



MARINE CONSERVATION PLAN

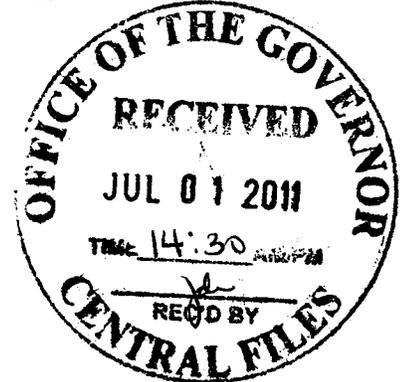
Government of Guam
2011

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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JUN 28 2011



The Honorable Eddie Baza Calvo
Governor of the Territory of Guam
Ricardo J. Bordallo Governor's Complex
Adelup, Guam 96910

Dear Governor Calvo:

I am pleased to inform you that the Marine Conservation Plan (MCP) for Guam, transmitted to the National Marine Fisheries Service on June 20, 2011, has been approved for the three-year period from June 28, 2011, through, June 27, 2014.

An announcement of the approved MCP (RIN 0648-XA520) will be published in the *Federal Register*.

Sincerely,

Michael D. Tosatto
Regional Administrator

cc: Mariquita Taitague, Guam Department of Agriculture
Kitty Simonds, WPFMC

CFI-0711-03485



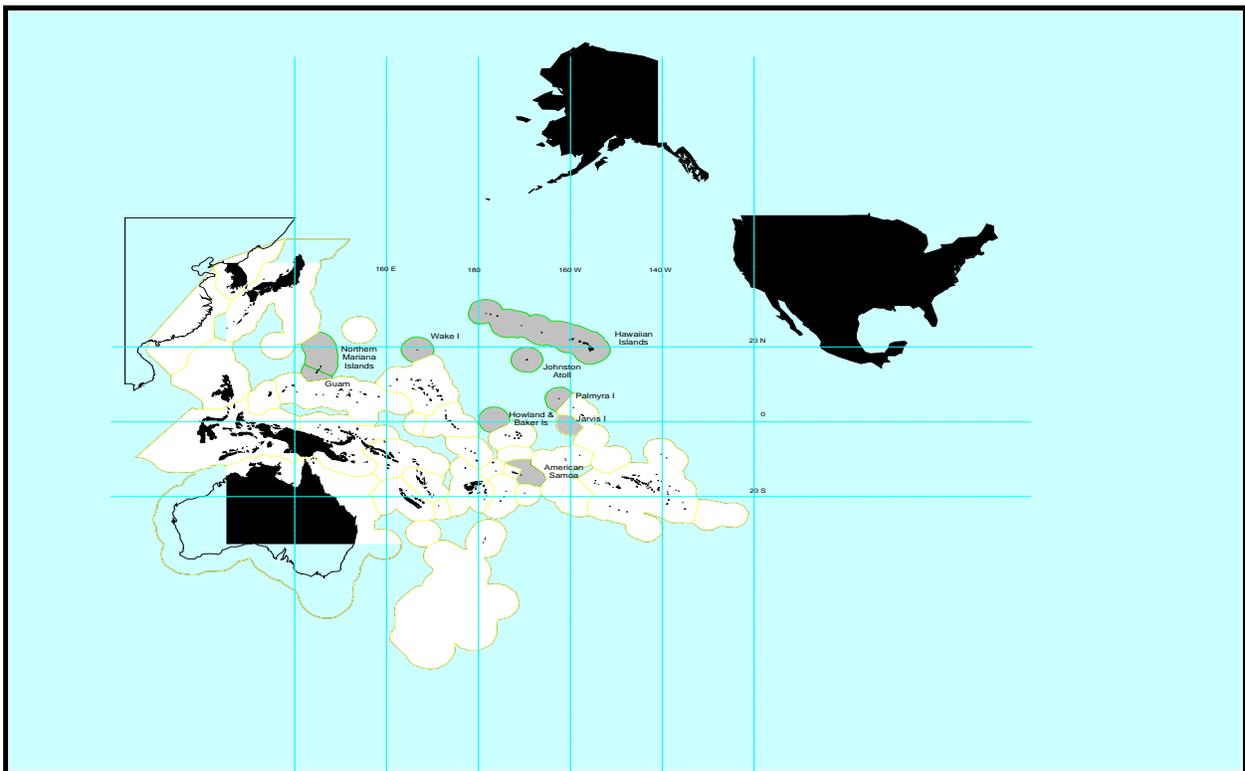
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1. INTRODUCTION

The 1996 Magnuson-Stevens Fishery Conservation and Management Act (MSA), U.S. Public Law 94-265, authorizes the negotiation of Pacific Insular Areas Fishery Agreements (PIAFAs) which would allow foreign fishing in the 200-mile Exclusive Economic Zone (EEZ) around the Pacific Insular Areas (Figure 1). The Pacific Insular Areas (PIAs) include American Samoa, Guam, the Northern Mariana Islands (NMI), Baker Island, Howland Island, Jarvis Island, Johnson Atoll, Kingman Reef, Midway Island, Wake Island, and all islands and reefs adjacent to any of the above. The MSA states that fees collected under a PIAFA for fishing in the EEZ surrounding Guam, American Samoa or NMI will be deposited into the treasury of that island's government. Fees collected from foreign fishing in the EEZ around other PIAs will be deposited into a new Western Pacific Sustainable Fisheries Fund.



Certain criteria must be met before foreign fishing activities can be authorized under a PIAFA. All fishing that occurs under a PIAFA must conform to the rules and regulations of any applicable fishery ecosystem plan (FEP); harvest levels must fall within the Total Allowable Level of Foreign Fishing (TALFF); and foreign fishing activities cannot adversely affect the fishing activities of the indigenous people of the PIA. Furthermore, in the case of Guam,

American Samoa and NMI, a PIAFA can be negotiated only with the concurrence of, and in consultation with, the Governor of the Pacific Insular Area where the fishing agreement would apply.

Regarding the use of funds obtained from a PIAFA or fines and penalties, the MSA states:

. . .the appropriate Governor shall develop a 3-year marine conservation plan detailing uses for funds... (Sec. 204 (e)(4)(A))

This document is Guam's Marine Conservation Plan (MCP) and describes how the Governor of Guam proposes to allocate funds obtained under a PIAFA or collected from fisheries violations within the Guam EEZ for the period 2011 - 2014. The document provides information on the process by which the MCP was developed and reviewed, the programmatic objectives determined to be funding priorities and the project activities to be undertaken. Given the uncertainty of the quantity and timing of the funds available for implementation of the MCP, this plan should be viewed as a working document subject to periodic review and revision.

1.1 Opportunities for Marine Resource Conservation and Development

The EEZ around Guam is bordered by the EEZs of NMI, 20 miles to the north, and the Federated States of Micronesia (FSM), 100 miles to the south. The waters of Guam extend from a baseline out to three nautical miles. Within the Guam EEZ there are areas closed to particular types of fishing. Specifically, the Western Pacific Regional Fishery Management Council FEP for pelagic fisheries prohibits domestic and foreign longlining, purse seining and pole-and-line fishing within 50 nautical miles of the 100 fathom contour and offshore banks.

Given the proximity of the EEZ boundaries of FSM and NMI, it is important that Guam coordinate its efforts toward marine resource development and management with those of its island neighbors. In particular, it would be in the interest of both Guam and NMI to cooperate in the development and implementation of activities articulated in their respective marine conservation plans. A cooperative effort is likely to result in increased benefits for both island areas.

The dynamic nature of the tuna fishing industry in the central and western Pacific and complexity of regional and subregional fisheries management and development issues presents challenges for the development of a long-term plan. The three-year time frame of the MCP provides an opportunity for periodic evaluation and adjustment of programs and projects as new issues and prospects develop. This plan demonstrates that there are extensive opportunities to pursue marine conservation and development activities in the EEZ around Guam. However, as mentioned previously, the quantity and timing of the funds available for implementation of the MCP is uncertain, and, as such, the ability to capitalize on these opportunities should be cast with reasonable expectations.

1.2 Overview of the Marine Conservation Plan

The MSA provides broad guidance on program objectives for the marine conservation plan. Based on these general guidelines, the Western Pacific Regional Fishery Management Council (Council) previously prepared a more detailed outline of possible MCP programmatic objectives. Guam's MCP utilizes this outline where appropriate. To avoid duplicating existing marine conservation programs and projects in Guam, activities being pursued under the Guam Fisheries Development and Management Plan, Guam Coral Reef Initiative, Overall Economic Development Plan for Guam and the New Master Plan for the Port Authority of Guam were considered.

The MCP, in certain instances, calls for the initiation or continuation of activities complementary to existing programs/projects. These complementary programs may be conducted in conjunction with the Western Pacific Regional Fishery Management Council, National Marine Fisheries Service (NMFS), local or Micronesian-based entities or with regional marine resource conservation, development or management organizations. In addition, the MCP calls for the initiation of new research, development, extension and training activities.

2. MARINE CONSERVATION PLAN OBJECTIVES

The plan lists eight programmatic objectives covering a diverse range of fishery conservation and management issues and initiatives. For each objective, strategies that are designed to specifically to meet the objective are identified. The strategies' outline describes their purpose and scope, provide time frames and estimated fund required for their implementation and list evaluation criteria.

Major program areas described in this plan fall under the following broad objectives:

- Conduct fisheries resource assessment and monitoring activities in the Guam Exclusive Economic Zone
- Develop and implement effective surveillance and enforcement mechanisms
- Promote acceptance and practice of the marine conservation plan by all facets of the fishing community and general public
- Conduct habitat assessment and monitoring
- Support domestic fisheries development
- Encourage marine conservation education
- Implement Community Demonstration Projects

2.1 Project Selection and Evaluation

Guam's initial MCP objectives were prepared by the Council's PIAFA Working Group and were reviewed during three meetings held in Guam and Hawaii between 1996 and 1999. These meetings were attended by interested parties from various Guam public sector agencies, the U.S. government (Council, NOAA, NMFS, USCG) and the private sector. Following these meetings, an array of programmatic activities and projects were developed. Every three years since the development of Guam's initial MCP, Guam's MCP objectives, projects and programs have been assessed and updated to reflect changes. The objectives and specific strategies identified in the MCP are consistent with the MSA National Standards, Operational Guidelines and applicable FEPs, as well as Government of Guam marine resource regulations.

2.2 Plan Review Process

Responsible entities are provisionally identified as being accountable for implementation of projects and for providing assistance where necessary to ensure that project aims are met. The Bureau of Statistics and Plans will prepare an annual report assessing the status and progress of strategies carried out under the plan.

Guam's MCP is not subject to Guam's Comprehensive Development Plan review process. The inclusion of the MCP as an element in the island's Comprehensive Development Plan would commit the Government of Guam to actions beyond a three year time frame with secure funding to carry out the strategies identified in the MCP. The past decade has proven that PIAFA funds and fishing violation fees placed in the Western Pacific Sustainable Fisheries Fund are not a viable funding source to carry-out the activities identified under each of the objectives as Guam has never received PIAFA related funds. Those strategies that were identified in Guam's previous Marine Conservation Plans that have been carried out through other federal funding sources unrelated to Magnuson-Stevens Fisheries Management and Conservation Act PIAFA provisions.

While Guam's MCP is not subject to the stringent review process that would be required if it was proposed to become a permanent element of Guam's Comprehensive Development Plan, it is subject to a public review process. As a three year plan that is subject to change, Guam's MCP for 2011-2014 was made available for public review and comment through the Guam Fisherman's Cooperative Association and the Guam Association of Saltwater Anglers. It was also provided to public sector marine related entities for their review and comment.

2.3 Prioritization of Objectives and Strategies

The various strategies described in the MCP are ranked high, medium or low priority. Activities designated as “high” are those deemed in need of immediate attention or resources. These rankings are subject to re-examination as conditions change. To follow are those identified program strategies that have been ranked as high priority and that are most in need of immediate attention. Ranked from highest to lowest priority, these strategies are as follows:

1	The Americans with Disabilities Act (ADA) Accessible Fishing Platform	\$330,000
2	Rehabilitation and Improvements to the Agat Small Boat Marina: Docks	\$300,000
3	Manahak (Rabbit Fish) Hatchery and Restocking	\$150,000
	Rehabilitation and Improvements to the Agat Small Boat Marina	
4	Lighting and Security Cameras	\$150,000
5	New Fish Wench	\$ 80,000
6	Study and A&E Design for Repair and Replacement of Refueling Pier, Boat Ramp and Boarding Pier	\$100,000
7	Repair and Construction of Refueling Pier, Boat Ramp and Boarding Piers	\$500,000
8	Chamorro Traditional Fishing	\$ 60,000
9	Public Review and Comment	\$ 1,000

3. PROGRAMMATIC/PROGRAM OBJECTIVES AND STRATEGIES

This section presents the objectives of the MCP. Specific projects or activities intended to help fulfill each objective are identified as program strategies.

3.1 Objective 1: Fisheries Resource Assessment and Monitoring

No Program Strategy is being pursued under Objective 1.

3.2 Objective 2: Effective Surveillance and Enforcement Mechanisms

Program Strategy 2.1 Observer Program

Background:	The MSA states that prior to entering into a PIAFA, the Governor, in consultation with the Council and NMFS, must establish an observer program that has been approved by the Secretary in consultation with the Western Pacific Regional Fishery Management Council and is at least equal in effectiveness to a program established by the Secretary. Therefore, a PIA fishery observer program must engage in the collection of comprehensive information on foreign fishing activities, including fishing location, catch and effort, by catch and protected species interaction. The level of coverage will need to be determined and may vary depending on the terms and conditions of the PIAFA, the types of foreign vessels engaged in fishing and the implementation of a VMS
Description:	Guam has the option of establishing its own observer program under a PIAFA. Presently, NMFS is providing observers and spends in excess of \$7,000 to \$10,000 per person-month for at-sea observers. Associated with these costs are additional various administrative costs such data key punching and port coordination.
Priority Level:	Low
Cost estimate:	It is assumed that the major costs of implementing an observer program will be borne by the foreign entity acquiring fishing access rights under a PIAFA. An additional \$100,000 is required for data entry and port coordination related activities that must be undertaken by the Government of Guam.
Accountability:	NIMFS, Western Pacific Regional Fishery Management Council and Bureau of Statistics and Plans

Program Strategy 2.2: EEZ Enforcement

Background:	The Council's jurisdiction covers an area of nearly 1.5 million square miles (Figure 1). Enforcement capabilities at the federal level for the insular areas of American Samoa, Guam and the Northern Mariana Islands consist of NMFS enforcement agents and limited U.S. Coast Guard support. A federal-local cooperative agreement has been completed that permits Guam law enforcement and conservation officers to assist in the enforcement of the MSA, the Endangered Species Act and the Marine Mammal Protection Act.
Description:	Additional enforcement services are required to enforce the MSA, the Endangered Species Act and the Marine Mammal Protection Act. In particular there exists a critical need for increased surveillance of Guam's EEZ. In order to effectively increase enforcement, Guam requires capacity building, training and monitoring vessels.
Priority Level:	Low
Time Table:	18 months
Cost Estimate:	\$100,000 for Purchase of Enforcement Vessel
Accountability:	Division of Aquatic and Wildlife Resources, Guam Department of Agriculture

3.3 Objective 3: Regional Cooperation

Program Strategy 3.1 Longline Permit, Reporting, and Quota Utilization Program to Facilitate Responsible Fisheries Development

Background:	Guam is a participating territory in the Western and Central Pacific Fisheries Commission (WCPFC), which recently established longline quotas for bigeye tuna in the WCPO. As a participating territory, Guam afforded the right as a Small Pacific Island Developing State to utilize its quotas to responsibly develop its own domestic fisheries.
Description:	Funds will be used to develop a permit, reporting, and/or quota transferability program that will utilize Guam's quota allocations established under the WCPFC. Funds may also be used in the development of the program to identify, develop, and establish partnerships or arrangements for Guam's quotas to be utilized by U.S.

fishing or foreign vessels in exchange for funds or training assistance to responsibly develop Guam's fisheries.

Priority: Medium

Time table: 36 months

Cost Estimate: \$100,000

Accountability: Government of Guam, Western Pacific Regional Fishery Management Council, National Marine Fisheries Service

Evaluation Criteria: Development of permit, reporting, and/or quota transferability program to facilitate funding and training for fisheries development in Guam as well other projects listed in this MCP.

3.4 Objective 4: Public Participation

Program Strategy 4.1 Public Review and Comment

Background: The Government of Guam has been faced with severe financial constraints since the development of Guam's first 1999 MCP. Entities that depend upon funding support through the Government of Guam's General fund have been forced to take more responsibilities with fewer resources that are required to conduct the responsibilities. These resources include both staff and supplies. The Government of Guam recognizes the importance of having a current MCP and has committed staff resources. Funding constraints preclude other required resources to be directed toward the development of a Guam MCP.

Description: The first phase of the Guam MCP development process consists of soliciting input from various fisheries and marine resources related entities within the government and private sectors. These entities utilized the MCP outline created in 1998 and agreed upon by the first PIAFA Working Group in Guam's 1999 MCP to ensure that the proposed projects and activities comply with the mandates of the MSA. The plan will be provided to the public and to fisheries and marine resource entities for their review, comment and input to ensure that the interests of the community are addressed.

Priority: High

- Time Table: 6 months. Funding is required every three years when new MCP is developed.
- Cost estimate: \$1,000 to pay for advertisements in order for the public to be aware the MCP is available for review and comment. Without funding support, this activity will continue to depend upon free public notification opportunities that may be available to the Government of Guam.
- Accountability: Bureau of Statistics and Plans
- Evaluation Criteria: Continued incorporation of both public and private sector and the community's input into the Guam MCP.

3.5 Objective 5: Habitat Assessment and Monitoring

Program Strategy 5.1 Habitat Assessment and Monitoring

Description: The 2005 MCP states: “*There is an urgent need for long-term monitoring of sites as part of an integrated research program to provide the data necessary to show how Guam's reef systems are changing; to identify sources of stress in disturbed reef area; and to provide for proper coral reef management*”. Guam’s Coral Reef Initiative established a Long-Term Monitoring program in 2008, to address this concern. An additional project was initiated in 2009 to examine risks to coral health from sewage nutrient enrichment and was carried out by Raymundo and Kim, through the University of Guam Marine Lab. This study established seven permanent reef flat sites along the western coast of Guam which have been monitored since 2009 for coral community structure and coral health and disease. In addition, water temperature (using submersible HOBO® data loggers) and sewage-based nitrogen ($\delta^{15}\text{N}$ stable isotope analysis) have been monitored. Long-term data sets such as these are rare, primarily due to funding restrictions, yet the quality of information that can be obtained from them is critical to informing management, examining questions of reef resilience, and predicting potential responses of coral communities to disturbance.

The long-term habitat assessment and monitoring of Guam coral reef flat communities will continue work which was started in 2009, to monitor coral health in connection with land-based sewage inputs. At present, six sites are monitored quarterly: Haputo, Tanguisson, Tumon, West Agana, Piti and Luminao. The project has since expanded to include coral community ecology monitoring, which includes assessment of coral recruit abundance, population size distribution, community structure, and

coral disease, bleaching, and predator outbreaks. Water temperature and nutrient inputs are also monitored simultaneously. If funds are made available for continuation of this monitoring, additional sites are planned, namely, the Achang Marine Preserve and Cetti Bay. Therefore, 3 out of Guam's 5 Marine Preserves will be regularly monitored (Tumon, Piti and Achang); these are the 3 most accessible sites with significant coral reef flat communities. Secure funding will also allow assessment and regular monitoring of the fish communities associated with these three reef flat sites which will serve to evaluate the continued performance of the Marine Preserves with respect to abundance of target species and health of fish habitat, and to assess community change in response to climate change and the military build up.

Priority Level:	Medium
Time Table:	Monitoring currently occurs quarterly, and should continue for as long as funding allows. Data analysis is ongoing, and technical reports are prepared annually.
Cost Estimate:	\$15,000 . The NOAA-CRI program funds approximately \$5,000 per year, but this is inadequate to cover isotope analysis, purchase of field supplies, boat time, and part-time student assistance in the field. Additional PIAFA funding support is required.
Accountability:	The University of Guam Marine Laboratory
Evaluation Criteria:	Technical reports annually prepared for local and federal management agencies (BSP, GCMP, GEPA, DAWR, NPS, USFWS, NIMFS, and Council) would be critically reviewed by local managers and would be assessed based on the relevance of the results.

3.6 Objective 6: Domestic Fisheries Development

Program Strategy 6.1: Rehabilitation and Improvements to the Agat Small Boat Marina Docks:

Description: The Agat Small Boat Marina was built by the Army Corps of Engineers and completed in 1989. It is located in the beautiful and peaceful southern village of Agat. By design, it was built to accommodate 163 vessels with shore side facilities for fuel, loading, car and trailer parking.

The Agat Marina is one of only two public small-boat marinas that support the approximate 5,400 boats used by the island's recreational and

commercial boating communities. The addition of the Agat Marina was seen as a means of stimulating growth in boating activities with emphasis in fisheries, allowing improved access to fishing grounds in the south, addressing the demand for permanent dockage space, providing additional safe harbor in bad weather, and facilitating search and rescue activities for the area.

Need: Since its completion, there has been no major infusion of capital for improvements at the Agat Marina, primarily due to insufficient funding levels from marina revenues to sustain its operations. The continued lack of suitable infrastructure and equipment has long been identified as the major obstacles to the successful growth of Guam's commercial, recreational and charter fishing operations. Minor improvements to the facility's boat ramp were completed in early 2011. The Port Authority is in the process of securing funding to make some minor, remedial repairs to the Marina's docks. The Agat Marina's structural upgrades to its docks and boat slips are far more extensive than the small amount of funds that have been directed toward their upgrade. The need to undertake major upgrades to the Agat Marina's facilities is fast approaching a critical point.

Priority Sequence:

- Repair and replace existing slips at southern portion of Dock A with larger boat slips and floats that can accommodate larger and heavier boats.
- Repair and replace existing slips at Dock B.

Priority Level: High

Time Table: 18 months

Cost Estimate: \$330,000 for Repairs to Docks A and B

Accountability: Port Authority of Guam

Evaluation Criteria: Repairs to Docks A and B are completed permitting fishermen safe access to their boats.

Program Strategy 6.2: The Americans With Disabilities Act (ADA) Accessible Fishing Platform

Need: The Americans with Disabilities Act (ADA) is a comprehensive civil rights law that prohibits discrimination on the basis of disability. The ADA requires that newly constructed and altered state and local government facilities, places of public accommodation, and commercial facilities are readily accessible to, and usable by, individuals with disabilities. Recreational facilities, including fishing piers and platforms, are among the facilities required to comply with the ADA access requirements.

Paseo de Susana Park is an established popular recreational area owned and operated by the Government of Guam. There is no ADA access to the water resources at this location along the Hagatna Marina Channel. Moreover, the lack of access to water resources is not limited to this recreational area.

Many of Guam's anglers brave the Hagatna Marina Channel's terrain to fish. The anglers most especially fish at the Hagatna Marina Channel during the seasonal run of the Atulai (Mackerel – Big Eye Scad). Too often anglers will slip or lose their balance while trying to navigate the large boulders that block their way down to the water level in order to cast their lines. Accessing the channel by Guam's physically challenged citizens and its manamko (senior citizens) is nearly impossible. The construction of a fishing platform will provide a safe location for all of Guam's anglers, including its senior citizens and disabled citizens, to fish and it will ensure individuals with disabilities have access to the fishing area.

Project Description: This project proposes to construct an access ramp and fishing platform that fully complies with ADA standards in order to provide recreational and subsistence fishing access to the Hagatna Marina Channel to Guam's disabled citizens. The proposed facility will consist of concrete surfaced ramps and platforms with steel guardrails and wheel stops approximately 15 feet wide and 75 feet for the second Phase of the project. The total length of the platform is approximately 500 feet broken into two additional Phases (3-4). In addition to providing access, GOSA will provide training, guidance, and mentoring for those with ADA needs to fully utilize the platform.

The project's A&E phase, which is the preparation of the design and construction plans for an ADA compliant fishing/viewing platform at Paseo de Susana Park along the Hagatna Marina Channel is completed.

The work was done by Duenas, Camacho & Associates, Inc. with input from the Department of Agriculture, Department of Parks and Recreation, the Guam Fisherman's Cooperative Association, and the Guam Organization of Saltwater Anglers. The first construction phase is the establishment of an ADA access platform on the rock wall along the Hagatna Marina Channel at Paseo de Susana Park. The park is centrally located between the Hagatna Marina and East Hagatna Bay and has established pavilions, day use facilities, baseball stadium, and softball park, to include ADA compliant restrooms. The platform would be located in close proximity and is a popular area for angling and wildlife viewing.

With the completion of the A&E design plans, the project is divided into three phases. Each Phase requires funding to complete the project: The project's phases are as follows:

- Phase 1: Construction of the ADA fishing platform at Paseo de Susana Park along the Hagatna Marina Channel.
- Phase 2: Expand the Fishing Platform an additional two hundred feet.
- Phase 3: Add to the fishing platform a final section that would add another two hundred and fifty feet to the platform in order to maximize the use of the accessible area.

Objectives:

- (1) Develop and enhance Western Pacific community-based fishing opportunities benefiting Guam residents.
- (2) Promote and foster cultural fishing practices and conservation enhancement through public awareness to improve decision making on coastal issues.
- (3) Foster capacity building in coastal science and education through observation.
- (4) Perpetuation of Chamorro fishing traditions and values.
- (5) Bridge barriers that prevent full participation in fisheries by Guam residents.

Priority Level: High

Time Table: 12 Months

Cost: \$330,000.00 - Construction Phase 1 and 2: Construct initial fishing platform (15' x 75') and expand its length an additional 200 ft.
\$150,000 – Construction Phase 3: Construct an additional 250 feet to the fishing platform.

Accountability: The Guam Organization of Saltwater Anglers (GOSA)

Evaluation Criteria: Completion of an ADA compliant fishing platform and its use by persons with disabilities.

Program Strategy 6.3: Manahak (Rabbit Fish) Hatchery and Restocking

Description: The 4-H Youth Development Program, Guam Cooperative Extension Service and the Guam Fisherman's Cooperative Association will collaborate with University of Guam's College of Natural Sciences-Hatchery and with the University of Guam's Marine Laboratory to fully develop and promote a juvenile rabbit fish reproduction project. An artificial habitat for the juvenile rabbit fish will be created in order to enable the fish to be used for restocking purposes. The juvenile rabbit fish will be nurtured in the artificial habitat for 6 months before the restocking takes place. The site chosen for the habitat will be an area that has algae overgrowth. Both the 4-H program's youth and the Guam Fisherman's Cooperative will oversee and monitor the site. This collaborative partnership will enhance a systematic approach that will help community to understand the concept of restocking.

Restoring Guam's living Marine resource habitats will:

- Maintain vital food supplies. Healthy coastal habitats produce more food for local people pertain to sustaining purposes.
- Protect the ecosystem and nature's bounty. Beyond providing food for consumption, coastal habitats are the home of thousands of species of fish, birds, plants, and animals that depend on healthy habitat for their survival.
- Protect human health. The ciguatera that causes harm to human health occurs in those fish exposed to the toxic microbe ciguatera. The ciguatera microbe multiplies when estuaries and coastal and upland habitats are allowed to decline. When they are restored, the ciguatera microbes cannot survive and the result is they contribute to the production of healthy fish and wildlife that contribute to human health and enjoyment.

- Maintain biodiversity. The coastal and marine environment is the second major source of biodiversity on our planet. Restoring a variety of coastal and marine habitats provides for healthy communities of plants and animals, including rabbit fish and threatened species, to maintain ecological balance within our natural systems.
- Preserve a way of life. Healthy estuaries and coastal resources support unique, centuries-old cultures, traditions and ways of life dependent upon the marine environment's diversity for everything from livelihoods to storytelling.

Activities:

- Collaboration will take place with marine biologists from the University of Guam's Marine Laboratory to determine the most appropriate Manahak species to use, and to determine the most appropriate location for the artificial habitat where the Manahak will be placed for 6 months before the restocking takes place. The collaboration will include ensuring appropriate mechanisms are put in place to prevent negative impacts to the environment.
- In collaboration with the University of Guam's Fish Hatchery Program the manahak will be grown in tanks.
- The fry will be harvested from the tanks after the initial run and when they have grown to be a size deemed unsuitable for human consumption. Normally, during this period the fish in the wild are subjected to the following factors that also contribute to their reduction in the numbers: starvation due to over-population and becoming prey for the predators due to lack of habitat.
- The manahak will be fed natural food mixed with some invasive species to address the algae coverage on our reefs. For released manahak, UOG's Marine Laboratory will be consulted to determine the most appropriate food to use that will have no environmental negative impact.
- Community outreach: Program activities use both subject matter and life skills to address issues of reef habitat. Participants will be encouraged to be involved in open discussions with strong emphasis of maintaining a positive perspective of issues under discussion in reef habitat restoration.

Expected outcomes of this program:

- The community will gain knowledge in reef restoration with rabbit fish restoration project. Community awareness will be an

instrumental approach to teach the respected members of the community the values of our eco-system.

- The project may foster a viable Mari-culture program while helping to remove undesirable algae on our shores, address the algae smothering our reefs and feed our communities in a sustainable manner.

Priority Level:	High
Time Table:	12 Months
Cost Estimate:	\$150,000
Accountability:	University of Guam Cooperative Extension Service 4-H Program in collaboration with Guam Fishermen’s Cooperative Association
Evaluation Criteria:	The restocking of adult rabbit fish from the created habitat for juvenile rabbit fish.

Program Strategy 6.4 Capital Financing for A New Guam Fishermen’s Cooperative Marina Building Complex

Background: The Guam Fishermen’s Cooperative Association presently has 200 members and is a 36 year old non-profit organization whose mission is to market the fish harvested by its members who are considered “artisanal fishermen”. The Guam Fishermen’s Cooperative Association’s present facility has insufficient space. A new structure at the Hagatna Boat Basin is needed to house the Coop’s retail outlet, office and processing and ice facilities along with a restaurant that exclusively sells seafood from the Coop, marine related gift shops, dive and tackle shops and other marina related businesses. An Architectural and engineering design plan for the facility has been completed.

Description: This project has two phases. Phase I is completed. Phase I was the preparation of a architectural / engineering design plan for a 6,000 sq. ft. facility that will house the Coop’s retail outlet, office, fish processing area and ice production area, a seafood restaurant, gift shop, and a dive and tackle shop. Included in this phase is the securing of all federal and local permits. The second phase of this project is the actual construction of the facility. This project has been unable to be pursued as a funding source has not been found.

Priority: Medium

Time table: 36 months

Cost Estimate: \$3,500,000.

Accountability: Guam Fisherman's Cooperative Association

Evaluation Criteria: The construction of the facility and further expansion of Guam's fishery economic base through increased income revenues for Guam's commercial and recreation fishermen.

Program Strategy 6.5: Rehabilitation and Improvements to the Agat Small Boat Marina:

Description: The Agat Small Boat Marina was built by the Army Corps of Engineers and completed in 1989. It is located in the beautiful and peaceful southern village of Agat. By design, it was built to accommodate 163 vessels with shore side facilities for fuel, loading, car and trailer parking.

The Agat Marina is one of only two public small-boat marinas that support the approximate 5,400 boats used by the island's recreational and commercial boating communities. The addition of the Agat Marina was seen as a means of stimulating growth in boating activities with emphasis in fisheries, allowing improved access to fishing grounds in the south, addressing the demand for permanent dockage space, providing additional safe harbor in bad weather, and facilitating search and rescue activities for the area.

Need: Since its completion, there has been no major infusion of capital for improvements at the Agat Marina, primarily due to insufficient funding levels from marina revenues to sustain its operations. The continued lack of suitable infrastructure and equipment has long been identified as the major obstacles to the successful growth of Guam's commercial, recreational and charter fishing operations. Minor improvements to the facility's boat ramp were completed in early 2011. The need to undertake major upgrades to the Agat Marina's facilities is fast approaching a critical point. In addition to the required structural upgrades to the marina's docks that were identified in another project, the marina requires increased security upgrades. The marina has been experiencing vandalization and motor vehicle break-ins. In addition, the Marina's wench to remove large fish from boats has corrosion problems and is slated to undergo minor repairs until funding can be secured for its replacement. Lastly, the fuel

pier servicing the marina's boats and well as the marina's boat ramp boarding piers require repairs and replacements.

Objectives and Priority Sequence:

- Improve the marina's security through the addition of improved lighting and closed circuit cameras, etc.
- Replacement of wench to offload fish
- Conduct study for the repair of the refueling pier and boat ramp boarding piers.
- Replace and repair refueling pier and boat ramp boarding piers.

Priority Level: High

Time Table: 24 months

Cost Estimate: \$150,000 for Lighting and Security Cameras
\$ 80,000 for New Fish Wench
\$100,000 for study for the Repair of the Refueling Pier and Boat Ramp Boarding Piers and A& E Design Work
\$500,000 for Repair and Construction of Refueling Pier Repair and Boat Ramp Boarding Piers

Accountability: Port Authority of Guam

Evaluation Criteria: Security lighting is installed and cameras are operational and vandalism and thefts at the marina are reduced. Fishermen are able to remove fish from their boats through the use of a working wench.

Program Strategy 6.6 Near-shore Data Collecting

Need: Basic life history information such as movement and growth and age on important reef fish species to required in order to support informed marine resource management of Guam's fisheries

Description: A community-based near shore reef fish tagging program utilizing local fishermen from the local community is required in order to release 2,000-tagged reef fish for one-year period throughout Guam's near shore areas. The Pacific Islands Fisheries Group intends to partner with Guam's local fishing community, non-profit community organizations, 4H school clubs, local businesses and fishery management authorities to foster public-

private partnerships, community ownership, collection of basic scientific information and informed resource management.

The University of Guam 4H Youth Development Program has been working with the Guam fishing community and state and federal fishery agencies to support the popular and successful /White Snappers tagging and other species in the future. Results from the Snappers tagging project will provide the first comprehensive estimates of natural and fishing mortalities of key predator species in Guam's coastal zone. These data will be incorporated into stock assessment models for these species, which will provide a quantitative assessment of the impact of fishing in Guam's coastal zone. After the in shore tagging, this project will be extension its outlet to deep bottom tagging.

Short-term benefits from this project will include estimates of growth and movement of key reef fish species in Guam's coastal zone. These data will also be useful to better understand temporal movement patterns and growth rates under varied environmental conditions.

Long-term benefits of the project may include comprehensive estimates of natural and fishing mortalities for key reef fish species in Guam. Data collected through an island-wide tagging project can be incorporated into future stock assessments, which can lead to a quantitative assessment of the impact of fishing in Guam's coastal zone. The project will also provide valuable movement activity, which will support Guam's MPA monitoring program and whole island stock assessment.

Priority:	Medium
Time Table:	12 months
Cost Estimation:	\$80,000.00
Accountability:	University of Guam Youth Development Program- 4H
Evaluation Criteria:	Pre and Post evaluation will be an instrument to measure knowledge. Data sheet for number of participants, number of fish tagged and retrieved.

Program Strategy 6.7 Guam Volunteer Fishery Data Collection Project

Background: Good fishery data by Guam's local fishing community, which includes its commercial, recreational and subsistence fishers, is needed to provide a history of catch, to help identify why changes are occurring in marine resources and to assess the status of the stocks. The data also will enable Guam to assess how its fisheries are changing over time and their dynamics. To help improve Guam's fish stock, seashore preserves have been established and other regulations are under consideration to promote the development and sustain ability of Guam's fishery. Through the use of fishery data, the impacts of current and proposed regulations upon the fisheries, fishermen and the fishing communities can be determined. Guam's fishermen and fishing industry will be able to work more effectively with government fishery managers to develop regulations and laws that address their needs and while protecting the fishery resource.

Description: This project is in addition to the Creel Survey that is conducted by DAWR. Through this project, the Guam Fisherman Cooperative Association recruits fishermen to participate voluntarily in collecting data. At a minimum, the local fishing community will annually fill out survey form. They will also be actively encouraged to fill out and return a Fishing Trip Survey form to document all fishing trips using any fishing method. Funding is required to develop and print voluntary catch logs that will be given to fishermen, to provide additional secure drop boxes in which fishermen can submit their catch logs, and to contract the services of an individual to enter the data from the catch logs into the data system.

This project also includes the hiring of a marine biologist by the Bureau of Statistics and Plans who will analyze the data that is captured by the GGCA. The marine biologist will also work in collaboration with economists through the University of Guam's College of Business and Public Administration to determine the contributions of Guam's fishery to the island's economy. The collected data will also be used to further define the local fishing community and it will provide additional information on fishing methods and effort, frequency, and the fish caught. The information will then be used to develop a model that provides insight into the fishing community and the local fish stocks. The primary focus of the marine biologist will be to work with Guam's fishing community to develop sound, culturally appropriate fishing practices that promote the continued preservation of Guam's fishery resource for future generations rather than to promote and enforce fishery conservation efforts.

Priority: High

Time Table:	On-going
Cost Estimate:	\$50,000 for the Fishery Data Collection activities by GFCA \$100,000 for the first year for a Marine Biologist's salary and benefits, computer, and supplies by the Bureau of Statistics and Plans. Funding for the biologist's salary and benefits will be required for subsequent years.
Accountability:	Guam Fishermen's Cooperative Association and Bureau of Statistics and Plans
Evaluation Criteria:	Annual report on the amount of fish harvested by Guam's subsistence and commercial fishermen and the economic impact the fish harvest has upon Guam's economy. Annual report on marine conservation strategies developed in a collaborative effort between Guam's fishing community and the marine biologist by the Bureau of Statistics and Plans.

Program Strategy 6.8 Fish Aggregating Devices and Shallow Water Mooring Buoys

Background:	<p>A fish aggregating device (FAD) is a floating object that attracts, aggregates and holds pelagic fish in the area, ultimately increasing the catch of fishermen. When FADs are offline, fishers call DAWR to report problems with the FAD and to request the FAD be replaced. The project also involves enhancement projects such as the production of FAD location maps for recreational fishermen and the improvement of the current FAD system designed to extend the average time on station. The cost of FAD deployment has double and now costs approximately \$20,000 per deployment. This cost does not include the cost of purchasing components.</p> <p>Legislation, Bill 120-31, to prohibit moorings on Guam's coral reefs is presently being proposed in order to protect Guam's reefs. If enacted into law, shallow water mooring buoys (SWMs) will be required by Guam's fishermen as they will be prohibited from setting their anchors into Guam's coral reefs.</p>
Description:	<p>A total of fourteen (14) FADs are part of DAWR's fish aggregating device program. Missing FADs are either determined by aerial surveys or by fishermen who report missing FADs. The purchase of equipment, supplies and materials to deploy FAD systems at various depths in addition to contracting companies to deploy FAD systems for those that are missing will ensure existing FADs are redeployed for year-round sportfish use. Presently, DAWR has federal funds under the Dingell-</p>

Johnson Sports Fish Restoration Fund that can be used to deploy new FADs in addition to replacing FADs that are either missing or not operable.

DAWR currently has a total of thirty-four (34) SWMs that are a part of its mooring program to minimize anchoring damage to Guam's coral reefs. Missing SWMs are either determined by aerial surveys or by boaters calling in to report missing SWMs. The purchase of equipment, supplies and materials, contracting companies to deploy SWMs for those missing and involving commercial companies willing to install SWMs will ensure existing SEMs are available for year-round sport fish use.

Priority Level: Medium

Cost Estimate: \$100,000. Funds will be used to supplement funding that is available through the Dingell-Johnson Sports Fish Restoration Fund and other funding sources that are available for the deployment and replacement of FADs and SWIMs.

3.7 Objective 7: Marine conservation Education

Program Strategy 7.1 Marine Conservation Public Education Campaign

Background: The purpose of this project is to collect, synthesize and disseminate adequate and accurate information in support of sound policy development on marine resource use, addressing present needs as well as concerns for future generations in Guam.

Description: Support the development and distribution of appropriate educational, extension, and informational materials, especially in forms and formats for use by educational institutions, local groups, villages, businesses and governments focused on development of sustainable economic alternatives in the use of ocean resources. This project will be conducted through the Marine Resources Pacific Consortium, University of Guam, in conjunction with the Pacific Island Network of the University of Hawaii Sea Grant Program.

Priority: Medium

Time table: 36 months

Cost Estimate: \$5,000

Accountability: University of Hawaii Sea Grant Program and University of Guam Sea Grant Program

Evaluation Criteria: Development and distribution of public information materials promoting sustainable use of ocean resources.

3.8 Objective 8: Western Pacific Demonstration Project

Program Strategy 8.1 Chamorro Traditional Fishing

Description: For centuries the people of Guam and Northern Marianas have relied on the ocean and water system as a life sustaining force. The ocean has shaped our Pacific Island Identity. We have a rich history of traditional fishing knowledge and other cultural skills that persist among small circles, but the changing tide and life style associated with westernization and modernization have noticeable consequences. Guam is a small island covering an area of 212 square miles. Guam is about thirty-two miles in length, with a width of 4 to 8 miles. To the east lies the Marianas Trench and Challenger Deep, the deepest spot on earth. To the western trough lies an active spreading center with hydrothermal vents and fascinating chemosynthetic communities. The beaches and water systems are important natural resources that contribute greatly to the community, both economically and culturally. Fishing skills play an important role in many of our Pacific Islanders cultures and are central to our indigenous way of life. As our community continues to evolve and adopt western practices, many of our youth are unable to demonstrate both traditional skills in fishing and other basic cultural activities. Traditional fishing methods and basic cultural skills are being lost to our youth and too few educational outlets exist to promote and pass down traditional knowledge to them.

Objectives:

- To provide non-formal education workshops, awareness, and demonstration sites to promote Guam traditional fishing methods.
- To provide an educational enrichment program in traditional fishing methods to middle and high school students.
- To provide a series of demonstrations and public awareness at selected sites on Guam to promote hands-on learning activities for the teaching of traditional fishing techniques.
- To provide the local youth with the opportunity and skills to be more effective in traditional fishing methods and traditional

conservation.

- To create collaborative partnerships with local agencies and Master traditional fishermen for the promotion and sustainability of traditional fishing methods.

Priority:	High
Time Table:	12 Months
Cost Estimation:	\$60,000.00
Accountability:	University of Guam Youth Development 4H Program
Evaluation Criteria:	Pre and Post evaluation will be an instrument to measure knowledge. Data sheet for number of participants, number of fish tagged and retrieved.

Program Strategy 8.2 Discovering the Cultural Importance of Fishing Techniques Through Associated Indigenous Linguistic Practices

Description: Indigenous fishing techniques develop and survive within an indigenous linguistic context. Hence, preserving culturally important fishing methods also requires documenting and understanding the detailed technical language required by indigenous fishers. An in-depth linguistic approach is also critical to discovering fishing techniques known only to a small and, sadly, a shrinking cadre of indigenous experts. For example, some fishers on Guam built rock shelters (*guma' ácho'*) on shallow and otherwise barren reef platforms to concentrate fish for spearing. This interesting technique has potential for wider use in conserving and anaging Guam's fish stocks, but it has not been reported in any historical or modern published account of fishing in the Mariana Islands and is unknown outside of the few families who practiced it. We are also aware of several other techniques that are known by only a few remaining living practitioners. Discovery of these rare techniques came about only via extensive interviews with indigenous fishers when granted their permission to accompany them in their fishing activities, which has been invariably conducted using a technical vocabulary that is exclusively Chamorro.

The first phase will be the identification of the types of traditional fishing methods that continue to be employed for inshore harvesting, and the level of decline in the application of the methods. A comprehensive inventory of technical terminology accompanying indigenous fishing on Guam to aid will be conducted in 2) uncovering little-known techniques in danger

of being lost because they are practiced by only very few traditional fishers. The later phase will include those techniques no longer practiced, but which are known by older living practitioners or which lie recorded in early historical documents. These phases will be accomplished through 1) interviews conducted in Chamoru with native speakers possessing expert knowledge of past and present indigenous fishing methods, 2) a survey of historical documents beginning with European contact and 3) dissemination of translations and analyses via reports available to relevant agencies and the public, as well as multimedia productions freely available to educators.

Priority level:	Low
Time Table:	24 months.
Cost estimate:	\$35,000 per 12-month period
Accountability:	University of Guam.
Evaluation Criteria:	Dissemination of translations and analyses via reports available to relevant agencies and to the public via the internet and multimedia productions freely available to educators.

Program Strategy 8.3 Preservation of Traditional In-shore Fishing Practices

Background: Traditional in-shore fisheries practices are being displaced by the utilization of modern gear and methods, and there are indications that traditional fishing knowledge is already becoming scarce. While there are several programs designed to provide practical training and create an appreciation for fishing among Guam's youth and the community in general, there are no specific programs which are geared toward the preservation of traditional fishing methods. This program strategy is proposed in two phases. The first phase is to identify the types of traditional fishing methods that continue to be employed for inshore harvesting, and the level of decline in the application of the methods. The second phase would apply these findings in the development of preservation programs.

Description: Phase I: Statistical Profile of Existing In-shore Traditional Fishing Practices. The DAWR conducts in-shore creel surveys which provide data to include fishing location, species caught, gear used. The data sets reflect consistent surveys from 1985 to present. In addition, the GFCA conducts

in-shore volunteer data surveys. In-shore data can be extracted from these two sources and be analyzed to provide a comparison on the level of gear utilization for activities classified as traditional fisheries, and provide a comparison on the level of application of traditional fishing practices in comparison to other fisheries activities, covering the time period of the data base.

Phase II: Development of Community Oriented Apprenticeship Programs for Traditional In-shore Fishing Practices.

Create a Master Traditional Fisherman program within the Guam Council on the Arts and Humanities. Develop criteria for qualifying masters. Conduct community outreach to identify and archive Guam residents who possess traditional fishing knowledge, to include gear used, gear manufacturing and repair techniques, and other information necessary to preserve and convey the practices. The master program would also establish an apprenticeship curricula that would include the identification of individuals to do teaching, length of apprenticeship, technique(s) to be applied, and number of apprentices. Stipends would be made available to both teachers and students based on length of time required to accomplish program and materials required.

Priority Level:	Low
Time Table:	Phase I - 3 months Phase II - Continuous
Cost Estimate:	Phase I - \$10,000 Phase II - \$50,000 annually
Accountability:	Phase I – Guam Fishermen’s Cooperative Association (should the proposed marine biologist under the Guam Volunteer Fishery Data Collection Project be funded, the biologist will assist the GFCA with the implementation of this Phase) Phase II - Guam Council on the Arts and Humanities
Evaluation Criteria:	Phase I - Completion of statistical analysis of traditional fishing practices and identification of existing activities Phase II - Implementation of Master of Traditional Fisherman Program.

4. OTHER MARINE CONSERVATION SUGGESTED OBJECTIVES

This section reviews those objectives suggested by the Council's PIAFA Working Group that were de-emphasized in the development of Guam's first 1999 MCP. They continued to be recognized in Guam's 2005 MCP and are remain recognized in this plan. If conditions change they may be reconsidered for inclusion in future plans.

4.1 Data Collection and Reporting

Fresh fish enter the commercial market in Guam from three sources: full-time commercial fishermen, part-time commercial fishermen and subsistence or recreational fishermen who sell portions of their catch. Before the Guam Fishermen's Cooperative Association (GFCA) was established in July 1979 there was no central place to sell fish. The Coop subsequently became the primary distribution center for fresh local fish. In 1982, WPacFIN began working with the Coop to improve their invoicing system and to obtain data on all fish purchases on a voluntary basis. A cooperative fishery data collection system was established. Data from two other fish wholesalers were collected beginning in 1983 and continued until their closing in 1987. Presently, the Guam Fishermen's Cooperative Association is the primary source for data collection efforts for Guam based commercial, recreational and subsistence fishery activity.

Monthly and annual summary reports of commercial landings data are generated by GFCA. Data are summarized in tables containing information on the pounds landed, value and the average price per pound for each species or species group.

The Bureau of Statistics and Plans collects landing information from vessels which transship fish through the port of Guam. In general, foreign longline vessels offloading in Guam have maintained good landings records. Data collected by the Bureau of Statistics and Plans include vessel size; vessel name, flag and type; offloaded tuna and billfish by species weight, value and destination of catch; fish transshipment by species; exporting agent; mode of transportation and destination; and vessel agent listing.

4.2 Bycatch and Protected Species Interaction

Because of the proximity of Guam's EEZ to major fishing grounds in Micronesia, bycatch and protected species interaction issues should be assessed within a regional context. Tuna fishery interactions and bycatch issues are being addressed by the Secretariat of the Pacific Community's Oceanic Fisheries Programme. For example, data collected by OFP observers and observer programmes of several SPC member countries continue to be analyzed in order to estimate annual catches of non-target species in longline and purse-seine fisheries in the SPC statistical area. Future work will consider the effect of various factors (e.g. latitude, longitude, year, quarter, target species, etc.) on catch rates of non-target species. This work may result in spatially disaggregated estimates of bycatch.

4.3 Management Procedures

As stated previously, area closures have been designated for the Guam EEZ by the Western Pacific Fishery Management Council's FEP for pelagic fisheries. These regulations, coupled with the MSA and other existing federal statutes prohibiting the take of marine mammals and endangered species, provide adequate safeguards for the existing level of fishing activity around Guam. The Guam MCP proposes monitoring and enforcement programs to ensure that these regulations are adequately enforced.

5. List of Abbreviations

BSP	=	Bureau of Statistics and Plans
CPUE	=	Catch Per Unit Effort
Council	=	Western Pacific Regional Fishery Management Council
DAWR	=	Division of Aquatic and Wildlife Resources, Department of Agriculture
EEZ	=	Exclusive Economic Zone
FEP	=	Fishery Ecosystem Plan
FFA	=	Forum Fisheries Agency
FSM	=	Federated States of Micronesia
GCMP	=	Guam Coastal Management Program, Bureau of Statistics and Plans
GEDA	=	Guam Economic Development Authority
MCP	=	Marine Conservation Plan
MSA	=	Magnuson-Stevens Fisheries Management and Conservation Act
MOP	=	Marine Option Program
MOU	=	Memorandum of Understanding
NMI	=	Northern Mariana Islands
NMFS	=	National Marine Fisheries Service, US
NOAA	=	National Oceanic and Atmospheric Administration, US
NOS	=	National Ocean Survey (NOAA), US
OFP	=	Oceanic Fisheries Programme, Secretariat of the Pacific Community's
PIA	=	Pacific Insular Area
PIAFA	=	Pacific Insular Area Fishing Agreement
PIC	=	Pacific Island Countries
SPC	=	Secretariat of the Pacific Community
TALFF	=	Total Allowable Level of Foreign Fishing
UOG	=	University of Guam
USCG	=	United States Coast Guard
VMS	=	Vessel Monitoring System
WPacFIN	=	Western Pacific Fishery Information Network