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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

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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, or by contacting the responsible official or Council at the above address.

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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[1], 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.

[1] 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[2] (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.

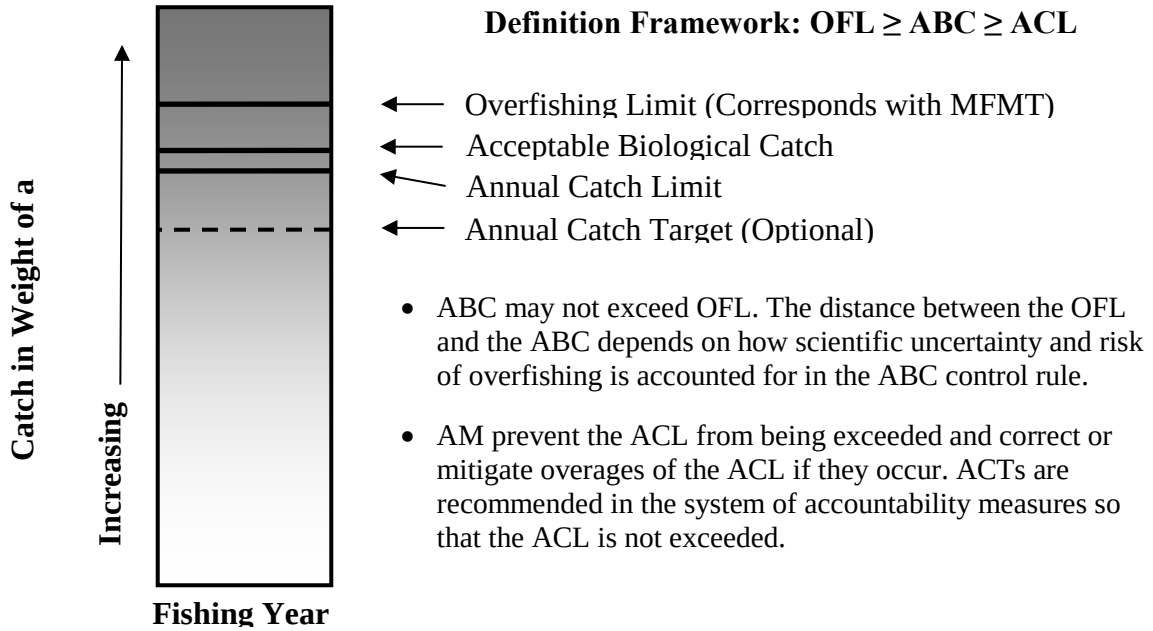

Figure 1. General relationship between OFL, ABC, ACL and ACT

[2] 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[3] 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 164th 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 121st SSC, and the range of ACLs considered in this document. The 121st SSC and the 164th 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

[3] 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 it's recommendations for ABCs at its 121st 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, contains a full report of the 121st SSC and 164th Council deliberations.

The 121st SSC and 164th 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_{MSY}) 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)* 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*B_{MSY}. 0.7* 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 ± 14,060 lb, slightly higher than the previous MSY estimate of 76,200 ± 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

ACL (lb)	% Probability of Overfishing (2016)	% Probability of Overfishing (2017)
50,000	1.0	1
69,000	4.2	5
80,000	7.7	10
87,000	10.9	15
92,000	13.5	20
97,000	16.6	25
101,000	19.3	30
102,000	19.9	31
103,000	20.7	33
104,000	21.5	34
105,000	22.3	35
106,000	22.9	37
107,000	23.7	38
108,000	24.5	40
109,000	25.4	41
110,000	26.1	42
111,000	26.9	44
112,000	27.8	45
113,000	28.6	47
114,000	29.4	48
115,000	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.

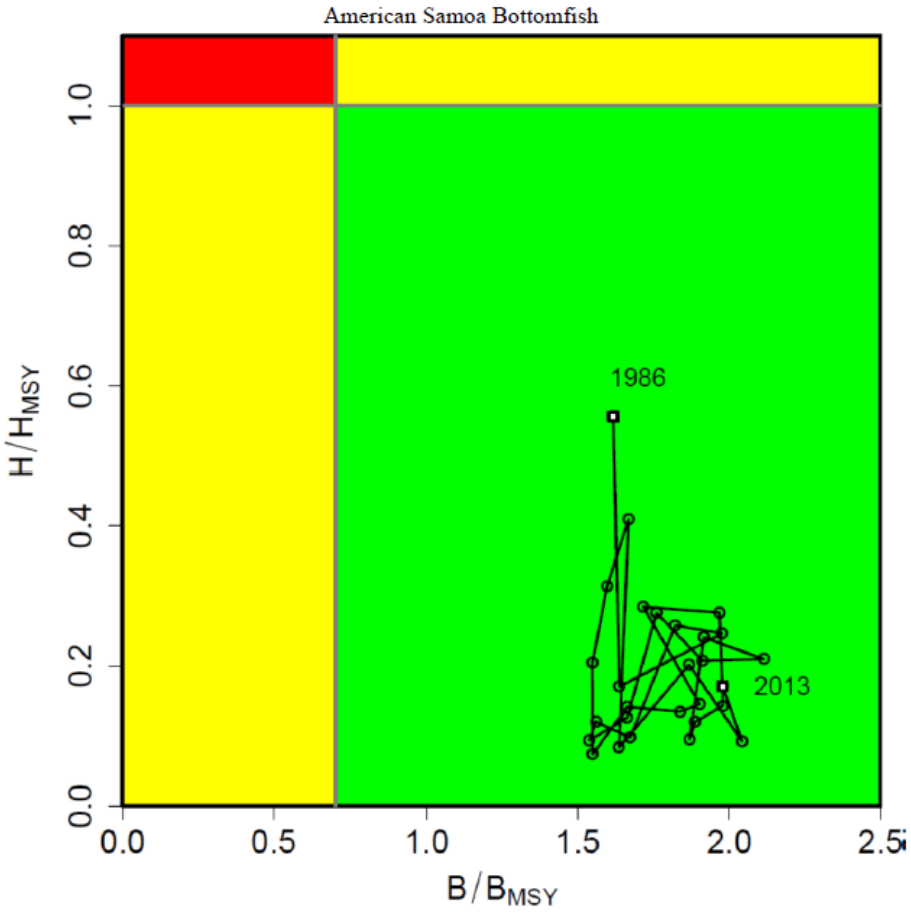

Figure 2. Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for American Samoa, 1986-2013 (Source: Yau et al. 2016, Figure 15)

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.[4] 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 161st 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

[4] 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 164th 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)

Year	Estimated Total Catch (lb)[1]	Estimated Commercial Catch (lb)[2]
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
Ave. Catch 2011-2013	**21,005**	**8,878**

[1]Source: Table 3 in Yau et al. (2016)
[2] 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 ± 7,790 lb, slightly higher than the previous MSY estimate of 55,000 lb ± 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

ACL (lb)	% Probability of Overfishing (2016)	% Probability of Overfishing (2017)
33,000	1.2	1
45,000	5.0	5
51,000	8.9	10
55,000	12.3	15
58,000	15.2	20
61,000	18.6	25
62,000	19.8	26
63,000	21.0	29
64,000	22.3	31
65,000	23.7	33
66,000	25.0	36
67,000	26.4	38
68,000	27.8	41
69,000	29.2	44
70,000	30.7	46
71,000	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.

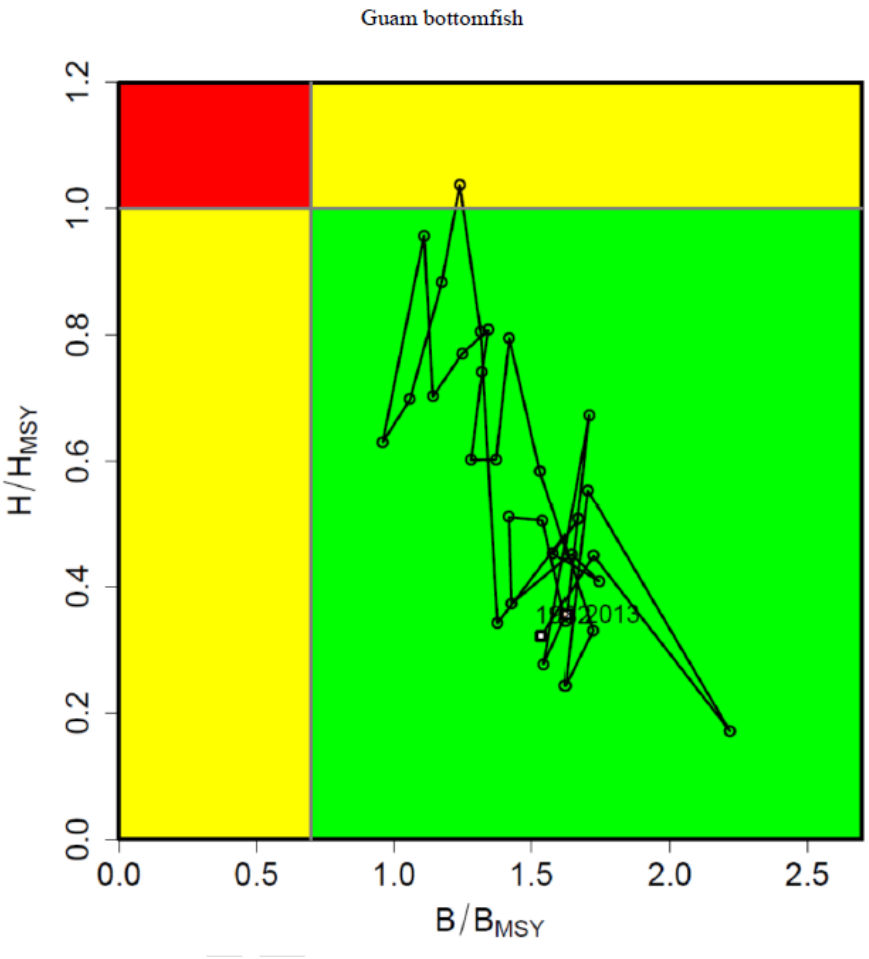

Figure 3. Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for Guam, 1982-2013 (Source: Yau et al. 2016, Figure 21)

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 161st 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)

Year	Estimated Total Catch (lb)[1]	Estimated Commercial Catch (lb)[2]
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
Ave. Catch 2011-2013	**37,183**	**10,292**

[1]Source: Table 3 in Yau et al. (2016).
[2] 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

ACL (lb)	% Probability of Overfishing (2016)	% Probability of Overfishing (2017)
78,000	1.0	1
134,000	4.7	5
162,000	8.5	10
180,000	12.1	15
208,000	18.7	26
212,000	19.7	28
214,000	20.2	29
218,000	21.3	31
220,000	21.9	32
224,000	23.1	34
228,000	24.2	36
230,000	24.9	37
232,000	25.6	38
236,000	26.8	41
240,000	28.1	43
242,000	28.7	45
246,000	30.0	47
248,000	30.6	48
250,000	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.

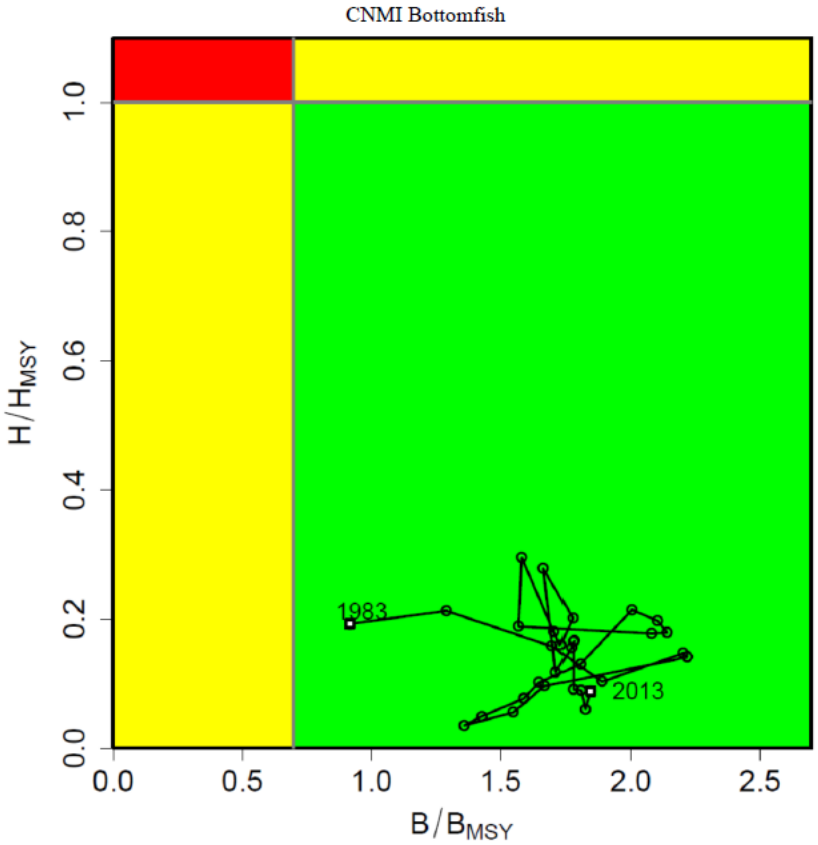

Figure 4. Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for CNMI, 1983-2013 (Source: Yau et al. 2016, Figure 18)

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 161th 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)

Year	Estimated Total Catch (lb)[1]	Estimated Commercial Catch (lb)[2]
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
Ave. Catch 2011-2013	**20,099**	**15,491**

[1]Source: Table 3 in Yau et al. (2016).
[2] 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.

	American Samoa Bottomfish			**Guam Bottomfish**			**CNMI Bottomfish**		
	MSY = 76,740 ± 14,060 lb			***MSY = 56,130 lb ± 7,790 lb***			***MSY = 173,100 lb ± 32,190 lb***		
	Ave. Catch (2011-2013) = 21,005 lb			***Ave. Catch (2011-2013) = 37,183 lb***			***Ave. Catch (2011-2013) = 20,009 lb***		
	ACL (lb)	*Probability of Overfishing in 2016 (%)*	*Probability of Overfishing in 2017 (%)*	***ACL (lb)***	*Probability of Overfishing in 2016 (%)*	*Probability of Overfishing in 2017 (%)*	***ACL (lb)***	*Probability of Overfishing in 2016 (%)*	*Probability of Overfishing in 2017 (%)*
Not Considered in Detail *(Higher than Preferred)*	**110,000**	26.1	42	**67,000**	26.4	38	**236,000**	26.8	41
	111,000	26.9	44	**68,000**	27.8	41	**240,000**	28.1	43
	112,000	27.8	45	**69,000**	29.2	44	**242,000**	28.7	45
	113,000	28.6	47	**70,000**	30.7	46	**246,000**	30	47
	114,000	29.4	48	**71,000**	32.1	49	**248,000**	30.6	48
	115,000	30.2	50				**250,000**	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).

	American Samoa Bottomfish			**Guam Bottomfish**			**CNMI Bottomfish**		
	MSY = 76,740 ± 14,060 lb			***MSY = 56,130 lb ± 7,790 lb***			***MSY = 173,100 lb ± 32,190 lb***		
	Ave. Catch (2011-2013) = 21,005 lb			***Ave. Catch (2011-2013) = 37,183 lb***			***Ave. Catch (2011-2013) = 20,009 lb***		
	ACL (lb)	*Probability of Overfishing in 2016 (%)*	*Probability of Overfishing in 2017 (%)*	***ACL (lb)***	*Probability of Overfishing in 2016 (%)*	*Probability of Overfishing in 2017 (%)*	***ACL (lb)***	*Probability of Overfishing in 2016 (%)*	*Probability of Overfishing in 2017 (%)*
Alternative 1 *(Status Quo)*	**101,000**	19.3	30	**66,800**	Approx. 26	Approx. 38	**228,000**	24.2	36
Alternative 2 (preferred) *ACL=ABC*	**106,000**	22.9	37	**66,000**	25	36	**228,000**	24.2	36
Alternative 3 *(ACL<ABC)*	**102,000**	19.9	31	**64,000**	22.3	31	**216,000**	20.8	30
	103,000	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 crumenopthalmus*); 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, accessed June 29, 2016) lives on Tutuila.

The U.S. EEZ around American Samoa is approximately 156,246 mi^2 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

American Samoa Bottomfish MUS		
Scientific Name	**English Common Name**	**Samoan Name**
Aphareus rutilans	red snapper/silvermouth	palu-gutusiliva
Aprion virescens	gray snapper/jobfish	asoama
Caranx ignobilis	Giant trevally/jack	sapoanae
Caranx lugubris	Black trevally/jack	tafauli
Epinephelus fasciatus	blacktip grouper	fausi
Variola louti	lunartail grouper	papa, velo
Etelis carbunculus	red snapper	palu malau
Etelis coruscans	red snapper	palu-loa
Lethrinus amboinensis	ambon emperor	filoa-gutumumu
Lethrinus rubrioperculatus	redgill emperor	filoa-paomumu
Lutjanus kasmira	blueline snapper	savane
Pristipomoides auricilla	yellowtail snapper	palu-i'usama
Pristipomoides filamentosus	pink snapper	palu-'ena'ena
Pristipomoides flavipinnis	yelloweye snapper	palu-sina
Pristipomoides seiboldii	pink snapper	palu
Pristipomoides zonatus	snapper	palu-ula, palu-sega
Seriola dumerili	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 ± 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 an, 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).

<u>Applicable ESA Coordination – American Samoa Bottomfish Fisheries</u>

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) Central South Pacific DPS	*Chelonia mydas*	Endangered DPS	Frequently seen. Nest at Rose Atoll. Known to migrate to feeding grounds.	No interactions observed or reported.
Hawksbill sea turtle (laumei uga)	*Eretmochelys imbricata*	Endangered	Frequently seen. Nest at Rose Atoll and Swain's Island.	No interactions observed or reported.
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	Very rare in American Samoa. One recovered dead in experimental longline fishing.	No interactions observed or reported.
Olive ridley sea turtle	*Lepidocheylys olivacea*	Threatened	Uncommon in American Samoa. Three sightings.	No interactions observed or reported.
South Pacific Loggerhead sea turtle DPS	*Caretta caretta*	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.

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

Marine mammals known to occur or reasonably expected to occur in waters around American Samoa		
Common Name	**Scientific Name**	**Interactions with the American Samoa bottomfish Fishery**
Humpback whale* (tafola or i`a manu)	*Megaptera novaeangliae*	No interactions observed or reported.
Sperm whale*	*Physeter macrocephalus*	No interactions observed or reported.
Blue whale*	*Balaenoptera musculus*	No interactions observed or reported.
Fin Whale*	*Balaenoptera physalus*	No interactions observed or reported.
Sei whale*	*Balaenoptera borealis*	No interactions observed or reported.
Blainville's beaked whale	*Mesoplodon densirostris*	No interactions observed or reported.
Bottlenose dolphin	*Tursiops truncatus*	No interactions observed or reported.

Marine mammals known to occur or reasonably expected to occur in waters around American Samoa		
Common Name	**Scientific Name**	**Interactions with the American Samoa bottomfish Fishery**
Bryde's whale	*Balaenoptera edeni*	No interactions observed or reported.
Common dolphin	*Delphinus delphis*	No interactions observed or reported.
Cuvier's beaked whale	*Ziphius cavirostris*	No interactions observed or reported.
Dwarf sperm whale	*Kogia sima*	No interactions observed or reported.
False killer whale	*Pseudorca crassidens*	No interactions observed or reported.
Fraser's dolphin	*Lagenodelphis hosei*	No interactions observed or reported.
Killer whale	*Orcinus orca*	No interactions observed or reported.
Melon-headed whale	*Peponocephala electra*	No interactions observed or reported.
Minke whale	*Balaenoptera acutorostrata*	No interactions observed or reported.
Pygmy killer whale	*Feresa attenuata*	No interactions observed or reported.
Pygmy sperm whale	*Kogia breviceps*	No interactions observed or reported.
Risso's dolphin	*Grampus griseus*	No interactions observed or reported.
Rough-toothed dolphin	*Steno bredanensis*	No interactions observed or reported.
Short-finned pilot whale	*Globicephala macrorhynchus*	No interactions observed or reported.
Spinner dolphin	*Stenella longirostris*	No interactions observed or reported.
Spotted dolphin (Pantropical spotted dolphin)	*Stenella attenuata*	No interactions observed or reported.
Striped dolphin	*Stenella coeruleoalba*	No interactions observed or reported.
Longman's beaked whale	*Indopacetus pacificus*	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

Samoan name	English name	Scientific name
Residents (i.e., breeding)		
ta'i'o	Wedge-tailed shearwater	*Puffinus pacificus*
ta'i'o	Audubon's shearwater	*Puffinus lherminieri*
ta'i'o	Christmas shearwater	*Puffinus nativitatis*
ta'i'o	Tahiti petrel	*Pterodroma rostrata*
ta'i'o	Herald petrel	*Pterodroma heraldica*
ta'i'o	Collared petrel	*Pterodroma brevipes*
fua'o	Red-footed booby	*Sula*
fua'o	Brown booby	*Sula leucogaster*
fua'o	Masked booby	*Sula dactylatra*
tava'esina	White-tailed tropicbird	*Phaethon lepturus*
tava'e'ula	Red-tailed tropicbird	*Phaethon rubricauda*
atafa	Great frigatebird	*Fregata minor*
atafa	Lesser frigatebird	*Fregata ariel*
gogouli	Sooty tern	*Onychoprion fuscatus*
gogo	Brown noddy	*Anous stolidus*
gogo	Black noddy	*Anous minutus*
laia	Blue-gray noddy	*Procelsterna cerulea*
manu sina	Common fairy-tern (white tern)	*Gygis alba*
Visitors/vagrants/accidental visitors:		
ta'i'o	Short-tailed shearwater	*Puffinus tenuirostris*
ta'i'o	Newell's shearwater (ESA threatened)	*Puffinus auricularis newelli*
ta'i'o	Mottled petrel	*Pterodroma inexpectata*
ta'i'o	Phoenix petrel	*Pterodroma alba*
ta'i'o	White-bellied storm petrel	*Fregetta grallaria*
ta'i'o	Polynesian storm petrel	*Nesofregetta fuliginosa*
-----	Laughing gull	*Larus atricilla*
gogosina	Black-naped tern	*Sterna sumatrana*

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	*Acropora globiceps*	Threatened	Present	No interactions observed or reported
None	*A. jacquelineae*	Threatened	Present	No interactions observed or reported
None	*A. retusa*	Threatened	Present	No interactions observed or reported
None	*A. speciosa*	Threatened	Present	No interactions observed or reported
None	*Euphyllia paradivisa*	Threatened	Present	No interactions observed or reported
None	*Isopora crateriformis*	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^2) 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^2). 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^2 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)

Mariana Bottomfish MUS (Guam)		
Scientific Name	**English Common Name**	**Local Name Chamorro/Carolinian**
Aphareus rutilans	red snapper/ silvermouth	lehi/maroobw
Aprion virescens	gray snapper/jobfish	gogunafon/aiwe
Caranx ignobilis	giant trevally/jack	tarakitu/etam
C. lugubris	black trevally/jack	tarakiton attelong/orong
Epinephelus fasciatus	blacktip grouper	gadao/meteyil
Variola louti	lunartail grouper	bueli/bwele
Etelis carbunculus	red snapper/ehu	buninas agaga/falaghal moroobw
Etelis coruscans	red snapper/onaga	buninas/taighulupegh
Lethrinus rubrioperculatus	redgill emperor	mafuti atigh
Lethrinus amboinensis	ambon emperor	mafuti/loot
Lutjanus kasmira	blueline snapper	funai/saas
Pristipomoides auricilla	yellowtail snapper	buninas/falaghal-maroobw
Pristipomoides filamentosus	pink snapper/ opakapaka	buninas/falaghal-maroobw
Pristipomoides flavipinnis	yelloweye snapper/ yelloweye okpakapaka	buninas/falaghal-maroobw
Pristipomoides seiboldi	pink snapper/kalekale	N/A
Pristipomoides zonatus	Snapper/gindai	buninas rayao amiriyu/falaghal-maroobw
Seriola dumerili	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, Tibbats 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).

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 Haggan Betde Central West Pacific DPS	*Chelonia mydas*	Endangered 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 Haggan Karai	*Eretmochelys imbricata*	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	*Dermochelys coriacea*	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	*Lepidochelys olivacea*	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.

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)

Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)		
Common Name	**Scientific Name**	**Interactions with the Guam Bottomfish Fishery**
Humpback whale*	*Megaptera novaeangliae*	No interactions observed or reported.
Sperm whale*	*Physeter macrocephalus*	No interactions observed or reported.
Sei whale*	*Balaenoptera borealis*	No interactions observed or reported.
Fin whale*	*Balaenoptera physalus*	No interactions observed or reported.
Blue whale*	*Balaenoptera musculus*	No interactions observed or reported.
Blainville's beaked whale	*Mesoplodon densirostris*	No interactions observed or reported.
Bottlenose dolphin	*Tursiops truncatus*	No interactions observed or reported.
Bryde's whale	*Balaenoptera edeni*	No interactions observed or reported.
Common dolphin	*Delphinus delphis*	No interactions observed or reported.
Cuvier's beaked whale	*Ziphius cavirostris*	No interactions observed or reported.
Dwarf sperm whale	*Kogia sima*	No interactions observed or reported.
Dugong*	*Dugong dugong*	No interactions observed or reported.
False killer whale	*Pseudorca crassidens*	No interactions observed or reported.
Fraser's dolphin	*Lagenodelphis hosei*	No interactions observed or reported.
Killer whale	*Orcinus orca*	No interactions observed or reported.
Longman's beaked whale	*Indopacetus pacificus*	No interactions observed or reported.
Melon-headed whale	*Peponocephala electra*	No interactions observed or reported.
Minke whale	*Balaenoptera acutorostrata*	No interactions observed or reported.
Pygmy killer whale	*Feresa attenuata*	No interactions observed or reported.

Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)		
Common Name	**Scientific Name**	**Interactions with the Guam Bottomfish Fishery**
Pygmy sperm whale	*Kogia breviceps*	No interactions observed or reported.
Risso's dolphin	*Grampus griseus*	No interactions observed or reported.
Rough-toothed dolphin	*Steno bredanensis*	No interactions observed or reported.
Short-finned pilot whale	*Globicephala macrorhynchus*	No interactions observed or reported.
Sperm whale	*Physeter macrocephalus*	No interactions observed or reported.
Spinner dolphin	*Stenella longirostris*	No interactions observed or reported.
Spotted dolphin	*Stenella attenuata*	No interactions observed or reported.
Striped dolphin	*Stenella coeruleoalba*	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 (S*ula 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	*Puffinus newelli (ESA: Threatened)*
Vr	Wedge-tailed shearwater	*Puffinus pacificus*
V	Audubon's shearwater	*Puffinus lherminieri*
Vc	Short-tailed shearwater	*Puffinus tenuirostris (common visitor)*
V	Leach's storm-petrel	*Oceanodroma leucorhoa*
Vr	Matsudaira's storm-petrel	*Oceanodroma matsudairae*
Vr	Red-footed booby	*Sula sula*
Vr	Brown booby	*Sula leucogaster*
V	Masked booby	*Sula dactylatra*
Vr	White-tailed tropicbird	*Phaethon lepturus*
Vr	Red-tailed tropicbird	*Phaethon rubricauda*
Vr	Great frigatebird	*Fregata minor*
Vr	Sooty tern	*Sterna fuscata*
R	Brown noddy	*Anous stolidus*
V	Black noddy	*Anous minutus*
R	White tern / Common fairy-tern	*Gygis alba*

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	*Acropora globiceps*	Threatened	Present	No interactions observed or reported
None	*A. retusa*	Threatened	Present	No interactions observed or reported
None	*Seriatopora aculeata*	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 NMFSs proposed rulemaking stage.

3.3 CNMI Bottomfish Fishery, Marine Resources and Potential Effects

The Mariana Archipelago (approximately 396 mi^2 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^2 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^2, 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)

Mariana Bottomfish MUS (CNMI)		
Scientific Name	**English Common Name**	**Local Name Chamorro/Carolinian**
Aphareus rutilans	red snapper/ silvermouth	lehi/maroobw
Aprion virescens	gray snapper/jobfish	gogunafon/aiwe
Caranx ignobilis	giant trevally/jack	tarakitu/etam
C. lugubris	black trevally/jack	tarakiton attelong/orong
Epinephelus fasciatus	blacktip grouper	gadao/meteyil
Variola louti	lunartail grouper	bueli/bwele
Etelis carbunculus	red snapper/Ehu	buninas agaga/falaghal moroobw
Etelis coruscans	red snapper/Onaga	buninas/taighulupegh
Lethrinus rubrioperculatus	redgill emperor	mafuti atigh
Lethrinus amboinensis	ambon emperor	mafuti/loot
Lutjanus kasmira	blueline snapper	funai/saas
Pristipomoides auricilla	yellowtail snapper	buninas/falaghal-maroobw
Pristipomoides filamentosus	pink snapper/ opakapaka	buninas/falaghal-maroobw
Pristipomoides flavipinnis	yelloweye snapper/ yelloweye okpakapaka	buninas/falaghal-maroobw
Pristipomoides seiboldi	pink snapper/kalekale	N/A
Pristipomoides zonatus	Snapper/gindai	buninas rayao amiriyu/falaghal-maroobw
Seriola dumerili	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).

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)

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**
Listed Sea Turtles				
Green sea turtle Central West Pacific DPS	*Chelonia mydas*	Endangered 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	*Eretmochelys imbricata*	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	*Dermochelys coriacea*	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	*Lepidochelys olivacea*	Threatened	Range across Pacific: Not confirmed in the Mariana Archipelago	No interactions observed or reported.
North Pacific loggerhead sea turtle DPS	*Caretta caretta*	Endangered DPS	No known reports of loggerhead turtles in waters around the Mariana Archipelago.	No interactions observed or reported.
Listed Marine Mammals				
Blue whale	*Balaenoptera musculus*	Endangered	Extremely rare	No interactions observed or reported.
Fin whale	*Balaenoptera physalus*	Endangered	Infrequent sightings.	No interactions observed or reported.
Humpback whale	*Megaptera novaeangliae*	Endangered	Infrequent sightings. Winter in the CNMI.	No interactions observed or reported.
Sei whale	*Balaenoptera borealis*	Endangered	Infrequent sightings.	No interactions observed or reported.
Sperm whale	*Physeter macrocephalus*	Endangered	Regularly sighted; most abundant large cetaceans in the region.	No interactions observed or reported.
Listed Sea Birds				
Newell's Shearwater	*Puffinus newelli*	Threatened	Rare visitor	No interactions observed or reported.
Listed Sharks				

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	*Sphyrna lewini*	Threatened DPS	Common	No interactions observed or reported
Listed Corals				
None	*Acropora globiceps*	Threatened		No interactions observed or reported
None	*Seriatopora aculeata*	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.

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)

Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)		
Common Name	**Scientific Name**	**Interactions with the Guam Bottomfish Fishery**
Humpback whale*	*Megaptera novaeangliae*	No interactions observed or reported.
Sperm whale*	*Physeter macrocephalus*	No interactions observed or reported.
Sei whale*	*Balaenoptera borealis*	No interactions observed or reported.
Fin whale*	*Balaenoptera physalus*	No interactions observed or reported.
Blue whale*	*Balaenoptera musculus*	No interactions observed or reported.
Blainville's beaked whale	*Mesoplodon densirostris*	No interactions observed or reported.
Bottlenose dolphin	*Tursiops truncatus*	No interactions observed or reported.
Bryde's whale	*Balaenoptera edeni*	No interactions observed or reported.

Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)		
Common Name	**Scientific Name**	**Interactions with the Guam Bottomfish Fishery**
Common dolphin	*Delphinus delphis*	No interactions observed or reported.
Cuvier's beaked whale	*Ziphius cavirostris*	No interactions observed or reported.
Dwarf sperm whale	*Kogia sima*	No interactions observed or reported.
False killer whale	*Pseudorca crassidens*	No interactions observed or reported.
Fraser's dolphin	*Lagenodelphis hosei*	No interactions observed or reported.
Killer whale	*Orcinus orca*	No interactions observed or reported.
Longman's beaked whale	*Indopacetus pacificus*	No interactions observed or reported.
Melon-headed whale	*Peponocephala electra*	No interactions observed or reported.
Minke whale	*Balaenoptera acutorostrata*	No interactions observed or reported.
Pygmy killer whale	*Feresa attenuata*	No interactions observed or reported.
Pygmy sperm whale	*Kogia breviceps*	No interactions observed or reported.
Risso's dolphin	*Grampus griseus*	No interactions observed or reported.
Rough-toothed dolphin	*Steno bredanensis*	No interactions observed or reported.
Short-finned pilot whale	*Globicephala macrorhynchus*	No interactions observed or reported.
Sperm whale	*Physeter macrocephalus*	No interactions observed or reported.
Spinner dolphin	*Stenella longirostris*	No interactions observed or reported.
Spotted dolphin	*Stenella attenuata*	No interactions observed or reported.
Striped dolphin	*Stenella coeruleoalba*	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 (S*ula 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)		
	Common name	***Scientific name***
Vr	Newell's shearwater	*Puffinus newelli (ESA: Threatened) rare visitor*
R	Wedge-tailed shearwater	*Puffinus pacificus*
V	Audubon's shearwater	*Puffinus lherminieri*
Vc	Short-tailed shearwater	*Puffinus tenuirostris (common visitor)*
V	Leach's storm-petrel	*Oceanodroma leucorhoa*
V	Matsudaira's storm-petrel	*Oceanodroma matsudairae*
V	Red-footed booby	*Sula sula*
R	Brown booby	*Sula leucogaster*
R	Masked booby	*Sula dactylatra*
R	White-tailed tropicbird	*Phaethon lepturus*
R	Red-tailed tropicbird	*Phaethon rubricauda*
R	Great frigatebird	*Fregata minor*
R	Sooty tern	*Sterna fuscata*
R	Brown noddy	*Anous stolidus*
R	Black noddy	*Anous minutus*
R	White tern / Common fairy-tern	*Gygis alba*

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

MUS	Species Complex	EFH	HAPC
Bottomfish MUS	**American Samoa, Guam and CNMI bottomfish species:** lehi (*Aphareus rutilans*) uku (*Aprion virescens*), giant trevally (*Caranx ignoblis*), black trevally (*Caranx lugubris*), blacktip grouper *(Epinephelus fasciatus)*, Lunartail grouper *(Variola louti)*, ehu (*Etelis carbunculus*), onaga (*Etelis coruscans*), ambon emperor *(Lethrinus amboinensis)*, redgill emperor *(Lethrinus rubrioperculatus)*, taape (*Lutjanus kasmira*), yellowtail kalekale (*Pristipomoides auricilla*), opakapaka (*P. filamentosus*), yelloweye snapper (*P. flavipinnis*), kalekale (*P. sieboldii*), gindai (*P. zonatus*), and amberjack (*Seriola dumerili*).	**Eggs and larvae:** the water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm). **Juvenile/adults:** 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)
Crustaceans MUS	**Spiny and slipper lobster complex (all FEP areas):** spiny lobster (*Panulirus marginatus*), spiny lobster (*P. penicillatus, P.* spp.), ridgeback slipper lobster (*Scyllarides haanii*), Chinese slipper lobster (*Parribacus antarcticus*) **Kona crab (all FEP areas):** Kona crab (*Ranina ranina*)	**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) **Juvenile/adults:** 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
Crustaceans MUS	**Deepwater shrimp (all FEP areas):** (*Heterocarpus* spp.)	**Eggs and larvae:** the water column and associated outer reef slopes between 550 and 700 m **Juvenile/adults:** the outer reef slopes at depths between 300-700 m	No HAPC designated for deepwater shrimp

MUS	Species Complex	EFH	HAPC
Coral Reef Ecosystem MUS	**Coral Reef Ecosystem MUS (all FEP areas)**	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

<u>Ecosystem Component Species Amendment</u>

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 164th 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

Fishery	Consultation	NMFS Determination
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	

Fishery	Consultation	NMFS Determination
	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.

5 References

Berger, G.M., J. Gourley, and G. Schroer. 2005. Comprehensive Wildlife Conservation Strategy for the CNMI. 390 pp.

Brodziak, J., J. O'Malley, B. Richards, and G. DiNardo. 2012. Stock Assessment Update of the Status of Bottomfish Resources of American Samoa, the Commonwealth of the Northern Mariana Islands and Guam, 2010. National Marine Fisheries Service Pacific Islands Fisheries Science Center, Internal Report IR-12-022. Honolulu, 126 pp.

Buddemeier, R.W., J.A. Kleypas, and R.B. Aronson. 2004. Coral Reefs and Global Climate Change: Potential Contributions of Climate Change to Stresses on Coral Reef Ecosystems. Pew Center on Global Climate Change, Arlington, VA. 56 pp.

Caldeira, K. and M.E. Wickett. 2005. Ocean model predictions of chemistry changes from carbon dioxide emissions to the atmosphere and ocean. Journal of Geophysical Research, 110 (C09S04).

Carroll, B., D. Fenner, N. TuiSamoa, T. Aitaoto, and D. Ochavillo. 2012. Chapter 1: American Samoa Fishery Ecosystem Report. *In: WPRFMC 2012*. Archipelagic Fishery Ecosystem Annual Report. Sabater, M. (Ed.) Western Pacific Regional Fishery Management Council. Honolulu, HI.

Craig, P., G. Dinonato, D. Fenner, and C. Hawkins. 2005. The state of coral reef ecosystems in American Samoa. *In:* J. Waddell (Ed), The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005. NOAA Tech. Memo. NOS NCC11.

Doney, S.C. 2006. The dangers of ocean acidification. Scientific American, 294(3), 58-65.

Eldredge, L.G. 2003. The marine reptiles and mammals of Guam. Micronesica, 35-36: 653-60.

Grant, G.S., P.W. Trail, and R.B. Clapp. 1994. First specimens of Sooty Shearwater, Newell's Shearwater, and White-faced Storm Petrel from American Samoa. Notornis, 41: 215-217.

Guam Division of Aquatic and Wildlife Resources (DAWR). 2005. Guam Comprehensive Wildlife Conservation Strategy.

Guam Division of Aquatic and Wildlife Resources (DAWR). 2009. Final Annual Progress Report for the Guam Sea Turtle Recovery Project. Award Period 8/1/2006 – 7/31/2008. NOAA Fisheries Grant number NA06NMF4540214. 25 pp.

Hospital, J. and C. Beavers. 2012. Economic and Social Characteristics of Guam's Small Boat Fisheries. Pacific Islands Fisheries Science Center. Administrative Report H-12-06. 59 pp.

Houghton, J.T., Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, and D. Xiaosu (Eds.) 2001. IPCC Third Assessment Report: Climate Change 2001: The Scientific Basis. Cambridge University Press, Cambridge, UK, 944 pp. [http://www.grida.no/climate/ipcc_tar/wg1/index.htm] [Also see: Summary for Policymakers and Technical Summary, 98 pp.]

Intergovernmental Panel on Climate Change (IPCC). 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (Eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Department of Defense (DOD), US. 2010. Final Environmental Impact Statement for Guam and Commonwealth of the Northern Mariana Islands Military Relocation Released. News Release, Office of the Assistant Secretary of Defense (Public Affairs), 29 July."

Kawamoto, K. and K. Sender. 2015. Assessment of Fishing Activities by Non-longline Federal Permit Holders in the U.S. Exclusive Economic Zone around the U.S. Pacific Islands. Pacific Islands Fisheries Science Center Internal Report IR-15-012. 14pp.

Kelley, C. and W. Ikehara. 2006. The impacts of bottomfishing on Raita and West St. Rogatien Banks in the Northwestern Hawaiian Islands. *Atoll Research Bulletin* 543:305-317.

Kleypas, J.A., R.A. Feely, V.J. Fabry, C. Langdon, C.L. Sabine, and L.L. Robbins, 2006: *Impacts of Ocean Acidification on Coral Reefs and Other Marine Calcifiers: a Guide for Future Research*. Workshop Report, National Science Foundation, National Oceanic and Atmospheric Administration, and the U.S. Geological Survey.

Kolinski, S.P., D.M. Parker, L.I. Ilo, and J.K. Ruak. 2001. An assessment of the sea turtles and their marine and terrestrial habitats at Saipan, Commonwealth of the Northern Mariana Islands. Micronesica, 34(1): 55–72.

Maison, K.A., Kinan-Kelly, I. and K.P. Frutchey. 2010. Green Turtle Nesting Sites and Sea Turtle Legislation throughout Oceania. U.S. Dep. Commerce, NOAA Technical Memorandum. NMFS-F/SPO-110, 52 pp.

NMFS. 2001. Final Environmental Impact Statement for the Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region.

NMFS. 2009. ESA – Section 7 Consultation. Biological Opinion. Continued authorization of pelagic troll and handline fisheries, as managed under the fishery management plan for pelagic fisheries of the western Pacific region. NMFS, Pacific Islands Region, Protected Resources Division. 31 pp.

NMFS. 2015. Biological Evaluation. Potential Impacts of American Samoa Coral Reef, Bottomfish, Crustacean, and Precious Coral Fisheries on Reef-Building Corals and Indo-West Pacific Scalloped Hammerhead Shark Distinct Population Segment. NMFS, Pacicfic Islands Region, Sustainable Fisheries Division. 33 pp.

Randall, R.H., R.T. Tsuda, R.S. Jones, M.J. Gawel, J.A. Chase, and R. Rechebei. 1975. Marine Biological Survey of the Cocos Barrier Reefs and Enclosed Lagoon. University of Guam Marine Laboratory Technical Report 17. 160 pp.

Seminoff, J.A., C.D. Allen, G.H. Balazs, P.H. Dutton, T. Eguchi, H.L. Haas, S.A. Hargrove, M.P. Jensen, D.L. Klemm, A.M. Lauritsen, S.L. MacPherson, P. Opay, E.E. Possardt, S.L. Pultz, E.E. Seney, K.S. Van Houtan, R.S. Waples. 2015. Status Review of the Green Turtle (Chelonia mydas) Under the U.S. Endangered Species Act. NOAA Technical Memorandum, NOAA-NMFS-SWFSC-539. 571pp.

Starmer, J., C. Bearden, R. Brainard, T. de Cruz, R. Hoeke, P. Houk, S. Holzwarth, S. Kolinski, J. Miller, R. Schroeder, M. Timmers, M. Trianni, and P. Vroom. 2005. The state of coral reef ecosystems of the Commonwealth of the Northern Mariana Islands. *In:* J. Waddell (Ed), The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005. NOAA Tech. Memo. NOS NCC11.

The Royal Society. 2005: Ocean Acidification Due to Increasing Atmospheric Carbon Dioxide. The Royal Society, London, 60 pp.

Tibbats, B. and T. Flores. 2012. Chapter 2: Guam Fishery Ecosystem Report. *In*: WPRFMC 2012. Archipelagic Fishery Ecosystem Annual Report. Sabater, M. (Ed.). Western Pacific Fishery Management Council. Honolulu, HI.

Wiles, G.J. 2003. A checklist of birds recorded in Guam's marine habitats. *Micronesica* 35–36: 665–679.

WPFMC. 2009a. Fishery Ecosystem Plan for the American Samoa Archipelago. Honolulu, HI. September 24, 2009.

WPFMC. 2009b. Fishery Ecosystem Plan for the Mariana Archipelago. Honolulu, Hawaii. September 24, 2009.

WPFMC. 2009c. Fishery Ecosystem Plan for the Hawaii Archipelago. Honolulu, Hawaii. September 24, 2009.

WPFMC 2011. Mariana Archipelago Fishery Ecosystem Plan 2009 Annual Report. Honolulu, HI. April 2011.

WPFMC and NMFS. 2003. Amendment 11 to the Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region. Measure to limit pelagic longline fishing effort in the exclusive economic zone around American Samoa. Honolulu, HI. December 1, 2003.

Yau A., M. Nadon, B. Richards, J. Brodziak and E. Fletcher. 2016. Stock Assessment Updates of the Bottomfish Management Unit Species of American Samoa, the Commonwealth of the Northern Mariana Islands, and Guam in 2015 Using Data Through 2013. U.S. Dept. of Commerce, NOAA Technical Memorandum, NMFS-PIFSC-51, 54 p. doi:10.7289/V5PR7T0G.

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

Catch (lbs) of American Samoa bottomfish in 2016 and 2017	Risk of overfishing (H>HMSY) in 2016	Risk of overfishing (H>HMSY) in 2017	Harvest rate in 2016	Relative biomass (B/BMSY) in 2017	Risk of being overfished (B<0.7*BMSY) in 2017
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

Catch (lbs) of CNMI bottomfish in 2016 and 2017	Risk of overfishing (H>HMSY) in 2016	Risk of overfishing (H>HMSY) in 2017	Harvest rate in 2016	Relative biomass (B/BMSY) in 2017	Risk of being overfished (B<0.7*BMSY) in 2017
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

Catch (lbs) of Guam bottomfish in 2016 and 2017	Risk of overfishing (H>HMSY) in 2016	Risk of overfishing (H>HMSY) in 2017	Harvest rate in 2016	Relative biomass (B/BMSY) in 2017	Risk of being overfished (B<0.7*BMSY) in 2017
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 121th SSC Determination of Risk of Overfishing of Territorial Bottomfish

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

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 163rd 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 163rd 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 120th 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 121st 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.

Quantitative assessment provides estimates of exploitation and B; includes MSY-derived benchmarks; no spatially-explicit information	**AS**	**GU**	**CNMI**
Reliable catch history - whether there is a good estimate of total catch which includes non-commercial/recreational catch	1	0.5	0.5
Standardized CPUE - if the CPUE has been standardized to control for effects other than abundance fluctuations	1	1	1
Species-specific data - whether data for individual species has been incorporated in the model	1	1	1
All sources of mortality accounted for – (whether?) if ALL types of mortality like discards, bycatch, natural, fishing etc. are considered in the model	1	0.5	0.5
Fishery independent survey – whether (an) independent estimate of abundance has been considered in the assessment	1	0.5	0.5
Tagging data – (whether?) movement information, spatial distribution patterns, population estimation from mark-recapture has been considered in the assessment	1	1	1
Spatial analysis - whether area specific information e.g., spatially explicit CPUE information was considered in the assessment	1	1	1
Total Assessment Aspect Score	**7**	**4**	**4**
DIMENSION SCORE EQUIVALENT	**4.0**	**3.6**	**3.6**

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)			
DIMENSION SCORE	**5**	**5**	**5**

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 ≥ MSST, F ≤ MFMT			
Stock is not overfished, overfishing is occurring (6)	Stock > MSST, F > MFMT			
Stock is overfished, overfishing is not occurring (8)	Stock < MSST, F ≤ MFMT			
Stock is overfished, overfishing is occurring (10)	Stock < MSST, F > MFMT			
	DIMENSION SCORE	**0**	**0**	**0**

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
Caranx lugubris (black trevally)	Deep	4.2	5.7	4.9
Aphareus rutilans (lehi)	Deep	4.3	5.8	5.4
Etelis carbunculus (ehu)	Deep	4.9	6.0	6.3
Etelis coruscans (onaga)	Deep	5.1	6.7	6.1
Pristipomoides auricilla (yellowtail snapper)	Deep	3.9	5.5	5.2
Pristipomoides filamentosus (opakapaka)	Deep	4.3	6.1	5.9
Pristipomoides flavipinnis (yelloweye opakapaka)	Deep	4.1	5.6	5.4
Pristipomoides seiboldi (kalekale)	Deep	3.0	5.3	5.5
Pristipomoides zonatus (gindai)	Deep	3.9	5.8	5.6
Aprion virescens (uku)	Shallow/Deep	4.5	5.7	5.3
Caranx ignobilis (giant trevally)	Shallow	4.8	5.8	5.7
Epinephelus fasciatus (black tip grouper)	Shallow	3.7	4.8	5.2
Lethrinus amboinensis (ambon emperor)	Shallow	3.4	5.2	5.0
Lethrinus rubrioperculatus (red gill emperor)	Shallow	4.0	5.2	3.6
Lutjanus kasmira (blue lined snapper)	Shallow	2.6	5.0	4.5
Variola louti (lunar tail grouper)	Shallow	4.4	5.3	5.0
Seriola dumerilii (amberjack)	Shallow/Deep	3.7	6.2	4.8
DIMENSION SCORE		**4.1**	**5.6**	**5.3**

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.

P* DIMENSIONS	**Am. Samoa**	**Guam**	**CNMI**
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
Total risk reduction score	*13.1*	*14.2*	*13.9*
Risk of overfishing level (P*)	**37**	**36**	**36**

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.

REFERENCES

Brodziak, J., J. O'Malley, B. Richards, and G. DiNardo. 2012. Stock assessment update of the status of the bottomfish resources of American Samoa, the Commonwealth of the Northern Mariana Islands, and Guam, 2012. Pacific Islands Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96822-2396. Pacific Islands Fish. Sci. Cent. Admin. Rep. H-12-04, 124 p.

Moffitt, R., and R. Humphreys. 2009. Unit 17 - Western Pacific Bottomfish and Groundfish Fisheries. p. 231-236 in DOC, NOAA, NMFS Our Living Oceans – Report on the Status of U.S. Living Marine Resources, 6th edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFSF/SPO-80, 369 p.

Patrick, W. S., Spencer, P., Ormseth, O. A., Cope, J. M., Field, J. C., Kobayashi, D. R., Gedamke, T., Cortes, E., Bigelow, K., Overholtz, O., Link, J., & Lawson, P. (2009). Use of productivity and susceptibility indices to determine stock vulnerability, with example applications to six US fisheries. US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. NOAA Technical Memorandum NMFS-F/SPO-101, p. 90

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.

Yau A, Nadon M, Richards B, Brodziak J, and E. Fletcher. 2016. Stock assessment updates of the Bottomfish Management Unit species of American Samoa, the Commonwealth of the Northern Mariana Islands, and Guam in 2015 using data through 2013. U.S. Dept. of Commerce, NOAA Technical Memorandum, NMFS-PIFSC-51, 54 p. doi:10.7289/V5PR7T0G.

Appendix C SEEM Working Group report

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

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	
	Average	0.5	0.6	0.3	3.8	**5.3%**

	WG Member	Social	Economic	Ecological	Management	Sum
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	
	Average	0.5	0.8	0.7	3.1	**5.0%**

	WG Member	Social	Economic	Ecological	Management	Sum
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	
Average		0.7	0.9	0.5	3.9	**6.0%**

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.

	Am. Samoa	**Guam**	**CNMI**
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* reductions + SEEM 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.-