 FR 20057). The population around CNMI is part of the Central West Pacific DPS, which is now listed as endangered. However, none of the alternatives considered would modify operations of the CNMI bottomfish fishery in any way, and there is no additional information that would change the conclusions of the June 3, 2008, informal consultation which determined that the CNMI bottomfish fishery is not likely to adversely affect green sea turtles.

### **3.3.4 CNMI Fishing Community**

The Magnuson-Stevens Act defines a fishing community as “a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities” (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is “a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops)”.

National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic effects on such communities.

The Council, in 1998, identified the CNMI as a fishing community and requested the Secretary of Commerce concur with this determination. The CNMI was recognized in regulation as a fishing community under the Magnuson-Stevens Act on April 19, 1999 (64 FR 19067).

#### **3.3.4.1 Potential Effects of the Alternatives on the CNMI Fishing Community**

No change to the CNMI bottomfish fishery is expected under any of the alternatives. The proposed ACL specifications, which are intended to provide for the long-term availability of bottomfish resources to the CNMI fishing community, are substantially higher than recent harvests. Thus, the Council does not believe there would be any disruption to the fishery that would result in any social or economic effects to the CNMI fishing community.

In terms of management, CNMI BMUS would continue to be subject to an ACL and post-season review of fishery performance against the ACL. Under the management system, ongoing monitoring of catch toward the ACL and future ACL adjustments are expected to benefit people who rely on fishing by providing additional review of fishing and catch levels, which, in turn, should enhance the sustainability of the fishery.

The community continues to participate in the Council decision-making process through its representatives on the Council, its Advisory Panel members, and through opportunities for public input at both the Council's deliberations and NMFSs proposed rulemaking stage.

### **3.4 Potential Effects on Biodiversity/Ecosystem Function**

When compared against recent fishing harvests, the current ACLs are higher than recent harvests, but lower than current MSYs and OFLs. The Council developed its recommended ACL and AM specifications using the best available scientific information, in a manner that accords with the fishery regulations, and after considering catches, participation trends, and estimates of the status of the fishery resources. The ACLs and AMs are also not likely to cause large adverse effects to marine resources because the bottomfish fishing in each of the three archipelagic areas is sustainable and conduct of bottomfish fishing would not change as a result of any ACL or AM or under the fourth, no management action alternative.

Bottomfish fishing is not known to be a potential vector for spreading alien species as none of vessels fish outside of their respective archipelagic waters. Because fishing would not change in any area under any of the action alternatives (including the no specification management action alternative, the proposed ACLs would not have the potential to spread of invasive species into or within the waters of American Samoa or the Marianas archipelagos.

To date, there have been no identified effects to marine biodiversity and/or ecosystem function from the Mariana Islands bottomfish fisheries. None of the alternatives would result in changes to the fisheries; therefore, the proposed ACLs and AMs would not affect marine biodiversity and/or ecosystem function.

### **3.5 Potential Effects on Essential Fish Habitat and Habitat Areas of Particular Concern**

The Magnuson-Stevens Act defines essential fish habitat (EFH) as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (Magnuson-Stevens Act § 3(10)). This includes the marine areas and their chemical and biological properties that organisms use. Substrate includes sediment, hard bottom, and other structural relief underlying the water column along with their associated biological communities. In 1999, the Council

developed and NMFS approved EFH definitions for management unit species (MUS) of the Bottomfish and Seamount Groundfish FMP (Amendment 6), Crustacean FMP (Amendment 10), Pelagic FMP (Amendment 8), and Precious Corals FMP (Amendment 4) (64 FR 19067, April 19, 1999). NMFS approved additional EFH definitions for coral reef ecosystem species in 2004 as part of the implementation of the Coral Reef Ecosystem FMP (69 FR 8336, February 24, 2004). NMFS approved EFH definitions for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

In addition to and as a subset of EFH, the Council described habitat areas of particular concern (HAPC) based on the following criteria: ecological function of the habitat is important, habitat is sensitive to anthropogenic degradation, development activities are or would stress the habitat, and/or the habitat type is rare. The FMPs defined HAPC for bottomfish, crustaceans, pelagic, and coral reef species in Guam, CNMI, and American Samoa and for bottomfish, pelagic, and coral reef species in the Pacific Remote Island Areas.

Ten years later, in 2009, the Council developed and NMFS approved five new archipelagic-based FEPs. The FEPs incorporated and reorganized elements of the Councils' species-based FMPs into a spatially-oriented management plan (75 FR 2198, January 14, 2010). The Council subsequently carried forward EFH definitions and related provisions for all FMP fishery resources into the respective FEPs.

Table 23 summarizes the designated areas of EFH and HAPC for all American Samoa and Marianas FEP MUS by life stage. To analyze the potential effects of a proposed fishery management action on EFH, one must consider all designated EFH.



**Table 23. EFH and HAPC for Pacific Island MUS**

| <b>MUS</b>             | <b>Species Complex</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>EFH</b>                                                                                                                                                                                                                                                              | <b>HAPC</b>                                                        |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>Bottomfish MUS</b>  | <b>American Samoa, Guam and CNMI bottomfish species:</b> lehi ( <i>Aphareus rutilans</i> ) uku ( <i>Aprion virescens</i> ), giant trevally ( <i>Caranx ignobilis</i> ), black trevally ( <i>Caranx lugubris</i> ), blacktip grouper ( <i>Epinephelus fasciatus</i> ), Lunartail grouper ( <i>Variola louti</i> ), ehu ( <i>Etelis carbunculus</i> ), onaga ( <i>Etelis coruscans</i> ), ambon emperor ( <i>Lethrinus amboinensis</i> ), redgill emperor ( <i>Lethrinus rubrioperculatus</i> ), taape ( <i>Lutjanus kasmira</i> ), yellowtail kalekale ( <i>Pristipomoides auricilla</i> ), opakapaka ( <i>P. filamentosus</i> ), yelloweye snapper ( <i>P. flavipinnis</i> ), kalekale ( <i>P. sieboldii</i> ), gindai ( <i>P. zonatus</i> ), and amberjack ( <i>Seriola dumerili</i> ). | <b>Eggs and larvae:</b> the water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm).<br><br><b>Juvenile/adults:</b> the water column and all bottom habitat extending from the shoreline to a depth of 400 m (200 fm) | All slopes and escarpments between 40–280 m (20 and 140 fm)        |
| <b>Crustaceans MUS</b> | <b>Spiny and slipper lobster complex (all FEP areas):</b> spiny lobster ( <i>Panulirus marginatus</i> ), spiny lobster ( <i>P. penicillatus</i> , <i>P. spp.</i> ), ridgeback slipper lobster ( <i>Scyllarides haanii</i> ), Chinese slipper lobster ( <i>Parribacus antarcticus</i> )<br><br><b>Kona crab (all FEP areas):</b> Kona crab ( <i>Ranina ranina</i> )                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Eggs and larvae:</b> the water column from the shoreline to the outer limit of the EEZ down to a depth of 150 m (75 fm)<br><br><b>Juvenile/adults:</b> all of the bottom habitat from the shoreline to a depth of 100 m (50 fm)                                      | No HAPC designated for crustaceans in American Samoa, Guam or CNMI |
| <b>Crustaceans MUS</b> | <b>Deepwater shrimp (all FEP areas):</b> ( <i>Heterocarpus</i> spp.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Eggs and larvae:</b> the water column and associated outer reef slopes between 550 and 700 m<br><br><b>Juvenile/adults:</b> the outer reef slopes at depths between 300-700 m                                                                                        | No HAPC designated for deepwater shrimp                            |

| MUS                             | Species Complex                                 | EFH                                                                                                                                                           | HAPC                                                                                                                                                                                      |
|---------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Coral Reef Ecosystem MUS</b> | <b>Coral Reef Ecosystem MUS (all FEP areas)</b> | EFH for the Coral Reef Ecosystem MUS includes the water column and all benthic substrate to a depth of 50 fm from the shoreline to the outer limit of the EEZ | Includes all no-take MPAs identified in the CREFMP, all Pacific remote islands, as well as numerous existing MPAs, research sites, and coral reef habitats throughout the Pacific Islands |

According to the most recent bottomfish fishery consultations for American Samoa (April 9, 2015) and for the Mariana Islands (April 29, 2015), none of the current bottomfish fisheries in these three areas has an adverse effect on EFH or HAPC. The findings were based on the fact that the bottomfish fisheries are targeted fisheries with very little bycatch, or gear contact with the bottom (i.e., no trawling, nets, traps, etc. and only a few weighted hooks and lines).

None of the alternatives considered would result in substantial changes to the way fishermen conduct the bottomfish fisheries in American Samoa, Guam, and CNMI; therefore, the alternatives would not result in effects on any EFH or HAPC in the three areas.

### **3.6 Potential Effects on Fishery Administration and Enforcement**

#### **3.6.1 Federal Agencies and the Council**

##### ***Alternative 1: Specify 2015 ACLs for 2016 and 2017 (Status Quo/NEPA Baseline)***

Under the Status Quo alternative, the ACL would be specified the same as last year for all regions. The bottomfish fisheries in each area would fish in the same manner as they did in 2015. All applicable reporting and permitting requirements would apply.

##### ***Alternative 2: Specify ACLs equal to the Council-recommended ABCs (Preferred)***

Under Alternative 2, the ACL would change slightly, but no other fishery management measure would change. This change would take a negligible amount of additional administrative effort by the Council and NMFS, in comparison to Alternative 1.

##### ***Alternative 3: Set the ACL lower than ABC based on recommendations from the SEEM Working Group to reduce overfishing probabilities***

Similar to Alternative 2, there would be small changes to the ACL, but essentially no changes to the administrative and enforcement workload.

#### ***Alternative 4: No ACL Specification Action by NMFS***

No ACL would be specified, so there would be a minor reduction in administrative effort to review each area's bottomfish MUS catches against an ACL. Catches would still be reviewed under this alternative.

#### ***All Alternatives***

Under all alternatives, there would be no change to enforcement and no large change to fishery administrative costs.

### **3.6.2 Local Agencies**

The specification of ACLs and AMs for bottomfish fisheries of American Samoa, Guam, and the CNMI is not expected to change fishery monitoring by the local resource management agencies. PIFSC will monitor catch data as it becomes available, in collaboration with local resource management agencies and the Council. If landings exceed the ACL, NMFS and the Council would pursue post-season AM.

For all alternatives proposed, no change to enforcement activities is required in association with implementing these specifications because there is no fishery closure recommended for any of the areas. Additionally, the ACL and AM specifications would not result in any change to the fishery that would pose an additional risk to human safety associated with bottomfish fishing in local waters.

### **3.7 Environmental Justice**

NMFS considered the effect of the alternatives on Environmental Justice communities that include members of minority and low-income groups. The ACLs would apply to everyone that catches bottomfish. The management measures considered under each alternative would not require additional monitoring. The environmental review in this EA shows that the fisheries in all three areas would continue to be conducted in the same way that they have been in recent years and that the fisheries are not having a large adverse environmental effect. The ACLs and AMs, monitoring, and other fishery management measures would continue to provide for sustainability of BMUS and this in turn, would continue to provide benefits to human communities that rely on their sustainable harvest. Because the management measures would not result in changes to the bottomfish fisheries of these areas and the bottomfish MUS stocks would continue to be sustainable, regardless of which alternative is being considered, no adverse effects to the environment were found that could have disproportionately high or adverse effects on members of Environmental Justice communities in American Samoa, Guam, or the CNMI.

### **3.8 Climate Change**

Changes in the environment from global climate change have the potential to affect bottomfish fisheries. Effects of climate change may include: sea level rise; increased intensity or frequency of coastal storms and storm surges; changes in rainfall (more or less) that can affect salinity

nearshore or increase storm runoff and pollutant discharges into the marine environment; increased temperatures resulting in coral bleaching; and hypothermic responses in some marine species (IPCC 2007). Increased carbon dioxide uptake can increase ocean acidity which can disrupt calcium uptake processes in corals, crustaceans, mollusks, reef-building algae, and plankton, among other organisms (Houghton et al. 2001; The Royal Society 2005; Caldeira and Wickett 2005; Doney 2006; Kleypas et al. 2006). Climate change can also lead to changes in ocean circulation patterns, which can affect the availability of prey, migration, survival, and dispersal (Buddemeier et al. 2004). Damage to coastal areas due to storm surge or sea level rises as well as changes to catch rates, migratory patterns, or visible changes to habitats are among the most likely changes. Climate change has the potential to adversely affect some organisms, while others could benefit from changes in the environment.

The effects from climate change may be difficult to discern from other effects; however, monitoring of physical conditions and biological resources by a number of agencies would continue to occur and would allow fishery managers to continually make adjustments in fishery management regimes in response to changes in the environment.

The efficacy of the proposed ACL and AM specifications in providing for sustainable levels of fishing for bottomfish is not expected to be adversely affected by climate change, although there are no specific studies examining the potential effects of climate change on Pacific Island bottomfish MUS. Recent catches and biological status of the species informed the development of the ACLs and AMs and climate change effects, if any, would be indirectly reflected in those statistics. Monitoring of bottomfish catches and stocks in all areas would continue, regardless of which alternative is selected, and if environmental factors or fishing were found to be affecting the stocks, ACLs could be adjusted in the future.

None of the alternatives is expected to result in a change to the manner in which the fisheries are conducted, so no change in greenhouse gas emissions would occur, regardless of which alternative is selected.

### **3.9 Additional Considerations**

#### **3.9.1 Important Ecological, Scientific, Cultural or Historical Sites**

NMFS does not expect the proposed ACLs and AMs to have an effect on objects or places listed in the National Register of Historical Places as no such areas exist in the U.S. EEZ. While fishing may occur in areas of potential scientific, cultural, or historical interest, Pacific Island bottomfish fisheries currently are not known to cause loss or destruction to any such resources, and fishing operations are not expected to change under the ACL specifications or AMs.

#### **3.9.2 Overall Effects**

When compared against recent fishing harvests, all ACLs would be higher than previous catch history but are an acceptable level of catch that is part of an overall management scheme intended to prevent overfishing and provide for long-term sustainability of the target stocks. NMFS and the Council developed ACL specifications using the best available scientific

information that accords with the fishery regulations, and after considering catches, participation trends, and estimates of the status of the fishery resources. The AMs are also not likely to cause adverse effects to resources because they would not result in changes to the fishery that could have an environmental effect. Bottomfish resources would benefit from post-season data review because of the additional management oversight the AM provide. For these reasons, the proposed ACLs and AMs are not expected to result in adverse, irreversible, or irretrievable effects to the environment.

### **3.9.3 Cumulative Effects of the Proposed Action**

#### ***Recent ACL and AM specifications for other Pacific Island fisheries***

NMFS recently specified ACL for the Deep 7 bottomfish in the MHI (81 FR 20259, April 7, 2016), which can be obtained at the Council or NMFS websites. The ACL does not affect the current project area.

NMFS is proposing to specify the 2016 ACLs and AMs for coral reef ecosystem MUS, precious corals MUS, and crustaceans, as recommended by the Council. The proposed ACLs and AMs for 2016 for these fisheries are expected to be identical to those NMFS specified in 2015 (80 FR 52415, August 31, 2015). However, NMFS and the Council may propose to reduce the 2016 ACLs for Guam jacks, Hawaii crabs, and Hawaii mollusks as a result of overages of the 3-year average catch in relation to the 2015 ACLs (Sustainable Fisheries Division 2016 proposed rule in prep.)

None of the proposed ACLs or AMs for bottomfish would conflict with or reduce the efficacy of existing bottomfish resource management by local resource management agencies, NMFS, or the Council. The proposed ACL specifications and AM would also not conflict with ACL and AM specifications for other fisheries in any of the three archipelagic areas because the ACLs apply to specific fishery resources and the proposed bottomfish ACLs and AMs are not anticipated to result in a change to any fishery in any of the areas. Because NMFS is not proposing in-season fishery closures, participants in one fishery would not change their fishing to another target MUS such that ACL in one fishery would adversely affect the stock status of MUS in another fishery.

#### ***Foreseeable fishery management actions***

##### **Ecosystem Component Species Amendment**

In the foreseeable future, the Council may re-evaluate the need for conservation and management for bottomfish fisheries in Federal waters and may recommend NMFS remove certain species from the FEPs and/or re-classify species as “ecosystem component” (EC) species. To be considered for possible classification as an EC species, the species should be: 1) a non-target species; 2) a stock that is determined not to be subject to overfishing, approaching overfished, or overfished; 3) not likely to become subject to overfishing or overfished; and 4) generally not retained for sale or personal use. The Council has discussed various methods for categorizing species and EC components at public meetings. These include, but are not limited to, species caught exclusively or predominately in territorial waters, species that occur infrequently in the

available time series, species that are non-native to an FEP area, and species associated with ciguatoxin poisoning.

In accordance with National Standard 1 guidelines found in 50 CFR 600.310(d), EC species are not considered to be “in the fishery” and thus, do not require specification of an ACL. EC species may, but are not required to remain in the FEP for data collection purposes, for ecosystem considerations related to the specification of optimum yield for associated BMUS, as considerations in the development of conservation and management measures for associated BMUS fisheries, and/or to address other ecosystem issues. However, until such time a particular BMUS is classified as an EC species, it would remain in the fishery and be subject to the ACL requirements. The specification of ACLs for BMUS and AMs for the bottomfish fisheries would not affect the consideration or a decision about whether or not to designate any species to the EC classification.

### ***Foreseeable actions by others***

One activity that has the potential to affect Guam’s fishery resources is the Guam military buildup. This activity was previously slated to involve three major components which include: (1) development of facilities and infrastructure to support approximately 8,000 Marines and their 9,000 dependents being relocated from Okinawa, Japan to the island of Guam and additional operations and training activities; (2) construction of a new deep-draft wharf generally within Apra Harbor, Guam to support transient nuclear aircraft carriers; and (3) development of facilities and infrastructure to support an air missile defense system on Guam. Other activities would include improvements to off-base roads and bridges to support increased traffic as well as utilities (water and power) to support increased demands by the military (JPOG 2010). As a result of the recent natural disasters and their effects in Japan, the economic conditions in Japan and the U.S., and changing political priorities, these proposed actions are being revised. The Navy is now preparing a Supplemental EIS and the scoping materials indicate that the Guam military buildup will involve substantially fewer personnel than was originally proposed (DOD 2010). There is likely to continue to be a need to upgrade infrastructure, but the overall project footprint and intensity are likely to be downsized.

As construction and associated human activities have the potential to affect the nearshore marine environment, measures to minimize and mitigate effects of these activities on the human environment are being addressed through ongoing consultations between the military, the Governments of Guam and the CNMI and other Federal agencies. Because of the reduced scale and the expected mitigation of effects and the fact that bottomfish fishing occurs offshore, the potential effects of the buildup on bottomfish and bottomfish habitat are not expected to result in adverse effects to the fishery, or interact with the proposed ACLs and AMs to reduce their efficacy in ensuring the fishery is sustainably managed.

## **4 Consistency with Other Applicable Laws**

### **4.1 National Environmental Policy Act (NEPA)**

NEPA, Council on Environmental Quality (CEQ Regulations implementing NEPA), and NOAA Administrative Order 216-6, Environmental Review Procedures, as amended by NAO 216-6A, all require consideration of effects of proposed agency actions and alternatives on the human environment and before a decision is made. The NMFS Pacific Islands Regional Administrator will use the analysis in this EA to determine whether the proposed action would be a major Federal action with the potential to have a significant environmental impact, which, if so, would require the preparation of an EIS. If not, the Regional Administrator will use the analysis in the EA to support a finding of no significant impact documenting the conclusions of this EA and a decision not to prepare an EIS.

This EA describes the purpose and need for action in Section 1.1. Background as to the technical development of the ACL and AM specifications is provided in Section 2 which also provides a description of the alternatives considered. The affected environment and potential effects of the alternatives are combined and described in Section 3. Consistency with law of the preferred alternative is evaluated in this section.

#### **4.1.1 Preparers and Reviewers**

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#### **4.1.2 List of Agencies Consulted**

The proposed action described in this EA was developed in coordination with various Federal and local government agencies that are represented on the Western Pacific Fishery Management Council. Specifically, agencies that participated in the deliberations and development of the proposed management measures and considered the potential environmental effects include:

- American Samoa Department of Marine and Wildlife Resources

- Guam Department of Agriculture, Division of Aquatic and Wildlife Resources
- Northern Mariana Islands Department of Land and Natural Resources, Division of Fish and Wildlife
- U.S. Coast Guard
- U.S. Fish and Wildlife Service

#### 4.1.3 Public Coordination

The proposed management scheme is not new. Affected fishermen and interested members of the public have likely been aware of the requirement to manage selected Pacific Island fisheries under ACLs and AMs through Council outreach and fishery management activities and through the development of NMFS national and local regulations and ACL and AM specifications for the past several years. The development of the proposed ACL and AM specifications for American Samoa, Guam, and the CNMI has taken place at public meetings of the SSC and the Council. In addition, the Council advertised the Council's focus on developing ACLs at its public meetings and described the proposed ACLs and AMs in media releases, newsletter articles, and on its website. The Council at its 164<sup>th</sup> meeting held October 21-22, 2015, received several public comments in support of ACL specifications and AM.

NMFS sought public comment on the proposed rule and draft EA for the proposed ACL specifications and AMs for crustacean and precious coral fisheries for fishing years 2016 through 2018 (82 FR 5517, January 18, 2017). NMFS received no comments.

## 4.2 Endangered Species Act

The ESA provides for the protection and conservation of threatened and endangered species. Section 7(a) (2) of the ESA requires Federal agencies to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

Pursuant to Section 7 of the ESA, NMFS has evaluated the bottomfish fisheries managed under the western Pacific FEPs for potential effects on ESA-listed species under the jurisdiction of NMFS. Table 24 summarizes ESA Section 7 consultations for bottomfish fisheries managed under the FEPs for the American Samoa Archipelago and the Mariana Archipelago.

**Table 24. ESA Section 7 consultations for Pacific Island bottomfish fisheries**

| <b>Fishery</b>                    | <b>Consultation</b>                  | <b>NMFS Determination</b>                                                 |
|-----------------------------------|--------------------------------------|---------------------------------------------------------------------------|
| American Samoa bottomfish fishery | March 8, 2002, Biological Opinion    | Not likely to adversely affect any ESA-listed species or critical habitat |
|                                   | April 9, 2015, Letter of Concurrence |                                                                           |
| Guam bottomfish fishery           | June 3, 2008, Letter of Concurrence  |                                                                           |



| <b>Fishery</b>          | <b>Consultation</b>                   | <b>NMFS Determination</b>                                                 |
|-------------------------|---------------------------------------|---------------------------------------------------------------------------|
|                         | April 29, 2015, Letter of Concurrence | Not likely to adversely affect any ESA-listed species or critical habitat |
| CNMI bottomfish fishery | June 3, 2008, Letter of Concurrence   | Not likely to adversely affect any ESA-listed species or critical habitat |
|                         | April 29, 2015, Letter of Concurrence |                                                                           |

Because the proposed action is not expected to modify vessel operations or other aspects of any fishery, NMFS does not expect the bottomfish fisheries in American Samoa, Guam, and the CNMI, as conducted under the proposed action, to have an effect on ESA listed species or any designated critical habitats that was not considered in prior consultations.

#### **4.3 Marine Mammal Protection Act**

The MMPA prohibits, with certain exceptions, the take of marine mammals in the U.S. and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. The MMPA gives NMFS the authority and duties for all cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions, except walruses). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries that classifies U.S. commercial fisheries into one of three categories. Specifically, the MMPA mandates that each fishery be classified according to whether it has a frequent, occasional, or remote likelihood of, or no known, incidental mortality or serious injury of marine mammals.

The bottomfish fisheries in each island area are listed as Category III fisheries under Section 118 of the MMPA (81 FR 20550, April 8, 2016). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals. Because the proposed action would not modify vessel operations or other aspects of any fishery, NMFS does not anticipate that these fisheries, as conducted under the proposed action, would affect marine mammals in any manner not previously considered or authorized by the commercial fishing take exemption under section 118 of the MMPA.

#### **4.4 Coastal Zone Management Act**

The Coastal Zone Management Act (CZMA) requires a determination that a recommended management measure has no effect on the land, water uses, or natural resources of the coastal zone or is consistent to the maximum extent practicable with an affected territory's enforceable coastal zone management program. On May 27, 2016, NMFS sent a letter to the appropriate territorial government agencies in American Samoa, Guam, and the CNMI informing them of its determination that the proposed action is consistent, to the maximum extent practicable, with their respective coastal zone management program. Guam concurred with NMFS determination of consistency in a letter dated July 6, 2016.

#### **4.5 Paperwork Reduction Act**

The purpose of the Paperwork Reduction Act is to minimize the paperwork burden on the public resulting from the collection of information by or for the Federal government. It is intended to ensure the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501(1)). The proposed action would not establish any new permitting or reporting requirements; therefore it is not subject to the provisions of the Paperwork Reduction Act.

#### **4.6 Regulatory Flexibility Act**

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires government agencies to assess and present the impact of their regulatory actions on small entities including small businesses, small organizations, and small governmental jurisdictions; and to determine ways to minimize adverse effects. The assessment is done via the preparation of an Initial Regulatory Flexibility Analyses and Final Regulatory Flexibility Analysis for each proposed and final rule, respectively. Under the Regulatory Flexibility Act, an agency does not need to conduct neither an Initial Regulatory Flexibility Analyses nor a Final Regulatory Flexibility Analysis if a certification can be made that the proposed rule, if adopted, would not have a significant adverse economic impact on a substantial number of small entities.

#### **4.7 Administrative Procedure Act**

All Federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II) which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the Federal Register and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it becomes effective, with rare exceptions.

The specification of ACLs for BMUS in American Samoa, Guam, and the CNMI complies with the provisions of the APA through the Council’s extensive use of public meetings, requests for comments, and consideration of comments in developing ACL and AM recommendations. Additionally, NMFS published a proposed rule announcing the proposed ACL and AM specifications described in this document which included requests for public comments. NMFS sought public comment on the proposed rule and draft EA for the proposed ACL specifications and AMs for territorial bottomfish fisheries of the western Pacific for fishing years 2016 through 2018 (82 FR 5517, January 18, 2017). NMFS received no comments.

#### **4.8 Executive Order 12898: Environmental Justice**

On February 11, 1994, President William Clinton issued Executive Order 12898 (E.O. 12898), “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” E.O. 12898 provides that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its program,

policies, and activities on minority populations and low-income populations.” E.O. 12898 also provides for agencies to collect, maintain, and analyze information on patterns of subsistence consumption of fish, vegetation, or wildlife. That agency action may also affect subsistence patterns of consumption and indicate the potential for disproportionately high and adverse human health or environmental effects on low-income populations, and minority populations. A memorandum by President Clinton, which accompanied E.O. 12898, made it clear that environmental justice should be considered when conducting NEPA analyses by stating the following: “Each Federal agency should analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA.”

The proposed ACL specifications and AMs were not found to result in disproportionately high and adverse human health or environmental effects on environmental justice communities (See, Sections 3.1.5, 3.2.5, and 3.3.5 for American Samoa, Guam, and CNMI, respectively). The proposed specifications and AMs would not change the conduct of the fishery, and the continuation of the bottomfish fisheries in all three island areas is not known to be having adverse effects on the environment. The proposed ACL and AM specifications would not affect subsistence patterns of consumption; the bottomfish fishery is a boat-based fishery that is sustainably managed and would continue to be so managed under all of the alternatives considered.

#### **4.9 Executive Order 12866: Regulatory Impact Review**

A “significant regulatory action” means any regulatory action that is likely to result in a rule that may –

- 1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal government or communities;
- 2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- 3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan program or the rights and obligations of recipients thereof; or
- 4) Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in the Executive Order.

The specification of ACL and AM for bottomfish fisheries is exempt from the procedures of E.O. 12866 because this action contains no implementing regulations.

#### **4.10 Information Quality Act**

The Information Quality Act (IQA) requires Federal agencies to ensure and maximize the quality, objectivity, utility, and integrity of information disseminated by Federal agencies. To the extent feasible, the information in this document is current. Much of the information was made available to the public during the deliberative phases of developing the proposed specifications

during meetings of the Council over the past several years. The information was also improved based on the guidance and comments from the Council's advisory groups.

The information contained in this document was reviewed according NMFS policies implementing the IQA.

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**Appendix A      Range of Catches of Bottomfish in American Samoa, Guam and the CNMI  
in Fishing Year 2016 and 2017 that would Produce Probabilities of  
Overfishing of 1-50%**

**American Samoa**

| <b>Catch (lbs) of<br/>American Samoa<br/>bottomfish in 2016<br/>and 2017</b> | <b>Risk of<br/>overfishing<br/>(H&gt;HMSY)<br/>in 2016</b> | <b>Risk of<br/>overfishing<br/>(H&gt;HMSY)<br/>in 2017</b> | <b>Harvest<br/>rate in<br/>2016</b> | <b>Relative<br/>biomass<br/>(B/BMSY)<br/>in 2017</b> | <b>Risk of being<br/>overfished<br/>(B&lt;0.7*BMSY)<br/>in 2017</b> |
|------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|-------------------------------------|------------------------------------------------------|---------------------------------------------------------------------|
| 50,000                                                                       | 1.0%                                                       | 1%                                                         | 0.09                                | 1.69                                                 | 0.5%                                                                |
| 69,000                                                                       | 4.2%                                                       | 5%                                                         | 0.13                                | 1.64                                                 | 0.7%                                                                |
| 80,000                                                                       | 7.7%                                                       | 10%                                                        | 0.15                                | 1.60                                                 | 0.8%                                                                |
| 87,000                                                                       | 10.9%                                                      | 15%                                                        | 0.16                                | 1.58                                                 | 0.9%                                                                |
| 92,000                                                                       | 13.5%                                                      | 20%                                                        | 0.17                                | 1.56                                                 | 1.0%                                                                |
| 97,000                                                                       | 16.6%                                                      | 25%                                                        | 0.18                                | 1.55                                                 | 1.0%                                                                |
| 98,000                                                                       | 17.2%                                                      | 27%                                                        | 0.18                                | 1.55                                                 | 1.1%                                                                |
| 99,000                                                                       | 18.0%                                                      | 28%                                                        | 0.18                                | 1.54                                                 | 1.1%                                                                |
| 100,000                                                                      | 18.6%                                                      | 29%                                                        | 0.18                                | 1.54                                                 | 1.1%                                                                |
| 101,000                                                                      | 19.3%                                                      | 30%                                                        | 0.19                                | 1.54                                                 | 1.1%                                                                |
| 102,000                                                                      | 19.9%                                                      | 31%                                                        | 0.19                                | 1.53                                                 | 1.1%                                                                |
| 103,000                                                                      | 20.7%                                                      | 33%                                                        | 0.19                                | 1.53                                                 | 1.2%                                                                |
| 104,000                                                                      | 21.5%                                                      | 34%                                                        | 0.19                                | 1.53                                                 | 1.2%                                                                |
| 105,000                                                                      | 22.3%                                                      | 35%                                                        | 0.19                                | 1.52                                                 | 1.2%                                                                |
| 106,000                                                                      | 22.9%                                                      | 37%                                                        | 0.19                                | 1.52                                                 | 1.2%                                                                |
| 107,000                                                                      | 23.7%                                                      | 38%                                                        | 0.20                                | 1.52                                                 | 1.3%                                                                |
| 108,000                                                                      | 24.5%                                                      | 40%                                                        | 0.20                                | 1.51                                                 | 1.3%                                                                |
| 109,000                                                                      | 25.4%                                                      | 41%                                                        | 0.20                                | 1.51                                                 | 1.3%                                                                |
| 110,000                                                                      | 26.1%                                                      | 42%                                                        | 0.20                                | 1.51                                                 | 1.3%                                                                |
| 111,000                                                                      | 26.9%                                                      | 44%                                                        | 0.20                                | 1.50                                                 | 1.3%                                                                |
| 112,000                                                                      | 27.8%                                                      | 45%                                                        | 0.21                                | 1.50                                                 | 1.4%                                                                |
| 113,000                                                                      | 28.6%                                                      | 47%                                                        | 0.21                                | 1.50                                                 | 1.4%                                                                |
| 114,000                                                                      | 29.4%                                                      | 48%                                                        | 0.21                                | 1.50                                                 | 1.4%                                                                |
| 115,000                                                                      | 30.2%                                                      | 50%                                                        | 0.21                                | 1.49                                                 | 1.5%                                                                |



### Commonwealth of Northern Mariana Islands

| <b>Catch (lbs) of<br/>CNMI<br/>bottomfish in<br/>2016 and 2017</b> | <b>Risk of<br/>overfishing<br/>(H&gt;HMSY)<br/>in 2016</b> | <b>Risk of<br/>overfishing<br/>(H&gt;HMSY)<br/>in 2017</b> | <b>Harvest<br/>rate in<br/>2016</b> | <b>Relative<br/>biomass<br/>(B/BMSY) in<br/>2017</b> | <b>Risk of being<br/>overfished<br/>(B&lt;0.7*BMSY)<br/>in 2017</b> |
|--------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|-------------------------------------|------------------------------------------------------|---------------------------------------------------------------------|
| 78,000                                                             | 1.0%                                                       | 1%                                                         | 0.07                                | 1.69                                                 | 1.7%                                                                |
| 134,000                                                            | 4.7%                                                       | 5%                                                         | 0.13                                | 1.60                                                 | 2.3%                                                                |
| 162,000                                                            | 8.5%                                                       | 10%                                                        | 0.15                                | 1.56                                                 | 2.7%                                                                |
| 180,000                                                            | 12.1%                                                      | 15%                                                        | 0.17                                | 1.54                                                 | 3.0%                                                                |
| 194,000                                                            | 15.2%                                                      | 20%                                                        | 0.18                                | 1.51                                                 | 3.1%                                                                |
| 206,000                                                            | 18.1%                                                      | 25%                                                        | 0.20                                | 1.50                                                 | 3.3%                                                                |
| 208,000                                                            | 18.7%                                                      | 26%                                                        | 0.20                                | 1.49                                                 | 3.4%                                                                |
| 210,000                                                            | 19.1%                                                      | 27%                                                        | 0.20                                | 1.49                                                 | 3.4%                                                                |
| 212,000                                                            | 19.7%                                                      | 28%                                                        | 0.20                                | 1.49                                                 | 3.4%                                                                |
| 214,000                                                            | 20.2%                                                      | 29%                                                        | 0.20                                | 1.48                                                 | 3.5%                                                                |
| 216,000                                                            | 20.8%                                                      | 30%                                                        | 0.21                                | 1.48                                                 | 3.5%                                                                |
| 218,000                                                            | 21.3%                                                      | 31%                                                        | 0.21                                | 1.48                                                 | 3.5%                                                                |
| 220,000                                                            | 21.9%                                                      | 32%                                                        | 0.21                                | 1.48                                                 | 3.6%                                                                |
| 222,000                                                            | 22.5%                                                      | 33%                                                        | 0.21                                | 1.47                                                 | 3.7%                                                                |
| 224,000                                                            | 23.1%                                                      | 34%                                                        | 0.21                                | 1.47                                                 | 3.7%                                                                |
| 226,000                                                            | 23.6%                                                      | 35%                                                        | 0.21                                | 1.47                                                 | 3.7%                                                                |
| 228,000                                                            | 24.2%                                                      | 36%                                                        | 0.22                                | 1.46                                                 | 3.8%                                                                |
| 230,000                                                            | 24.9%                                                      | 37%                                                        | 0.22                                | 1.46                                                 | 3.8%                                                                |
| 232,000                                                            | 25.6%                                                      | 38%                                                        | 0.22                                | 1.46                                                 | 3.8%                                                                |
| 234,000                                                            | 26.2%                                                      | 40%                                                        | 0.22                                | 1.45                                                 | 3.9%                                                                |
| 236,000                                                            | 26.8%                                                      | 41%                                                        | 0.22                                | 1.45                                                 | 3.9%                                                                |
| 238,000                                                            | 27.4%                                                      | 42%                                                        | 0.23                                | 1.45                                                 | 4.0%                                                                |
| 240,000                                                            | 28.1%                                                      | 43%                                                        | 0.23                                | 1.45                                                 | 4.0%                                                                |
| 242,000                                                            | 28.7%                                                      | 45%                                                        | 0.23                                | 1.44                                                 | 4.1%                                                                |
| 244,000                                                            | 29.3%                                                      | 46%                                                        | 0.23                                | 1.44                                                 | 4.1%                                                                |
| 246,000                                                            | 30.0%                                                      | 47%                                                        | 0.23                                | 1.44                                                 | 4.2%                                                                |
| 248,000                                                            | 30.6%                                                      | 48%                                                        | 0.24                                | 1.43                                                 | 4.2%                                                                |
| 250,000                                                            | 31.2%                                                      | 50%                                                        | 0.24                                | 1.43                                                 | 4.3%                                                                |

## Guam

| <b>Catch (lbs) of<br/>Guam<br/>bottomfish in<br/>2016 and 2017</b> | <b>Risk of<br/>overfishing<br/>(<math>H &gt; H_{MSY}</math>)<br/>in 2016</b> | <b>Risk of<br/>overfishing<br/>(<math>H &gt; H_{MSY}</math>)<br/>in 2017</b> | <b>Harvest<br/>rate in<br/>2016</b> | <b>Relative<br/>biomass<br/>(<math>B/B_{MSY}</math>) in<br/>2017</b> | <b>Risk of being<br/>overfished<br/>(<math>B &lt; 0.7 * B_{MSY}</math>)<br/>in 2017</b> |
|--------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 33,000                                                             | 1.2%                                                                         | 1%                                                                           | 0.15                                | 1.50                                                                 | 1.0%                                                                                    |
| 45,000                                                             | 5.0%                                                                         | 5%                                                                           | 0.20                                | 1.42                                                                 | 1.6%                                                                                    |
| 51,000                                                             | 8.9%                                                                         | 10%                                                                          | 0.23                                | 1.39                                                                 | 2.0%                                                                                    |
| 55,000                                                             | 12.3%                                                                        | 15%                                                                          | 0.25                                | 1.36                                                                 | 2.2%                                                                                    |
| 58,000                                                             | 15.2%                                                                        | 20%                                                                          | 0.26                                | 1.34                                                                 | 2.4%                                                                                    |
| 61,000                                                             | 18.6%                                                                        | 25%                                                                          | 0.27                                | 1.32                                                                 | 2.7%                                                                                    |
| 62,000                                                             | 19.8%                                                                        | 26%                                                                          | 0.28                                | 1.32                                                                 | 2.8%                                                                                    |
| 63,000                                                             | 21.0%                                                                        | 29%                                                                          | 0.28                                | 1.31                                                                 | 2.9%                                                                                    |
| 64,000                                                             | 22.3%                                                                        | 31%                                                                          | 0.29                                | 1.30                                                                 | 3.1%                                                                                    |
| 65,000                                                             | 23.7%                                                                        | 33%                                                                          | 0.29                                | 1.30                                                                 | 3.2%                                                                                    |
| 66,000                                                             | 25.0%                                                                        | 36%                                                                          | 0.30                                | 1.29                                                                 | 3.3%                                                                                    |
| 67,000                                                             | 26.4%                                                                        | 38%                                                                          | 0.30                                | 1.28                                                                 | 3.4%                                                                                    |
| 68,000                                                             | 27.8%                                                                        | 41%                                                                          | 0.31                                | 1.28                                                                 | 3.5%                                                                                    |
| 69,000                                                             | 29.2%                                                                        | 44%                                                                          | 0.31                                | 1.27                                                                 | 3.6%                                                                                    |
| 70,000                                                             | 30.7%                                                                        | 46%                                                                          | 0.32                                | 1.27                                                                 | 3.7%                                                                                    |
| 71,000                                                             | 32.1%                                                                        | 49%                                                                          | 0.32                                | 1.26                                                                 | 3.9%                                                                                    |

## Appendix B     121<sup>th</sup> SSC Determination of Risk of Overfishing of Territorial Bottomfish



### **P\* Working Group Meeting**

September 23-24, 2015

1:00 pm to 5:00 pm

Pelagic Suite Conference Room – Council Office

Teleconference: 1-888-4823560 (Access Code: 5228220)

**Participants:** Bob Humphreys (NMFS PIFSC), Ariel Jacobs (NMFS – PIRO)

**Council staff:** Marlowe Sabater (WPRFMC)

**On Conference Call / WebEx:** Domingo Ochavillo (SSC member, Chair), Todd Miller (SSC member), Frank Camacho (SSC member), Michael Trianni (NMFS-PIFSC), Eric Cruz (NMFS-PIFSC), Trey Dunn (DFW), Mike Tenorio (DFW), Jack Ogumoro (Island Coordinator), Sarah Ellgen (NMFS – PIRO)

### **DRAFT REPORT**

Wednesday, September 23, 2015

Meeting Started: 1:25pm

#### **1. Introductions**

Domingo Ochavillo opened the meeting and welcomed the working group participants. The participants made self-introductions. The working group adopted the agenda with some changes where agenda item 4 was skipped because 4.a is not directly related to the P\* scoring while 4.b had been part of the review required for the scoring of the different dimensions. There was no need to review the information that will be presented.

Council staff thanked the working group members for the scoring of the different dimensions particularly the productivity and susceptibility dimensions. This is the first P\* analysis that utilized a standardized set of criteria for the productivity and susceptibility dimensions based on Patrick et al. 2009. The P\* Working Group also consulted with the bottomfish fishermen in the Marianas to score the susceptibility attributes for the 17 species in the complex.

#### **2. Recommendations from previous Council meetings**

Council staff presented the recommendations from the 163<sup>rd</sup> Council meeting. At this meeting, the Council heard a presentation on the 2015 Draft Bottomfish Stock Assessment Updates for American Samoa, Guam, and Commonwealth of Northern Mariana Islands (Yau et al. 2016). The Council recommended the WPSAR peer-review of the assessment update and a special session of the SSC to make a best available science determination. The Council also recommended that staff convene a P\* and a SEEM working group to evaluate the scientific and management uncertainties.

Staff presented the events following the 163<sup>rd</sup> Council meeting where the WPSAR Tier-3-Panel Review was held on August 11-12, 2015 to review the stock assessment updates. The WPSAR panel deemed the updates appropriate for management. The 120<sup>th</sup> SSC was held on September 16, 2015 and concurred with the WPSAR panel and endorsed the assessment update as best scientific information available (BSIA) for the bottomfish fisheries in American Samoa, Guam and CNMI. The SSC concurred with the panel, that the data was acceptable for management purposes.

The succeeding meetings will use the SSC-determined BSIA as a basis for the P\* analysis.

### 3. Overview of the P\* process

Council staff provided an overview of the P\* process. The Fishery Ecosystem Plans required the Council to revisit the P\* analysis once new information becomes available. The P\* process determines the risk level to which the fishery will be managed based on the scientific uncertainties surrounding the stock assessment and the stock it described. There are 4 dimensions in the P\* analysis: 1) Assessment Information; 2) Uncertainty Characterization; 3) Stock Status; and 4) Productivity-Susceptibility. Each dimension has criteria scored by working group members. The total scores will be deducted from the 50% risk of overfishing described in Yau et al., 2016. The catch that corresponds to the final P\* corresponds to the potential Acceptable Biological Catch that the SSC will specify at its 121<sup>st</sup> Meeting in October 2015.

### 4. Discussion of the Scoring of the P\* Dimensions and Criteria

- a. **Assessment information** – The working group discussed the scores under the Assessment Information Dimension.

| <b>Quantitative assessment provides estimates of exploitation and B; includes MSY-derived benchmarks; no spatially-explicit information</b>                           | <b>AS</b>  | <b>GU</b>  | <b>CNMI</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|-------------|
| <i>Reliable catch history</i> - whether there is a good estimate of total catch which includes non-commercial/recreational catch                                      | 1          | 0.5        | 0.5         |
| <i>Standardized CPUE</i> - if the CPUE has been standardized to control for effects other than abundance fluctuations                                                 | 1          | 1          | 1           |
| <i>Species-specific data</i> - whether data for individual species has been incorporated in the model                                                                 | 1          | 1          | 1           |
| <i>All sources of mortality accounted for</i> – (whether?) if ALL types of mortality like discards, bycatch, natural, fishing etc. are considered in the model        | 1          | 0.5        | 0.5         |
| <i>Fishery independent survey</i> – whether ( an) independent estimate of abundance has been considered in the assessment                                             | 1          | 0.5        | 0.5         |
| <i>Tagging data</i> – (whether?) movement information, spatial distribution patterns, population estimation from mark-recapture has been considered in the assessment | 1          | 1          | 1           |
| <i>Spatial analysis</i> - whether area specific information e.g., spatially explicit CPUE information was considered in the assessment                                | 1          | 1          | 1           |
| <b>Total Assessment Aspect Score</b>                                                                                                                                  | <b>7</b>   | <b>4</b>   | <b>4</b>    |
| <b>DIMENSION SCORE EQUIVALENT</b>                                                                                                                                     | <b>4.0</b> | <b>3.6</b> | <b>3.6</b>  |

**Reliable catch history** – Guam and CNMI received score(s) on the reliable catch history criterion as 0.5 (partially captured) and were deemed partially reliable. Guam used the creel survey information which had sufficient catch and effort interviews and is one of the fisheries adequately documented by the survey. The CNMI data used was the commercial purchase data which only accounts for the commercial sector of the fishery and not the non-commercial. American Samoa had a bigger reduction score because the data was deemed unreliable because it does not represent total catch and is poor in capturing the commercial and non-commercial fisheries. It was reported that there were significant landings in Aunuu which is not captured in the creel surveys and also fishing for special events like funerals and weddings.

**Standardized CPUE** – Because the assessment used nominal CPUE, all three scored (1). No standardizations were performed in this assessment.

**Species specific data** – the assessment was conducted on a complex of 17 species from various families and depth distribution hence all scored (1)

**All sources of mortality accounted for** – there (are) no known empirically-based mortality estimates from discards and bycatch. Fishery-based mortality is estimated entirely from the catch and CPUE data hence only a partial score (0.5) was assigned to the Marianas. American Samoa scored (1) because the sources of mortality estimates for American Samoa were deemed virtually non-existent.

**Fishery independent data** – fishery independent data was used from the 1980's Raioma cruise in the Marianas. The Polovina and Ralston (1986) methods were used by Moffitt and Humphreys (2009) for the MSY estimates which were in turn used to condition the assessment results. These were the Our Living Oceans estimates which were the basis for the fishery independent MSY in the assessment. The Marianas scored this assessment aspect as (0.5) but American Samoa scored it a (1) because the estimates were just derived from the Marianas estimates and extrapolated to habitat size.

**Tagging data** – there is no large scale tagging data available for the BMUS in American Samoa and Marianas. There is a tagging program implemented by the Pacific Island Fisheries Group in the Marianas but this is only small scale and not incorporated in the assessment update

**Spatial analysis** – there is no spatial analysis in the actual assessment update although there is some spatial data on the 1980 Raioma cruise and the recent RV OES (2014, 14-04) cruise.

## b. Uncertainty characterization

| Description                                                                                                                                      | AS       | GU       | CNMI     |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|
| Complete. Key determinant – uncertainty in both assessment inputs and environmental conditions included (0)                                      |          |          |          |
| High. Key determinant – reflects more than just uncertainty in future recruitment (2.5)                                                          |          |          |          |
| Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections (5) | 5        | 5        | 5        |
| Low. Distributions of Fmsy and MSY are lacking (7.5)                                                                                             |          |          |          |
| None. Only single point estimates; no sensitivities or uncertainty evaluations (10)                                                              |          |          |          |
| <b>DIMENSION SCORE</b>                                                                                                                           | <b>5</b> | <b>5</b> | <b>5</b> |

The uncertainty characterization did not change between 2012 and 2015 since this was a simple update to the Brodziak et al. 2012 assessment update with 3 years of additional data. All areas had a score of (5) points leading to a 5 point reduction since uncertainties were not carried forward in the project. It utilized nominal CPUE and no standardizations were applied.

## c. Stock status

| Stock Status Description                              | Biomass level & Fishing level         | AS       | GU       | CNMI     |
|-------------------------------------------------------|---------------------------------------|----------|----------|----------|
| Neither overfished nor overfishing (0).               | Stock > MSST & $B_{MSY}$ , $F < MFMT$ | 0        | 0        | 0        |
| Neither overfished nor overfishing (2).               | Stock > MSST, $F < MFMT$              |          |          |          |
| Neither overfished nor overfishing (4).               | Stock $\geq$ MSST, $F \leq MFMT$      |          |          |          |
| Stock is not overfished, overfishing is occurring (6) | Stock > MSST, $F > MFMT$              |          |          |          |
| Stock is overfished, overfishing is not occurring (8) | Stock < MSST, $F \leq MFMT$           |          |          |          |
| Stock is overfished, overfishing is occurring (10)    | Stock < MSST, $F > MFMT$              |          |          |          |
| <b>DIMENSION SCORE</b>                                |                                       | <b>0</b> | <b>0</b> | <b>0</b> |

The stock status did not change between 2012 and 2015. The stock remains not overfished and is not experiencing overfishing. The reference points actually increased slightly with the addition of 3 additional years of data. All three areas scored a (0) point reduction.

## d. Productivity and susceptibility – the 2015 P\* Analysis utilized a standardized criteria for evaluating the productivity and susceptibility of the different species in the BMUS complex. The productivity and susceptibility attributes were adopted from Patrick et al. 2009.

| Species (common name)                                   | Component    | Average PS Score |            |            |
|---------------------------------------------------------|--------------|------------------|------------|------------|
|                                                         |              | AS               | GU         | CNMI       |
| <i>Caranx lugubris</i> (black trevally)                 | Deep         | 4.2              | 5.7        | 4.9        |
| <i>Aphareus rutilans</i> (lehi)                         | Deep         | 4.3              | 5.8        | 5.4        |
| <i>Etelis carbunculus</i> (ehu)                         | Deep         | 4.9              | 6.0        | 6.3        |
| <i>Etelis coruscans</i> (onaga)                         | Deep         | 5.1              | 6.7        | 6.1        |
| <i>Pristipomoides auricilla</i> (yellowtail snapper)    | Deep         | 3.9              | 5.5        | 5.2        |
| <i>Pristipomoides filamentosus</i> (opakapaka)          | Deep         | 4.3              | 6.1        | 5.9        |
| <i>Pristipomoides flavipinnis</i> (yelloweye opakapaka) | Deep         | 4.1              | 5.6        | 5.4        |
| <i>Pristipomoides seiboldi</i> (kalekale)               | Deep         | 3.0              | 5.3        | 5.5        |
| <i>Pristipomoides zonatus</i> (gindai)                  | Deep         | 3.9              | 5.8        | 5.6        |
| <i>Aprion virescens</i> (uku)                           | Shallow/Deep | 4.5              | 5.7        | 5.3        |
|                                                         | p            |                  |            |            |
| <i>Caranx ignobilis</i> (giant trevally)                | Shallow      | 4.8              | 5.8        | 5.7        |
| <i>Epinephelus fasciatus</i> (black tip grouper)        | Shallow      | 3.7              | 4.8        | 5.2        |
| <i>Lethrinus amboinensis</i> (ambon emperor)            | Shallow      | 3.4              | 5.2        | 5.0        |
| <i>Lethrinus rubrioperculatus</i> (red gill emperor)    | Shallow      | 4.0              | 5.2        | 3.6        |
| <i>Lutjanus kasmira</i> (blue lined snapper)            | Shallow      | 2.6              | 5.0        | 4.5        |
| <i>Variola louti</i> (lunar tail grouper)               | Shallow      | 4.4              | 5.3        | 5.0        |
| <i>Seriola dumerilii</i> (amberjack)                    | Shallow/Deep | 3.7              | 6.2        | 4.8        |
|                                                         | p            |                  |            |            |
| <b>DIMENSION SCORE</b>                                  |              | <b>4.1</b>       | <b>5.6</b> | <b>5.3</b> |

Expert panel members from the Life History Program of PIFSC (Bob Humphreys, Brett Taylor, and Michael Trianni) provided the productivity scores while bottomfish fishermen were requested to score the susceptibility attributes (Anthony Flores, Jack Villagomez and James Borja).

The working group did not go over the individual scores for each productivity/susceptibility attribute to species combination. The group discussed similarities in the scoring and the rationale behind the scores:

- Rate of population increase – currently the Western Pacific has no information on this attribute hence scored as (5) across all species;
- Estimated total mortality – currently no estimate, scored (5) across the all species;
- Fecundity – all species bear millions of eggs released in the water column hence scored (0) across all species
- Breeding patterns – the species in the complex are all broadcast spawners hence a score of (0);
- Recruitment pattern – currently unknown hence a score of (5);
- Maximum age – utilized information on the Hawaii and Guam samples from the bomb radiocarbon work;
- Maximum size – utilized BioSampling Program data;

- VBGF – score (5) as moderate but some species are unknown which also received a score of (5);
- Mean trophic level – was interpreted as high productivity if planktonic feeder; moderate if an omnivore; and low productivity if a piscivore

Other jurisdictions had similar thinking regarding the scores. The raw scoring of each of the productivity and susceptibility attributes per species can be found in Appendix 1.1 and 1.2.

**5. Public comment** – There was no public comment

**6. Summary of scores and P\* recommendations** – Below are the final point reduction for the Territory Bottomfish P\* Analysis. The P\* Working Group recommended a reduction of risk of overfishing level to 36% for Guam and CNMI and 37% for American Samoa.

| <b>P* DIMENSIONS</b>                      | <b>Am. Samoa</b> | <b>Guam</b> | <b>CNMI</b> |
|-------------------------------------------|------------------|-------------|-------------|
| Dimension 1: Assessment information       | 4                | 3.6         | 3.6         |
| Dimension 2: Uncertainty characterization | 5                | 5           | 5           |
| Dimension 3: Stock status                 | 0                | 0           | 0           |
| Dimension 4: Productivity-Susceptibility  | 4.1              | 5.6         | 5.3         |
| <i>Total risk reduction score</i>         | <i>13.1</i>      | <i>14.2</i> | <i>13.9</i> |
| <b>Risk of overfishing level (P*)</b>     | <b>37</b>        | <b>36</b>   | <b>36</b>   |

The Working Group also recommended some improvements to the P\* Analysis:

- Consider applying a weighting factor for some of the productivity and susceptibility attributes because some may be more important than others or may have more information than others
- Need to further refine the default scoring of (5) to differentiate the actual score of (5) with information versus a (5) if no information. A member recommended (5\*) if there is no information compared to (5) for a moderate productivity attribute
- Some technical corrections were brought up – (1) *Aphareus furca* should be *Aphareus rutilans*; (2) *Seriola dumerilii* and *Aprion virescens* should be both a shallow and deep component while *Variola louti* should be a shallow component not deep

The meeting adjourned at 3:15 PM.

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Polovina, J., and Ralston, S. 1986. An approach to yield assessment for unexploited resources with application to the deep slope fishes of the Marianas. *Fishery Bulletin*, 84(4): 759-770.

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## Appendix C SEEM Working Group report



### **Social, Economic, Ecological, Management Uncertainty (SEEM) Working Group Meeting**

September 25, 2015

1:00 pm to 5:00 p.m.

Council Office – Pelagic Suite Conference Room

Teleconference: 1-888-4823560 (Access Code: 5228220)

**In-person Participants:** Craig Severance (Chair), Justin Hospital (NMFS-PIFSC), Cindy Grace-McCaskey (NMFS-PIFSC), Minling Pan (NMFS-PIFSC)

**On Conference Call / WebEx:** Ariel Jacobs and Sarah Ellgen (NMFS – PIRO SFD) (Observers)

**Council staff:** Christopher Hawkins, Marlowe Sabater

### **DRAFT REPORT**

Friday, September 25, 2015

Meeting Started: 1:10 p.m.

#### **7. Introductions**

Craig Severance opened the meeting and welcomed the working group participants. Participants made the round of introductions. Council staff thanked the working group members for their participation in the ACL specification process for territorial bottomfish.

With the Chair's permission, Christopher Hawkins reviewed the agenda and the purpose of the meeting. He also quoted the SEEM sections of the Council's annual catch limit (ACL) specification process document. Finally, he noted that pre-meeting communication was directed towards the Council's Island Coordinators, the leadership of the Territorial Advisory Panels, and other Council Family – to encourage local participation in this process.

#### **8. Review of the overfishing limit and P\* for Territorial bottomfish fisheries**

Marlowe Sabater described the first stages of the Council's ACL specification process: the Council received a risk of overfishing projection (Yau et al. 2016). The catch associated with 50% risk of overfishing (OFL) is 115,000 lb. (American Samoa), 250,000 lb. (CNMI) and 71,000 lb. (Guam). A scientific uncertainty ("P\*") working group is recommending the Council incorporate additional precaution, beyond the 50% risk of overfishing, to 37% (American Samoa), 36% (CNMI), and 36% (Guam) based on their collective assessment of the four P\* dimensions: assessment information, uncertainty characterization, stock status, productivity-susceptibility.

## **9. Discussion of ACL-relevant social, economic, ecological, and management uncertainty factors in the fisheries**

As described by Christopher Hawkins in pre-meeting communication, and again at the outset of the meeting, the Council created the SEEM process to identify any social, economic, ecological, and management uncertainty factors that may warrant additional precaution (further to precaution levels recommended by the P\* working group), as well as percentages associated with them. The Chair suggested the group discuss and note such issues sequentially by SEEM dimension across all island areas.

### Social

The group agreed that these fisheries are all important to the sociocultural fabric of the islands, but the group could produce few specific reasons or examples that would argue for reducing the allowable harvest. One such example is the fact that these island areas are subject to dynamic natural events, such as hurricanes and tsunamis. These events, which are not rare in the islands, can impact electrical power, bulk goods transport, and other aspects of modern life. If such impacts were to occur, fishing is one of the only immediate ways to obtain fresh food.

### Economic

Bottomfishing does not play a large role in the economies of the island areas. However, the group noted that bottomfish prices are highest among all the local fisheries and a higher percentage of bottomfish are sold (versus retained) than other species. In the CNMI it was noted that bottomfish tend to be more important in some of the smaller islands, such as Tinian and Rota, than on Saipan, and that casino development, which is a real possibility in the next few years, is expected to increase the demand for local fish, especially bottomfish.

### Ecological

The group discussed the shallow-water component of the bottomfish management unit species. Shallow-water bottomfish are often found in mid-level coral reef habitats and some can be considered coral-reef associated species. The group expressed some concern that run-off and other land-based sources of pollution due to development and modification of natural systems and processes is impacting and could further impact shallow-water bottomfish.

The group noted it does not have enough information about the linkages between, or ecological status of, those species that bottomfish eat and what eat them in the island areas to inform any predator-prey concerns or reductions.

### Management Uncertainty

The group was most concerned about issues associated with management of bottomfish. In American Samoa, relatively large amounts of Federal and local funding have recently been allocated and/or distributed for bottomfish fishery development in the territory. Whether these efforts would increase catch, and to what extent, is unknown at this time. Across all of the island areas, there is no real time tracking of catch, as data on catch is typically available six months to one year later and little local capacity to manage and enforce the bottomfish

fisheries. The group felt that these issues, coupled with the long timeframes inherent in the regulatory process, may argue for some additional precaution in terms of setting the ACL.

#### 10. Evaluation of whether reductions to Allowable Biological Catch are warranted

During the meeting, several working group members mentioned the large gap between reported catches and the harvest amount associated with the OFL (for all three areas), as well as the inability of managers to address management uncertainty factors, make it difficult to recommend any additional precaution. However, all agreed that the Council should err on the side of caution, especially since fish are one of the few natural resources available in these island areas.

#### 11. Final Recommendation

The group agreed that rather than score factor by factor, each member should assign one score for each of the SEEM dimensions for each of the territories and that those scores would be averaged. Scores were based on a 0-10 scale, where a 0 score indicated the member felt no reduction was necessary and each number represents a percent. Finally, per the Council's approved ACL specification procedures, the group added the averaged scores to arrive at a recommended reduction percentage (Table 1).

**Table 25. Working Group member scores.**

|      | WG Member      | Social | Economic | Ecological | Management | Sum         |
|------|----------------|--------|----------|------------|------------|-------------|
|      |                |        |          |            |            |             |
| AS   | 1              | 1      | 0        | 0          | 3          |             |
|      | 2              | 0      | 2.5      | 0          | 5          |             |
|      | 3              | 0      | 0        | 0          | 3          |             |
|      | 4              | 0      | 0        | 1          | 2          |             |
|      | 5              | 0      | 0        | 0          | 5          |             |
|      | 6              | 2      | 1        | 1          | 5          |             |
|      | <b>Average</b> | 0.5    | 0.6      | 0.3        | 3.8        | <b>5.3%</b> |
| GU   |                |        |          |            |            |             |
|      | 1              | 1      | 0        | 0          | 3          |             |
|      | 2              | 0      | 2.5      | 0          | 2.5        |             |
|      | 3              | 0      | 0        | 0          | 3          |             |
|      | 4              | 0      | 0        | 3          | 0          |             |
|      | 5              | 0      | 0        | 0          | 5          |             |
|      | 6              | 2      | 2        | 1          | 5          |             |
|      | <b>Average</b> | 0.5    | 0.8      | 0.7        | 3.1        | <b>5.0%</b> |
| CNMI |                |        |          |            |            |             |
|      | 1              | 2      | 0        | 0          | 3          |             |
|      | 2              | 0      | 2.5      | 0          | 2.5        |             |
|      | 3              | 0      | 0        | 0          | 3          |             |
|      | 4              | 0      | 0        | 2          | 0          |             |

|                |   |     |     |     |     |             |
|----------------|---|-----|-----|-----|-----|-------------|
|                | 5 | 0   | 0   | 0   | 10  |             |
|                | 6 | 2   | 3   | 1   | 5   |             |
| <b>Average</b> |   | 0.7 | 0.9 | 0.5 | 3.9 | <b>6.0%</b> |

These numbers are driven largely by working group members' concerns with the management uncertainty factors described above. Table 2 shows the relationship of the SEEM scores to the P\* scores in terms of the total recommended reduction.

**Table 26. Initial overfishing limit (5) and final recommended limit, inclusive of P\* and SEEM recommended reductions.**

|                                                                                   | <b>Am. Samoa</b> | <b>Guam</b> | <b>CNMI</b> |
|-----------------------------------------------------------------------------------|------------------|-------------|-------------|
| Overfishing limit %                                                               | 50%              | 50%         | 50%         |
| Scientific uncertainty (P*) % reduction                                           | 13.1%            | 14.2%       | 13.9%       |
| SEEM % reduction                                                                  | 5.3%             | 5%          | 6%          |
| Combined % reduction from OFL                                                     | 18.4%            | 19.2%       | 19.9%       |
| Risk of overfishing percent associated with total risk reduction from P* and SEEM | 31.6%            | 30.8%       | 30.1%       |

If the Council chooses to accept these recommendations, it may elect to set the ACL directly based on the reductions described in Table 2 (i.e.,  $ACL = OFL - (P^* \text{ reductions} + SEEM \text{ reductions})$ ), or it may elect to set the ACL equal to ABC and use the SEEM reductions as the basis for an annual catch target.

-Meeting adjourned 4:00 p.m.-