UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

DEC 16 2011

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review was performed on the following action.

TITLE: RIN 0648-XA674: Annual Catch Limit Specifications and Accountability Measures for Pacific Islands Crustacean and Precious Coral Fisheries in 2012 and 2013

LOCATION: U.S. EEZ around American Samoa, Guam, the CNMI, and Hawaii

SUMMARY: NMFS proposes to specify an annual catch limit (ACL) and accountability measures (AM) for crustacean and precious coral stocks and stock complexes in American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and Hawaii. The ACLs and AMs will be applicable in fishing years 2012 and 2013, which run from January 1 to December 31 for crustacean fisheries, and from July 1 to June 30 the following year for precious coral fisheries. The purpose of this action is to comply with provisions of the fishery ecosystem plans (FEP) for American Samoa, the Mariana Archipelago, and Hawaii which require NMFS to specify an ACL for each stock and stock complex in the western Pacific crustacean and precious coral fisheries and implement AMs that prevent ACLs from being exceeded, and correct or mitigate overages should they occur. The ACL specifications and AMs were developed by the Council using the best available scientific information and were coordinated with the public. The ACLs and AMs are intended to provide for long-term sustainability of crustacean and precious coral fisheries of the western Pacific.

NMFS prepared an environmental assessment (EA) to consider the effects of the proposed specifications on the environment. The ACL specifications are not accompanied by in-season closures, but rather, by AMs that call for a post-season fishery review of the fishery to determine whether an ACL was exceeded, and, if so, additional consideration of whether stocks were adversely affected, and the possibility of adjusting the ACL. Because there is no in-season management measure (such as a fishery closure should an ACL be reached), the manner in which crustacean and precious coral fisheries of the region are conducted is not likely to change. Future evaluations of the fisheries and ACL adjustments are expected to prevent crustacean and precious coral stocks from being subject to overfishing or becoming overfished.

The EA and proposed specifications, identified by RIN 0648-XA674, is available from www.regulations.gov; or by mail from the following:

RESPONSIBLE OFFICIAL:

Michael D. Tosatto
Regional Administrator, Pacific Islands Region
National Marine Fisheries Service, NOAA
1601 Kapiolani Blvd. 1110
Honolulu, HI 96814
Tel (808) 944-2200; Fax (808) 973-2941

The environmental review process led us to conclude that the proposed action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact (FONSI), including the environmental assessment, is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI, we will consider any comments submitted that would assist us in preparing future NEPA documents. Please submit any written comments to the Responsible Official named above.

Sincerely,

Patricia A. Montanio
NOAA NEPA Coordinator

Enclosure

U.S. DEPARTMENT OF COMMERCE
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Environmental Assessment
for
Annual Catch Limit Specifications and Accountability Measures for Pacific Islands Crustacean and Precious Coral Fisheries in 2012 and 2013

Including a Regulatory Impact Review

December 13, 2011

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

Responsible Official: Michael D. Tosatto
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Responsible Council: Western Pacific Regional Fishery Management Council
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Abstract

NMFS proposes to specify an annual catch limit (ACL) and accountability measures (AM) for crustacean and precious coral fisheries of American Samoa, the Commonwealth of the Northern Mariana Islands or the CNMI, Guam, and Hawaii. Species that have historically been harvested in western Pacific crustacean fisheries include deepwater shrimps, spiny and slipper lobsters and Kona crab. Currently there is little to no fishing of these resources in areas administered as federal fisheries. Precious coral fisheries have only developed in Hawaii and have historically targeted black corals, pink corals and bamboo corals. Currently, only the fishery for black corals is active with fewer than three participants and most of the fishing is occurring in nearshore waters managed by the State. Fishing for gold coral is prohibited throughout the western Pacific through June 30, 2013.

For all crustacean fisheries, the ACLs and AMs would be applicable in fishing years 2012 and 2013 which begin on January 1 and end December 31 of each year. For all precious coral fisheries, the ACLs and AMs would be applicable in fishing years 2011-12 and 2012-13 which

begin on July 1 and end June 30, the following year. The purpose of the action is to comply with provisions of the fishery ecosystem plans (FEPs) for American Samoa, the Mariana Archipelago, and Hawaii which require NMFS to specify an ACL for western Pacific crustacean and precious coral fisheries and implement AMs that prevent ACLs from being exceeded, and correct or mitigate overages of ACLs if they occur.

The proposed ACL specifications were recommended by the Council and were developed in accordance with the approved ACL mechanism described in each FEP, and in consideration of the best available scientific, commercial, and other information. Fisheries for crustaceans and precious corals in federal waters are subject to federal permit and reporting requirements. At present, there are no permits issued for crustacean fishing in federal waters; and only two permits for precious coral fishing. To develop the ACLs, the SSC and Council relied on catch data that is predominately from the fisheries that operate in nearshore waters (e.g., non-federal fisheries) of American Samoa, the CNMI, Guam and Hawaii. The data are collected by local resource management agencies.

Currently, near-real time processing of catch information is not being applied in any western Pacific crustacean or precious coral fishery; and in-season AMs to prevent an ACL from being exceeded (e.g., fishery closures in federal waters) are not possible. The AM being proposed for all crustacean and precious coral fisheries is a post-season accounting of the catch each fishing year and evaluation of whether an ACL has been exceeded. Under the proposed action, and consistent with current provisions of the FEPs, if landings exceed a specified ACL in a fishing year, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage, which may include a recommendation that NMFS implement a downward adjustment to the ACL in the subsequent fishing year, or other measures, as appropriate.

This environmental assessment (EA) evaluates the potential environmental impact of the proposed ACL specifications and AMs in fishing years 2012 and 2013 for crustaceans and in fishing years 2011-12 and 2012-13 for precious coral fisheries. The EA includes a description of the information and methods used by the Council to develop the proposed ACLs. Because, there are no active fisheries for crustaceans or precious corals occurring in federal waters in any island area, and because there is no in-season management measure, the analysis in this EA indicates that the proposed ACL specifications and AMs are not expected to change the conduct of any western Pacific crustacean or precious coral fishery, so there would be no large or adverse environmental effects on target, non-target, or bycatch species, or on protected species that may interact with these fisheries should they begin to operate.

The proposed ACLs and AMs are not expected to conflict with ongoing fishery management activities and programs conducted by other federal agencies, local resource management agencies or communities, or result in any impacts to coastal or marine areas, including designated essential fish habitat, critical habitat, marine protected areas, or unique areas. The specification of ACLs and implementation of AMs are expected to provide for sustainable harvest of crustacean and precious coral fishery resources while preventing overfishing from occurring which would have positive long-term impacts on fishery participants and fishing communities.

NMFS is seeking public comment on the proposed rule to specify ACLs and implement AMs for the crustacean and precious coral fisheries of the western Pacific. Instructions on how to comment on the proposed rule can be found by searching on RIN 0648-XA674 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
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
FEP – Fishery Ecosystem Plan
FMP – Fishery Management Plan
FR – Federal Register
HDAR – Hawaii Division of Aquatic Resources
MHI – Main Hawaiian Islands
Magnuson-Stevens Act – Magnuson-Stevens Fishery Conservation and Management Act
MFMT – Maximum Fishing Mortality Threshold
MSST – Minimum Stock Size Threshold
MSY – Maximum Sustainable Yield
MUS – Management Unit Species
NMFS – National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric Administration
OFL – Overfishing Limit
OY – Optimum Yield
PIFSC – NMFS Pacific Islands Fisheries Science Center
PIRO – Pacific Islands Regional Office
SSC – Scientific and Statistical Committee
WPacFIN – Western Pacific Fisheries Information Network

1 Background Information

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

Crustacean management unit species of the western Pacific fisheries include the following stocks and stock complexes[1]: deep-water shrimps, spiny lobsters, slipper lobsters, and Kona crab (see list, Appendix A). Precious corals MUS include the following stocks and stock complexes: black corals, pink corals, bamboo corals and gold corals (see list, Appendix B).

General federal regulations for crustacean and precious coral fisheries are found in 50 CFR 665 and include federal permit and reporting requirements, vessel identification and observer requirements, fishing seasons, and size restrictions. Precious coral fishing in Hawaii is further regulated through closed areas and harvest quotas; however, there are no active fisheries for crustaceans or precious corals in federal waters around any island area at present. Additionally, there is a moratorium on fishing for gold corals in all U.S. EEZ waters through June 30, 2013.

Overview of the ACL Specification Process

NMFS is required to specify an annual catch limit (ACL) and accountability measures (AM) for all crustacean and precious coral stocks in fisheries of the western Pacific region, as recommended by the Council, and in consideration of the best available scientific, commercial, and other information about the fishery for that stock or stock complex. This section provides an overview of the steps taken by the Council in developing its recommendation.

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

[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 vulnerability to the fishery such that the impact of management actions on the stock is similar.

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

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

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

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

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

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

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

The second step requires the Council to determine an ACL that may not exceed the SSC recommended ABC. The process includes methods by which the ACL may be reduced from the ABC based on social, economic, and ecological considerations, or management uncertainty

(SEEM). An ACL set below the ABC further reduces the probability that actual catch will exceed the OFL and result in overfishing.

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

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

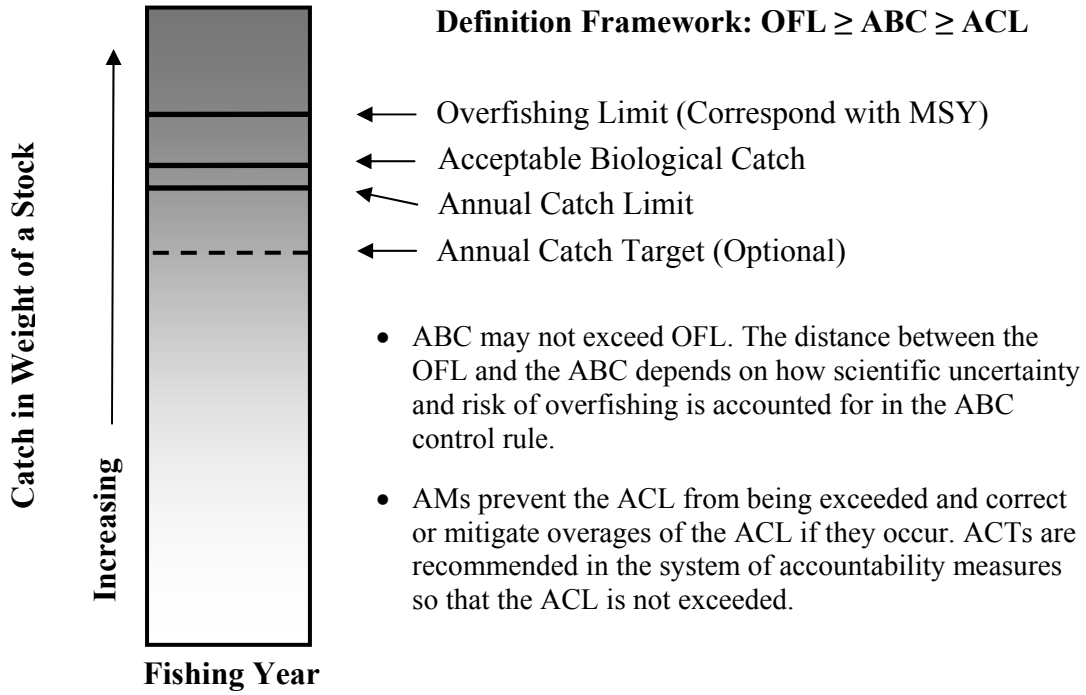

Figure 1. Relationship among OFL, ABC, ACL and ACT

1.1 Purpose and Need

ACLs are needed in order to comply with the Magnuson-Stevens Act and provisions of the FEPs for American Samoa, the Mariana Archipelago, and Hawaii which require NMFS to specify an ACL for each stock and stock complex in western Pacific crustacean and precious coral fisheries.

The fishery management objective of this action is to specify an ACL for all crustacean and precious coral MUS to prevent overfishing from occurring, and provide for long-term sustainability of the fishery resources while allowing fishery participants to continue to benefit from their utilization. AMs are to be used to correct or mitigate overages of the ACL should they occur.

1.2 Proposed Action

NMFS proposes to specify an ACL for each crustacean and precious coral stock or stock complex managed under the FEPs for American Samoa, the Marianas (which include Guam and the CNMI), and Hawaii. The proposed ACL specifications are based on the recommendations of the Council which were developed in accordance with the approved ACL mechanism described in the FEPs and implementing federal regulations at 50 CFR §665.4, and in consideration of the best available scientific, commercial, and other information.

For crustaceans, the ACLs and AMs would be applicable in fishing years 2012 and 2013 which begin on January 1 and end December 31, annually. For precious coral fisheries, the ACLs and AMs would be applicable in fishing years 2011-12 and 2012-13 which begin on July 1 and end June 30, the following year. Each fishing year, in each island area, catches would be counted towards the ACL for the stock or stock complex based on catch data collected by local resource management agencies through their respective fishery monitoring programs[2], and by NMFS through federal logbook reporting.

Pursuant to 50 CFR 665.4, when an ACL for any stock or stock complex is projected to be reached, based on best available information, NMFS will restrict fishing for that stock or stock complex in federal waters around the applicable U.S. EEZ to prevent the ACL from being exceeded. The restriction may include, but is not limited to closure of the fishery, closure of specific areas or restriction in effort (76 FR 37286, June 27, 2011). However, in-season restrictions are not possible for any fishery at this time because catch statistics are generally not available until at least six months after the data has been collected (see Section 2.3 for more details on data collection). For this reason, NMFS also proposes to implement the Council's recommended AM which requires the Council to conduct a post-season accounting of the annual catch for each stock and stock complex relative to its ACL immediately after the end of the fishing year. If landings of any stock or stock complex exceeds the specified ACL in a fishing year, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock or stock complex in the subsequent fishing year, or other measures, as appropriate. Additionally, as a performance measure specified in each FEP, if any ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness.

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

1.3 Decision to be Made

After considering public comments on the proposed action and alternatives considered, NMFS will specify ACLs and AMs for crustacean and precious coral stocks and stock complexes in American Samoa, CNMI, Guam and Hawaii for fishing years 2012 and 2013. The Regional Administrator of the NMFS Pacific Islands Regional Office (PIRO) will also use 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 that would require the preparation of an environmental impact statement.

1.4 Public Involvement

At its 152nd meeting, the Council considered and discussed issues relevant to ACL and AM specifications for western Pacific crustacean and precious corals in American Samoa, the CNMI, Guam, and Hawaii, including ABC recommendations of the 108th SSC, and the range of ACLs considered in this document. The 108th SSC and the 152nd Council meetings were held October 17-19, 2011 and October 19-22, 2011, respectively. Both meetings were open to the public and advertised through notices in the Federal Register (76 FR 60004; September 28, 2011) and on the Council's website. The public had an opportunity to comment at the meetings on the proposed ACL specifications and AMs and no public comment addressed this topic at either meeting.

NMFS is seeking public comment on the proposed rule to specify ACLs and implement AMs for crustacean and precious coral fisheries in American Samoa, CNMI, Guam and Hawaii, and this EA was distributed with the proposed rule. Instructions on how to comment on the proposed rule and a copy of the EA can be found by searching on RIN 0648-XA674 at www.regulations.gov, or by contacting the responsible official or Council at addresses on the cover page.

2 Description of the Alternatives

The alternatives considered in this document are a range of annual catch limits (ACLs) for crustacean and precious coral MUS caught in these fisheries in American Samoa, Guam, CNMI and Hawaii. Although the estimate of the overfishing limit (OFL) and calculation of the acceptable biological catch (ABC) are part of the ACL mechanism, the establishment of these reference points is not part of the proposed federal action because OFL is unknown, and, has not been determined for any crustacean or precious coral stock or stock complex. Additionally, the development of ABCs is not part of the federal action, but a summary of their development by the SSC is described in this section for informational purposes. ABCs were previously calculated by the Council's SSC at its 108th meeting, in accordance with the approved ACL mechanism described in the FEPs and implementing federal regulations at 50 CFR §665.4, and in consideration of the best available scientific, commercial, and other information. In accordance with the Magnuson-Stevens Act and the ACL mechanism described in all western Pacific FEPs, the Council's ACL recommendation may not exceed the ABC recommended by the Council's SSC.

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

Features common to all alternatives

Pursuant to 50 CFR 665.4, when an ACL for any stock or stock complex is projected to be reached, based on best available information, NMFS will restrict fishing for that stock or stock complex in federal waters around the applicable U.S. EEZ to prevent the ACL from being exceeded. The restriction may include, but is not limited to closure of the fishery, closure of specific areas or restriction in effort (76 FR 37286, June 27, 2011). However, in-season restrictions are not being recommended by the Council for any fishery at this time because catch statistics are generally not available until at least six months after the data has been collected (see Section 2.3 for more details on data collection). For this reason, a post season review is the proposed AM under all alternatives considered (except Alternative 1, the no-action alternative). As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate. Additionally, as a performance measure specified in each FEP, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Each alternative also assumes continuation of all existing federal and local resource management laws and regulations.

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

Fishery	Alternative 1 *No Action*	Alternative 2 *Council Recommended ACL* ***(Preferred)***	Alternative 3 *ACL = 90% of ABC*	Most Recent Landing (Years)[1]
HAWAII				
Deepwater Shrimp	No ACL	250,773 lb	225,695 lb	18,743 lb (2000-2010)
Spiny Lobster	No ACL	10,000 lb	9,000 lb	10,873 lb (2010)
Slipper Lobster	No ACL	280 lb	252 lb	102 lb (2009)
Kona Crab	No ACL	27,600 lb	24,840 lb	9,292 lb (2009)
Auau Channel Black Coral	5,000 kg*	2,500 kg	6,750 lb	5,587 lb (2000-2010)
Makapuu Bed Pink/Bamboo Coral	2,000/500 kg*	1,000/250 kg	1,229/233 kg	0
180 Fathom Bank Pink/Bamboo Coral	222/56 kg**	222/56 kg	273/51 kg	0
Brooks Bank Pink/Bamboo Coral	444/111 kg**	444/111 kg	546/104 kg	0
Kaena Point Bed Pink/Bamboo Coral	67/17 kg**	67/17 kg	82/15 kg	0
Keahole Bed Pink/Bamboo Coral	67/17 kg**	67/17 kg	82/15 kg	0
Precious Coral Exploratory Area	1000 kg**	1000 kg	900 kg	0
AMERICAN SAMOA				
Deepwater Shrimp	No ACL	80,000 lb	72,000 lb	0
Spiny Lobster	No ACL	2,300 lb	2,070 lb	1,417 lb (2008)
Slipper Lobster	No ACL	30 lb	27 lb	Unknown
Kona Crab	No ACL	3,200 lb	2,880 lb	0
Black Coral	No ACL	790 lb	711 lb	0
Precious Coral Exploratory Area	1,000 kg**	1,000 kg	900 kg	0
CNMI				
Deepwater Shrimp	No ACL	275,570 lb	248,018 lb	0
Spiny Lobster	No ACL	5,500 lb	4,950 lb	881 lb (2009)
Slipper Lobster	No ACL	60 lb	54 lb	165 lb (2009)
Kona Crab	No ACL	6,300 lb	5,670 lb	0
Black Coral	No ACL	2,100 lb	1,890 lb	0
Precious Coral Exploratory Area	1,000 kg**	1,000 kg	900 kg	0
GUAM				
Deepwater Shrimp	No ACL	48,488 lb	43,639 lb	0
Spiny Lobster	No ACL	2,700 lb	2,430 lb	1,144 (2009)
Slipper Lobster	No ACL	20 lb	18 lb	0
Kona Crab	No ACL	1,900 lb	1,729 lb	0
Black Coral	No ACL	700 lb	630 lb	0
Precious Coral Exploratory Area	1,000 kg**	1,000 kg	900 kg	0

[1]Catch reported to local marine resource management agencies through their respective data collection programs.
*Represents the current harvest quota that can be taken over the course of two consecutive fishing years.
**Represents the current annual harvest quota that can be taken annually.

2.1 Development of the Alternatives for Crustaceans – Deepwater Shrimp

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

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

In accordance with federal regulations, any vessel used to fish for deepwater shrimp or lobsters in the U.S. EEA must obtain a federal permit and submit catch logbooks to NMFS within 72 hours of landing. Crustacean Permit Area 1 includes the EEZ around the Northwestern Hawaiian Islands (NWHI). Crustacean Permit Area 2 includes the EEZ around the main Hawaiian Islands (MHI). Crustacean Permit Area 3 includes the EEZ around American Samoa. Crustacean Permit Area 4 includes the EEZ waters around the U.S. Pacific Remote Island Areas. Crustacean Permit Area 5 includes the EEZ around Guam, and EEZ waters from three miles to 200 nm seaward of the CNMI.

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

The SSC and Council developed the ABC and ACL recommendations for deepwater shrimp MUS in accordance with the Magnuson-Stevens Act and federal regulations at 50 CFR §665.4 that implement the ACL specification mechanism of the FEPs described in Section 1. The following section summarizes the data, methods, and procedures considered in SSC and Council deliberations as described in the Council's ACL specification document (WPFMC 2011). A full report of the 108th SSC and 152nd Council deliberations can be found on the Council website at: www.wpcouncil.org.

2.1.1 Hawaii Deepwater Shrimp ACL Alternatives

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

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

Table 3. Total and Average Annual Landings of Hawaii Deepwater Shrimp (1982-2010)

Years (Grouped)	Total Landing (lb)	Average Annual Landing (lb)
1982-1989 (8 yrs.)	320,195	40,024
1990-1999 (10 yrs.)	881,548	88,155
2000-2010 (11 yrs)	206,176	18,743

Source: Hawaii Division of Aquatic Resources (in WPFMC 2011)

NMFS/Council Estimation of OFL

There is no OFL estimate for deepwater shrimp in Hawaii.

SSC's Calculation of ABC

The most current estimate of maximum sustainable yield (MSY) for the deepwater shrimp stock complex in Hawaii is 125 mt/yr or 275,575 lb/yr (Tagami and Ralston 1988). At 108th SSC meeting, the SSC determined that the Hawaii deep water shrimp stock complex can be regarded as Tier 4 because MSY is known, but there is no current harvest. Therefore, consistent with the Tier 4 ABC control rule described in the Hawaii FEP, the SSC recommended the ABC be set equal to 0.91*MSY. As explained in the Hawaii FEP, the application of this control rule would result in a fishing mortality rate of 0.70 F_{MSY} which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty.

In calculating the ABC, the SSC applied the value for exploitable biomass (271.4 mt/yr or 598,328 lb) as estimated by Ralston and Tagami, (1992) instead of the MSY estimated by Tagami and Ralston (1988), and calculated an ABC of 544,479 lb which the SSC then rounded down to 544,000 lb. Because the SSC used the value for exploitable biomass in the Tier 4 ABC control rule calculation, the SSC-recommended ABC of 544,000 lb exceeds the MSY estimate of 125 mt or 275,575 lb/yr. Therefore, consistent with the intent of the SSC's recommendation, NMFS is making a technical correction to the ABC calculation by applying the correct MSY

value of 125 mt/ yr or 275,575 lb/yr into the Tier 4 ABC control rule which results in a corrected ABC of 250,773 lb.

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for the Hawaii deepwater shrimp stock complex as equal to the ABC, which, as re-calculated by NMFS, is 250,773 lb. In recommending the ACL, the Council considered the average annual landings for the three approximately 10-year periods in Table 3. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty as described in the Hawaii FEP, because average annual landings within each of three approximately 10-year periods are substantially lower than the MSY of 125 mt/yr (275,575 lb/yr) estimated by Ralston and Tagami (1988). Therefore, while setting the ACL equal to the ABC does not provide for consideration of management uncertainty, it is highly unlikely that catch would ever approach ACL based on the historical performance of the Hawaii deepwater shrimp fishery, and it is unlikely that the Hawaii deepwater shrimp stock complex would experience overfishing during the 2012 or 2013 fishing years.

2.1.1.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the Hawaii deepwater shrimp stock complex and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the Hawaii FEP which requires ACLs to be specified for all stocks and stock complexes in the deepwater shrimp fishery. Alternative 1 serves as the baseline for the environmental impact assessment.

2.1.1.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for the Hawaii deepwater shrimp stock complex would be set equal to the ACL recommended by the Council or 250,773 lb. This ACL is equal to the ABC and is 91% of the estimated MSY of 275,575 lb.

2.1.1.3 Alternative 3: Specify ACL at 90% of ABC

Under this alternative, the ACL for Hawaii deepwater shrimp stock complex would be set at 90% of the 250,773 lb ABC, or 225,695 lb. This ACL would be 82% of the MSY estimate of 275,575 lb.

2.1.2 American Samoa Deepwater Shrimp ACL Alternatives

No fishing for deepwater shrimp has ever been reported around American Samoa and no federal permits have ever been issued. However, in 1987 PIFSC fishery scientists conducted sampling at 10 shrimp trapping stations at depths ranging between 200 and 510 fathoms around American Samoa (Moffitt and Polovina 1987). Large pyramid single set traps were used and at least some *Heterocarpus* were present in every trap haul. Unpublished results from the cruise showed that deepwater shrimp were found at every trapping station and may be more abundant in some places than others. Additionally, depletion trapping surveys were conducted in Western Samoa

(near Apia) which yielded 0.6 kg of deepwater shrimp per trap (King 1980, King 1984). Other trapping studies have been conducted in other Pacific Islands including Hawaii, the Marianas, Guam, Tonga, Fiji, Vanuatu, New Caledonia, French Polynesia and the Kiribati.

NMFS/Council Estimation of OFL

There is no estimate of OFL for deepwater shrimp in American Samoa.

SSC's Calculation of ABC

At its 108th SSC, the SSC developed a proxy for estimating MSY for the American Samoa deepwater shrimp stock complex based on the product of an equilibrium sustainable yield estimate for deepwater shrimps and an estimate of the available deepwater shrimp habitat area of the seabed between 600 and 800 m.

Based on the trapping studies conducted in the Pacific Islands, King (1986) provides a potential equilibrium sustainable yield estimate for deepwater shrimps in the Pacific Islands of 200 kg/km^2 per year The equilibrium yield is estimated as the ratio of yield-per-unexploited biomass (Y/Bo) multiplied by the unexploited biomass estimated from the depletion experiments described in King (1986). Additionally, King (1988) estimates American Samoa contains approximately 200 km^2 of available deepwater shrimp habitat area which includes substrates between 600 and 800 m in depth though this may be an underestimate because of the incomplete coverage in the depth range of interest and because some banks and seamounts have yet to be mapped sufficiently to provide an accurate area estimate (Michael Parke, NMFS PIFSC, *pers. comm.*; Robert O'Conner, NMFS PIRO, *pers. comm.*).

Multiplying the King (1986) equilibrium sustainable yield estimate of 200 kg/km^2 by the King (1988) estimate of 200 km^2 of deepwater shrimp habitat for the territory, the SSC calculated a potential MSY proxy for deepwater shrimp in American Samoa of 40,000 kg or approximately 88,000 lb. The SSC determined that American Samoa deep water shrimp can be regarded as Tier 4 because an MSY proxy can be calculated, but there is no current harvest. Therefore, consistent with the Tier 4 ABC control rule described in the American Samoa FEP which requires ABC be set equal to 0.91*MSY, the SSC calculated ABC to be 80,000 lb. As explained in the American Samoa FEP, the application of this control rule would result in a fishing mortality rate of 0.70 F_{MSY}, which would maximize yield while minimizing fishery impacts to biomass, and account for scientific uncertainty.

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting ACL for America Samoa deepwater shrimp stock complex equal to the SSC recommended ABC of 80,000 lb. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty, as described in the American Samoa FEP, because no fishing for deepwater shrimp has ever been reported around American Samoa and none is expected to occur in 2012 or 2013. Therefore, it is highly unlikely that catch would approach the ACL any time in the foreseeable future, and it is unlikely that the American Samoa deepwater shrimp stock complex would experience overfishing during the 2012 or 2013 fishing years.

2.1.2.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the American Samoa deepwater shrimp stock complex and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the American Samoa FEP which requires ACLs to be specified for all stocks and stock complexes in the fishery. Alternative 1 serves as the baseline for the environmental impact assessment.

2.1.2.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for the American Samoa deepwater shrimp stock complex would be set equal to the ACL recommended by the Council or 80,000 lb. This ACL is equal to the ABC recommended by the SSC and is 91% of the estimated MSY proxy of 88,000 lb.

2.1.2.3 Alternative 3: Specify ACL at 90% of ABC

Under this alternative, the ACL for American Samoa deepwater shrimp stock complex would be set at 90% of the 80,000 lb ABC recommended by the SSC or 72,000 lb. This ACL would be 81% of the estimated MSY proxy of 88,000 lb.

2.1.3 CNMI Deepwater Shrimp ACL Alternatives

A directed fishery for deepwater shrimp in the CNMI began in mid-1994, but lasted only two years. One of two companies involved stopped fishing in mid-1995, after fishing a total of 193 days. Between May 1994 and February 1996, approximately 27,000 lb of deepwater shrimp were landed in the CNMI. Of these, more than 97 percent were *Heterocarpus laevigatus.* The remainder of the catch was *Heterocarpus ensifer* (WPFMC 2008). Small amounts of catch were reported in 2001, 2005, and 2006 as local fishermen explored re-invigorating the deepwater shrimp fishery; however the landings cannot be publicly reported to protect fishery data confidentiality. No shrimp catches have been reported recently. There are currently no Federal crustacean permits issued for deepwater shrimp harvest in CNMI.

NMFS/Council Estimation of OFL

There is no OFL estimate for deepwater shrimp in CNMI.

SSC's Calculation of ABC

Based on an equilibrium yield assessment conducted by NMFS Southwest Fisheries Science Center in 1987, the most current estimate of maximum sustainable yield (MSY) for the deepwater shrimp stock complex in the Mariana Archipelago is 161.5 mt/yr (Moffitt and Polovina 1987). The assessment identified *Heterocarpus ensifer*, *Heterocarpus laevigatus*, and *Heterocarpus longirostris* as the major components of catch in the Mariana Archipelago. The assessment also estimated yield for each individual island, bank and seamount in the archipelago (Table 4).

Table 4. Equilibrium yield for *Heterocarpus* shrimps in the Mariana Archipelago

Bank Area (CNMI)	**Yield (mt/yr)**
Maug	0.9
Asuncion	1.5
Agrihan	3.0
Pagan	4.3
Alamagan	3.0
Guguan	1.7
Sarigan	0.8
Anatahan	3.1
38 Fathom	1.7
Esmeralda	0.3
Farallon de Medinilla	10.6
Saipan	54.1
Tinian	16.3
Aguijan	7.8
Rota	24.7
Bank C	0.7
Bank D	0.9
Pathfinder	0.9
Arakane	0.5
Bank A	0.6
CNMI Total	**137.4**
Bank Area (Guam)	**Yield (mt/yr)**
Guam Island	3.9
Galvez and Santa Rosa	20.2
Guam Total	**24.1**
Archipelagic Total (CNMI + Guam)	***161.5***

Source: Adapted from Moffitt and Polovina (1987)

At its 108th meeting, the SSC determined that the CNMI deep water shrimp stock complex can be regarded as a Tier 4 stock complex because an MSY is known, but there is no current harvest. Therefore, consistent with the Tier 4 ABC control rule described in the Mariana Archipelago FEP, the SSC recommended the ABC = 0.91*MSY. As explained in the Mariana FEP, the application of this control rule would result in a fishing mortality rate of 0.70 F_{MSY} , which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty. Applying the Tier 4 ABC control rule to the CNMI deepwater shrimp MSY estimate of 137.4 mt/yr (302,830 lb), as provided for in Moffitt and Polovina (1987) and listed in Table 4, yields an ABC of 125 mt/yr or 275,575 lb.[3]

[3] Note that this is a corrected ABC. At its 108th meeting, the SSC applied an MSY estimate of 133.8 mt/yr (294,975 lb/yr) for CNMI deepwater shrimp, resulting in an ABC of 268,000 lb. However, the MSY estimate used by the SSC is the result of a technical error in the interpretation of Moffitt and Polovina (1987) who calculate the MSY for deepwater shrimp in the CNMI as 137.4 mt/yr as shown in Table 4.

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for the CNMI deepwater shrimp stock complex equal to the ABC or 275,575 lb. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP because there have been no reported landings of deepwater shrimp for the past five years and none is expected to occur in 2012 or 2013. Therefore, it is highly unlikely that catch would approach the ACL anytime in the foreseeable future, and it is unlikely that the CNMI deepwater shrimp stock complex would experience overfishing during the 2012 or 2013 fishing years.

2.1.3.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the CNMI deepwater shrimp stock complex and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the Mariana Archipelago FEP which require ACLs to be specified for all stocks and stock complexes in the fishery. Alternative 1 serves as the baseline for the environmental impact assessment.

2.1.3.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for the CNMI deepwater shrimp stock complex would be set equal to the ACL recommended by the Council or 275,575 lb. This ACL is equal to the ABC recommended by the SSC and is 91% of the MSY of 302,830 lb (137.4 mt/yr) estimated by Moffitt and Polovina (1987).

2.1.3.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for CNMI deepwater shrimp stock complex would be set at 90% of the 275,575 lb ABC recommended by the SSC or 248,018 lb. This ACL is 82% of the MSY of 302,830 lb (137.4 mt/yr) estimated by Moffitt and Polovina (1987).

2.1.4 Guam Deepwater Shrimp ACL Alternatives

A small-scale fishery for deepwater shrimp occurred in the 1970s, but ended shortly thereafter. No fishing or landings have been reported since. There are currently no federal crustacean permits issued for deepwater shrimp harvest in Guam and no recent shrimp harvests have been reported. Based on an equilibrium yield assessment conducted by NMFS Southwest Fisheries Science Center in 1987 (Moffitt and Polovina 1987), the most current estimate of MSY for the deepwater shrimp stock complex in Guam, including the offshore banks of Galvez and Santa Rosa, is 24.1 mt/yr or 53,116 lb/yr (Table 4).[4]

[4] Note that this is a corrected ABC. At its 108th meeting, the SSC applied an MSY estimate of 27.7 mt/yr (61,067 lb/yr) for Guam deepwater shrimp, resulting in an ABC of 268,000 lb. However, the MSY estimate used by the SSC is the result of a technical error in the interpretation of Moffitt and Polovina (1987) who calculate the MSY for deepwater shrimp in Guam as 24.1 mt/yr as shown in Table 4.

SSC's Calculation of ABC

At its 108th meeting, the SSC determined that the Guam deep water shrimp stock complex can be regarded as Tier 4 because an MSY is known, but there is no current harvest. Therefore, consistent with the Tier 4 ABC control rule described in the Mariana Archipelago FEP, the SSC recommended ABC = 0.91*MSY. As explained in the Mariana FEP, the application of this ABC control rule would result in a fishing mortality rate of 0.70 F_{MSY} , which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty. Applying the Tier 4 ABC control rule to the MSY estimate of 24.1 mt/yr, as provided for in Moffitt and Polovina (1987) and listed in Table 4, yields an ABC of 22 mt/yr or 48,488 lb.

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for the Guam deepwater shrimp stock complex equal to the ABC or 48,488 lb. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP because there have been no reported landing of deepwater shrimp fishing since the 1970s and none is expected to occur in 2012 or 2013. Therefore, it is highly unlikely that catch would approach the ACL anytime in the foreseeable future and it is unlikely that the Guam deepwater shrimp stock complex would experience overfishing during the 2012 or 2013 fishing years.

2.1.4.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the Guam deepwater shrimp stock complex and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the Guam FEP which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.1.4.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for Guam deepwater shrimp stock complex would be set equal to the ACL recommended by the Council or 48,488 lb. This ACL is equal to the ABC recommended by the SSC and is 91% of the MSY of 53,116 lb/yr (24.1 mt/yr) estimated by Moffitt and Polovina (1987).

2.1.4.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for the Guam deepwater shrimp stock complex would be set at 90% of the 48,488 lb ABC recommended by the SSC or 43,639 lb. This ACL is 82% of the MSY of 53,116 lb (24.1 mt/yr) estimated by Moffitt and Polovina (1987).

2.2 Development of the Alternatives for Crustaceans - Spiny and Slipper Lobster

Lobsters are harvested on a small scale basis throughout the inhabited islands of the western Pacific region and are comprised primarily of species belonging to the taxonomic groups

Palinuridae (spiny lobsters) and Scyllaridae (slipper lobsters). The FEPs for American Samoa, the Mariana Archipelago (including Guam and the CNMI), and Hawaii include two species of spiny lobster (*Panulirus marginatus* and *Panulirus penicillatus*), and all species of slipper lobsters belonging to the family Scyllaridae as management unit species.

Generally, adult lobsters are typically found on rocky substrates in association with coral reef ecosystems that provide shelter as well as a diverse and abundant supply of food items. Some species can be found on rocky substrates in well-protected areas, in crevices and under rocks, while others inhabit the rocky shelters in the windward surf zones of oceanic reefs.

In 1999, the Council developed and NMFS approved essential fish habitat (EFH) designations for adult and juvenile lobsters (as well as Kona crab) as the bottom habitat from the shoreline to a depth of 100 m or 0-50 fathoms (see section 3.4 for more information about EFH designations). This EFH designation corresponds to the definition of coral reef ecosystem in the FEPs for American Samoa, the Mariana Archipelago (including Guam and CNMI) and Hawaii. Table 5 lists the estimate area of coral reef ecosystem habitat in the main Hawaiian Islands, American Samoa, Guam and the CNMI as reported in Hunter (1995) and WPFMC (2001).

Table 5. Estimated Coral Reef Habitat in the Western Pacific Region*

Island Area	Area of Coral Reef Ecosystem Habitat (0-100 m) in km²
Main Hawaiian Islands	2,535
American Samoa	296
Guam	179
CNMI	579

*Coral reef habitat, as defined in this table, is based on the definition in western Pacific regional fishery ecosystem plans and includes "bottom habitat from the shoreline to a depth of 100 m (0-50 fathoms).
Source: Hunter (1995); WPFMC (2001)

Comprehensive information on target, non-target stocks, bycatch, protected species and conservation and management measures for lobster fisheries can be found in the American Samoa Archipelago FEP (WPFMC 2009a), the Hawaii Archipelago FEP (WPFMC 2009b) and the Mariana Archipelago FEP (WPFMC 2009c).

The SSC and Council developed the ABC and ACL recommendations for spiny and slipper lobsters in accordance with the Magnuson-Stevens Act and federal regulations at 50 CFR §665.4 that implement the ACL specification mechanism of the FEPs described in Section 1. The following section summarizes the data, methods, and procedures considered in SSC and Council deliberations as described in the Council's ACL specification document (WPFMC 2011). A full report of the 108th SSC and 152nd Council deliberations can be found on the Council website at: www.wpcouncil.org.

2.2.1 Hawaii Spiny and Slipper Lobster ACL Alternatives

In Hawaii, fisheries for lobsters target the two species of spiny lobster and several species of slipper lobsters, although two species, the common slipper lobster (*Scyllarides squammosus*) and the ridgeback slipper lobster (*Scyllarides haanii*) are the principle species harvested. Gear types

used in Hawaii's lobster fisheries include traps, nets and hand harvest, with the latter being the preferred method in recent years and accounting for nearly 80 percent of reported landings between 1994 and 2004 (Kelly and Messer, 2005).

Prior to 1999, the majority of spiny lobster production was attributed to the Northwestern Hawaiian Island lobster trap fishery. However, since the closure of the NWHI fishery in 1999, fishing is now confined to the main Hawaiian Islands (MHI) and with more than 97% of the total catch coming from state waters (WPFMC 2011).

Between 1966 and 2010, spiny lobster production in the MHI ranged from just over 1,400 lb to about 14,000 lb with 16-69 commercial participants in any given year. During the same time period, slipper lobster landings ranged from about 0-2,395 lb with 4-12 commercial participants. Only about 2% of the spiny lobster landings from the MHI are estimated to have come from federal waters (WPFMC 2011). There are currently no Federal crustacean permits issued for lobsters in the MHI. Table 6 summarizes the reported commercial landing of spiny and slipper lobster landings between 1966 and 2010.

There is no information on the amount of non-commercial lobster harvest in the MHI. Some non-commercial lobster harvest is noted from shore-based creel census and telephone intercept surveys.

Table 6. Annual reported commercial landings of spiny and slipper lobsters in the main Hawaiian Islands (1966-2010)

Fishing Year	Spiny Lobster Total Landing (lb)	Slipper Lobster Total Landing (lb)
1966	8,295	0
1967	5,320	0
1968	3,481	0
1969	8,312	105
1970	6,681	0
1971	6,818	89
1972	4,376	0
1973	5,101	0
1974	5,757	100
1975	4,152	100
1976	3,958	47
1977	8,531	0
1978	8,614	160
1979	4,113	129
1980	6,324	119
1981	4,449	277
1982	9,195	152
1983	7,510	85
1984	14,933	687
1985	14,034	1,878

Fishing Year	Spiny Lobster Total Landing (lb)	Slipper Lobster Total Landing (lb)
1986	11,907	2,395
1987	10,205	287
1988	11,454	416
1989	6,673	498
1990	7,135	34
1991	5,297	160
1992	9,327	66
1993	2,018	42
1994	1,411	45
1995	3,050	97
1996	7,486	765
1997	6,852	387
1998	11,802	917
1999	8,170	107
2000	10,339	192
2001	8,577	114
2002	11,270	58
2003	7,310	40
2004	6,787	36
2005	10,525	0
2006	10,032	0
2007	8,755	70
2008	8,710	78
2009	11,073	102
2010	10,873	No data

Source: WPFMC 2011

NMFS/Council Estimation of OFL

There is no OFL estimate for spiny lobsters or slipper lobsters in Hawaii.

SSC's Calculation of ABC

There is no MSY estimate for spiny lobsters in Hawaii.[5] At the 108th SSC meeting, the SSC recommended that, for species with no MSY estimates, the ABC be set in accordance with the Tier 5 ABC control rule as described in the Hawaii FEP. See Section 1 for a description of the Council's default ABC control rule for Tier 5 data poor stocks.

In defining "Recent Catch" to apply in the ABC control rule, the SSC recommended using the 75th percentile of the long term catch history for MHI spiny and slipper lobster as the definition

[5] Amendment 1 to the Fishery Management Plan for Crustacean Fisheries of the Western Pacific Region (WPFMC 1983) provides an estimate of optimum yield for MHI lobsters as being 15-30,000 lobsters annually. However, the basis for this estimate is unknown. Using an estimate of 2 lb/lobster (Kelly and Messer, 2005), an OY of 15-30,000 lobsters would yield between 30,000 and 60,000 pounds of lobsters annually. The SSC did not rely on this data in setting ABC.

of "Recent Catch." The 75th percentile is the value of an array (in this case, the level of catch in terms of pounds) below which 75% of the observations may be found. This is a non-parametric approach, that is, a distribution-free method and does not rely on assumptions that the data are drawn from a given probability distribution. Referring to discussions at the 107th SSC meeting, the SSC noted that the insular fishery catch vs. time-series data usually display considerable inter-annual variability; therefore, non-parametric measures are a better way to summarize such data compared to averages (Chambers et al. 1983,Cleveland 1993).

The SSC noted that the inter-quartile range (25-75th percentile) is a standard non-parametric measure that may be used to summarize data with considerable inter-annual variability, and determined that using the 75th percentile of long-term catch for Tier 5 stocks was more appropriate than the median long-term catch (or 50th percentile) as described in the Tier 5 control rule because using the 50th percentile is likely to result in ABC being attained 50% of the time.

Based on this approach and rationale, the SSC recommended the ABC for both spiny lobsters and slipper lobster in the MHI be set based on 1 x the 75th percentile of the long term catch history (Figures 2 and 3). Specifically, the SSC set the ABC for spiny lobsters at 10,000 lb and the ABC for slipper lobsters at 280 lb.

The SSC determined a multiplier of 1 was warranted in both calculations of ABC because there are numerous state regulations to conserve lobster populations in both the MHI and the NWHI, including size limits (Hawaii Administrative Rule Title 13, Subtitle 4, Chapter 89 §13-89-1), prohibitions on taking or killing of female spiny lobsters (Hawaii Revised Statutes §188-58.5) and numerous restricted fishing areas including Fishery Management Areas, Marine Life Conservation Districts, State Marine Refuges and Natural Area Reserves.

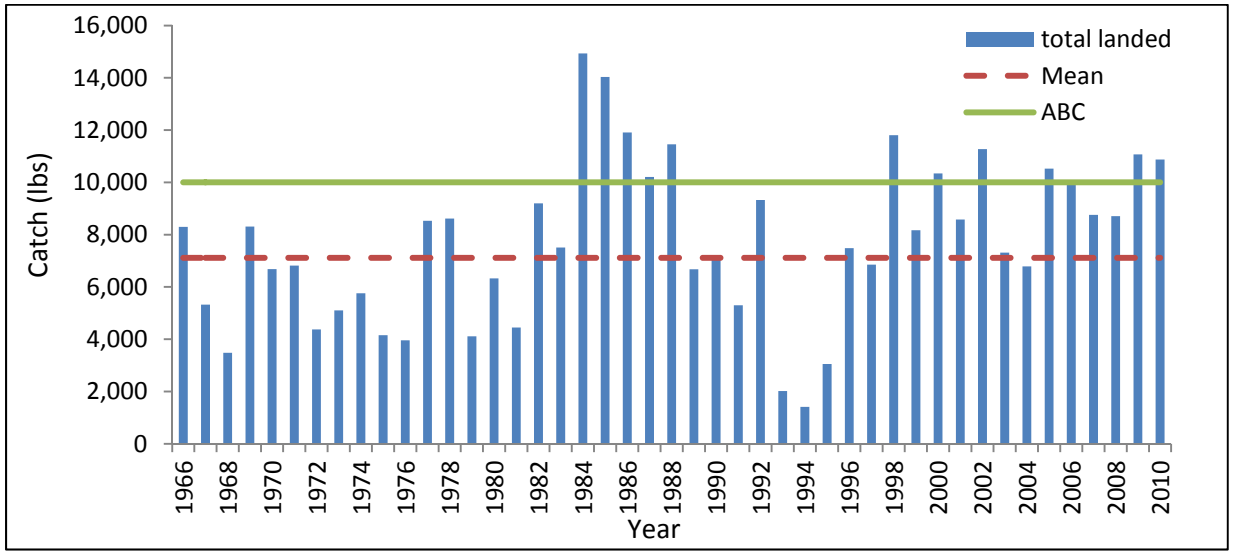

Figure 2. Average reported commercial landings of spiny lobster in the MHI (1966-2010) compared to the recommended acceptable biological catch (ABC)

Source: WPFMC 2011

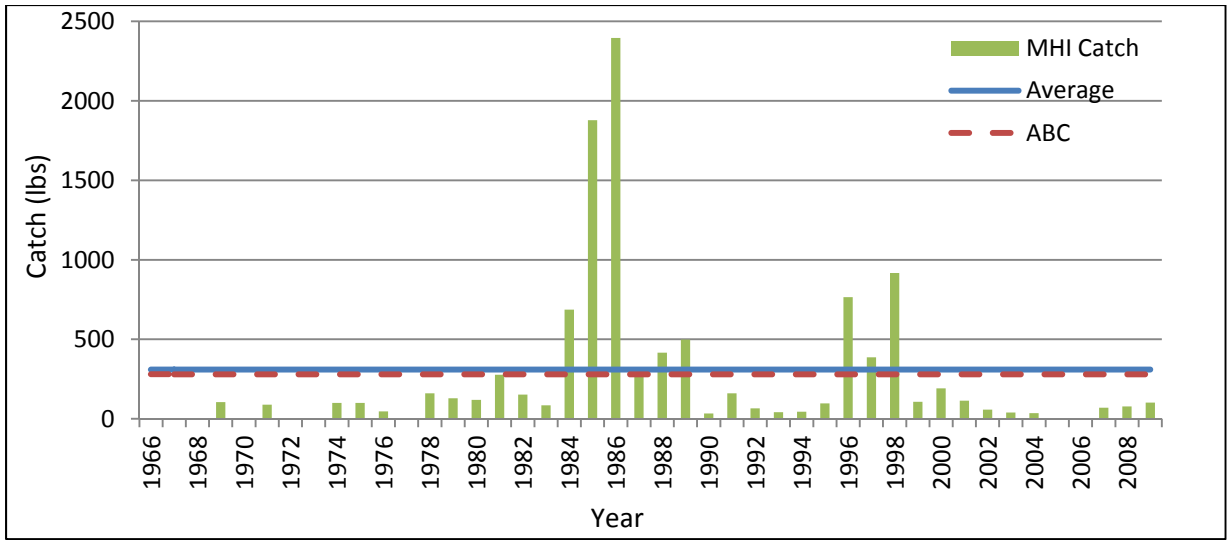

Figure 3. Average reported commercial landings of slipper lobster in the MHI (1966-2008) compared to the recommended acceptable biological catch (ABC)

Source: WPFMC 2011

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for MHI spiny lobster stock complex and slipper lobster stock complex equal to the SSC recommended ABCs which are 10,000 lb and 280 lb, respectively. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty as described in the Hawaii FEP because the ACL for spiny lobsters would be set significantly below the OY estimate of 15,000-30,000 lobsters (or 30,000-60,000 lb) described in Amendment 1 to the Crustacean FMP. Additionally, the Council noted that for both spiny and slipper lobsters, there are numerous regulations implemented by the State of Hawaii that limit lobster harvest and provide protection to lobster populations.

2.2.1.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the Hawaii spiny lobster stock complex or the Hawaii slipper lobster stock complex and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the Hawaii FEP which requires ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.2.1.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for the Hawaii spiny and slipper lobster stock complexes would be set equal to the ACLs recommended by the Council which are 10,000 lb and 280 lb, respectively.

2.2.1.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACLs for Hawaii spiny and slipper lobster stock complexes would be set at 90% of the ABC recommended by the SSC. This would result in ACLs of 9,000 lb and 252 lb, respectively.

2.2.2 American Samoa Spiny and Slipper Lobster ACL Alternatives

In American Samoa, the spiny lobster (*Panulirus penicillatus*) is the main lobster species harvested and is primarily speared at night near the outer reef slope by free divers diving for finfish in territorial waters. Total landings expanded from a market survey conducted by the American Samoa Department of Marine and Wildlife Resources are estimated to average 1,271 lb of spiny lobsters sold per year, without taking subsistence and recreational catches into account (Coutures 2003).

Commercial landings reported by the American Samoa DMWR between 2000 and 2008 ranged from 170-5,404 lb (Table 7). According to landings records, slipper lobsters in American Samoa are not exploited. However, an SSC member from American Samoa reported at the 108th SSC meeting, that some slipper lobsters are harvested but the catch is not identified to the species level in the DMWR fishery's monitoring creel survey programs. There are currently no Federal crustacean permits issued for lobster harvest in American Samoa and most of the harvest is believed to be from territorial waters.

Table 7. Annual commercial landing of spiny lobsters in the American Samoa (2000-2008)

Fishing Year	Total Landings* (lb)
2000	170
2001	1484
2002	762
2003	779
2004	516
2005	3335
2006	5405
2007	2327
2008	1417

*Total landings are estimated from intercept monitoring surveys.
Source: WPFMC 2011

NMFS/Council Estimation of OFL

There is no OFL estimate for slipper or spiny lobsters in American Samoa.

SSC's Calculation of ABC

Spiny Lobster

There is no MSY estimate for spiny lobsters in American Samoa. At the 108th SSC meeting, the SSC recommended that, for species with no MSY estimates, the ABC be set in accordance with

the Tier 5 ABC control rule as described in the American Samoa FEP. See Section 1 for a description of the Council's default ABC control rule for Tier 5 data poor stocks.

In defining "Recent Catch" to apply in the ABC control rule, the SSC recommended using the 75th percentile of the entire catch history for spiny lobster as the definition of "Recent Catch." Based on this approach, the SSC recommended ABC for spiny lobsters in American Samoa be set based on 1 x the 75th percentile of the long term catch history (Figure 4). Specifically, the SSC set the ABC for spiny lobsters at 2,300 lb. The SSC determined a multiplier of 1 was warranted in the calculation of the spiny lobster ABC because there is no evidence of declining stock abundance and no long recorded history of exploitation (WPFMC 2011).

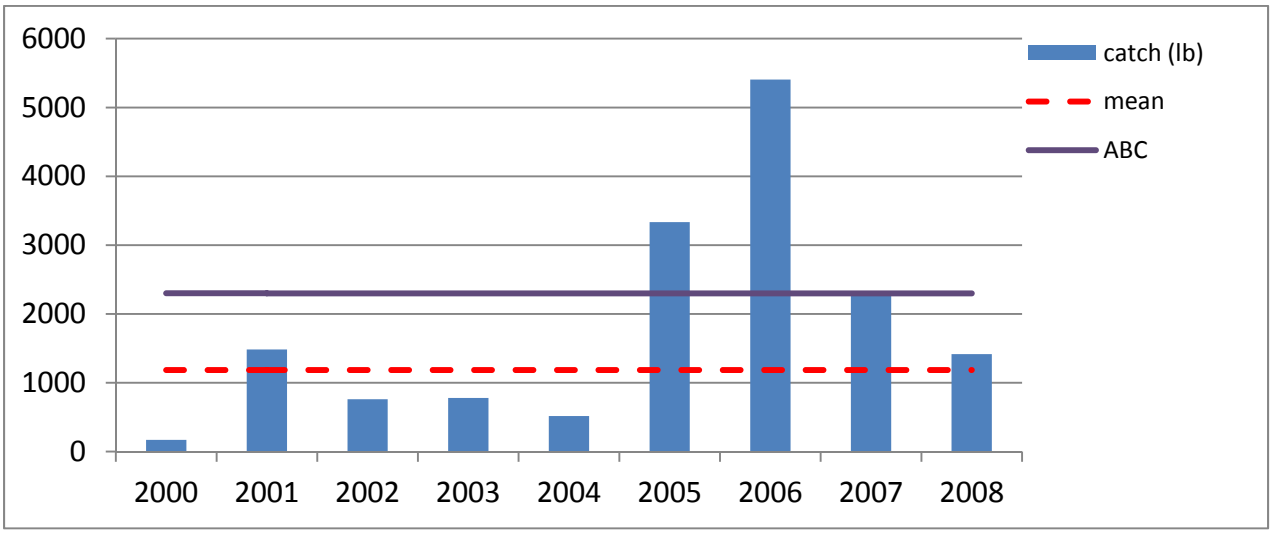

Figure 4. Average catch of spiny lobster in the American Samoa fishery (2000-2010) compared to the recommended acceptable biological catch (ABC)

Source: WPFMC 2011

Slipper Lobster

There is no MSY estimate for slipper lobsters in American Samoa. Additionally, there is no catch information and, therefore, this precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating an ABC for the American Samoa slipper lobster stock complex.

First, SSC recognized that essential fish habitat (EFH) designation for juvenile and adult slipper lobsters in American Samoa included all bottom habitat from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that American Samoa contains approximately 296 km² of lobster EFH as shown in Table 5. The SSC then developed an estimate of slipper lobster density based on the slipper lobster density estimated for Hawaii (the only area that has specifically documented harvesting of slipper lobster). To do this, the SSC applied the 75th percentile of slipper lobster catch from the MHI (which is 280 lb), and a MHI lobster EFH area of 2,535 km², and calculated that there are approximately 0.11 spiny lobsters per km² of EFH in the MHI. Using this spiny lobster density as a proxy for slipper lobsters, and applying the

ratio of 0.11 lobsters per EFH area to American Samoa, the SSC calculated the ABC for American Samoa slipper lobster stock complex to be 33 lb.

American Samoa Slipper Lobster ABC Proxy Equation:

$$(280 \text{ lb lobsters} / 2{,}535 \text{ km}^2) * 296 \text{ km}^2 = 33 \text{ lbs}$$

Although the SSC expressed concern about undocumented slipper lobster landings, it did note that the species is a small proportion of total lobster landings. The SSC also noted that American Samoa regulations prohibit the harvest of berried females for both species (American Samoa Administrative Code, Title 24, Chapter 9, V. 24.0935 and 24.0936) and the extensive protected areas on Tutuila and in the Rose Atoll Monument. An additional regulation is the prohibition of the use of spears or snagging devises to harvest slipper lobsters (American Samoa Administrative Code, Title 24, Chapter 9, V. 24.0935). An additional regulation for spiny lobsters is a size restriction (American Samoa Administrative Code, Title 24, Chapter 9, V. 24.0936).

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACLs for the American Samoa spiny lobster stock complex and slipper lobster stock complex equal to the SSC-recommended ABCs which are 2,300 lb and 30 lb, respectively. The Council did not recommend reducing the ACLs from the ABCs in consideration of social, economic, ecological considerations or management uncertainty as described in the American Samoa FEP. While setting the ACLs equal to the ABCs allows for no precaution in the fishery, the Council noted there is currently only a small commercial fishery occurring in territorial waters, thus the Council does not expect the continued harvest to adversely impact lobster populations. The Council also noted that numerous regulations are already in place in American Samoa territorial waters that provide protection to the lobster stock populations.

2.2.2.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the American Samoa spiny lobster stock complex or the American Samoa slipper lobster stock complex and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.2.2.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for American Samoa's spiny lobster and slipper lobster stock complexes would be set equal to the ACL recommended by the Council, which is 2,300 lb and 30 lb, respectively. This is equal to the ABC recommended by the SSC.

2.2.2.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for American Samoa's spiny lobster and slipper lobster stock complexes would be set at 90% of the ABC recommended by the SSC. This would result in ACLs of 2,070 lb and 27 lb, respectively.

2.2.3 CNMI Spiny and Slipper Lobster ACL Alternatives

The CNMI lobster fishery primarily targets spiny lobsters which are harvested by hand, with scuba or by free diving (Table 8). This fishery occurs almost exclusively inside of three nautical miles of the inhabited southern islands of Saipan, Tinian and Rota although, anecdotal information indicates that in the northern islands on the reef surrounding Farallon de Medinilla, bottomfish fishermen anchored overnight occasionally dive for lobsters (WPFMC 2011; NMFS and WPFMC 2009). Slipper lobster catches have only recently been reported within the past several years with catches of 7 lb, 371 lb and 165 lb reported in 2007, 2008 and 2009 (WPacFIN unpublished data). There are currently no Federal crustacean permits issued for lobster harvest in CNMI.

Table 8. Annual commercial landing of spiny lobsters in the CNMI (1981-2009)

Fishing Year	Spiny Lobster Total Landing (lb)
1981	946
1982	2610
1983	5865
1984	12,868
1985	6,000
1986	8,022
1987	6,261
1988	4,707
1989	5,447
1990	4,859
1991	3,945
1992	2,780
1993	2,991
1994	4,243
1995	2,149
1996	3,830
1997	433
1998	5,549
1999	3,112
2000	3,967
2001	4,732
2002	1,841
2003	743
2004	2,447

Fishing Year	Spiny Lobster Total Landing (lb)
2005	5,610
2006	4,391
2007	3,008
2008	2,259
2009	881

Source: WPFMC 2011

NMFS/Council Estimation of OFL

There is no OFL estimate for slipper or spiny lobsters in the Mariana Archipelago.

SSC's Calculation of ABC

Spiny Lobster

There is no MSY estimate for spiny lobsters in the CNMI. At the 108th SSC meeting, the SSC recommended that, for species with no MSY estimates, the ABC be set in accordance with the Tier 5 ABC control rule as described in the Mariana Archipelago FEP. See Section 1 for a description of the Council's default ABC control rule for Tier 5 data poor stocks.

In defining "Recent Catch" to apply in the ABC control rule, the SSC recommended using the 75th percentile of the entire catch history for spiny lobster as the definition of "Recent Catch." Based on this approach, the SSC recommended the ABC for spiny lobsters in the CNMI be set based on 1 x the 75th percentile of the long term catch history (Figure 5). Specifically, the SSC set the ABC for spiny lobsters at 5,500 lb.

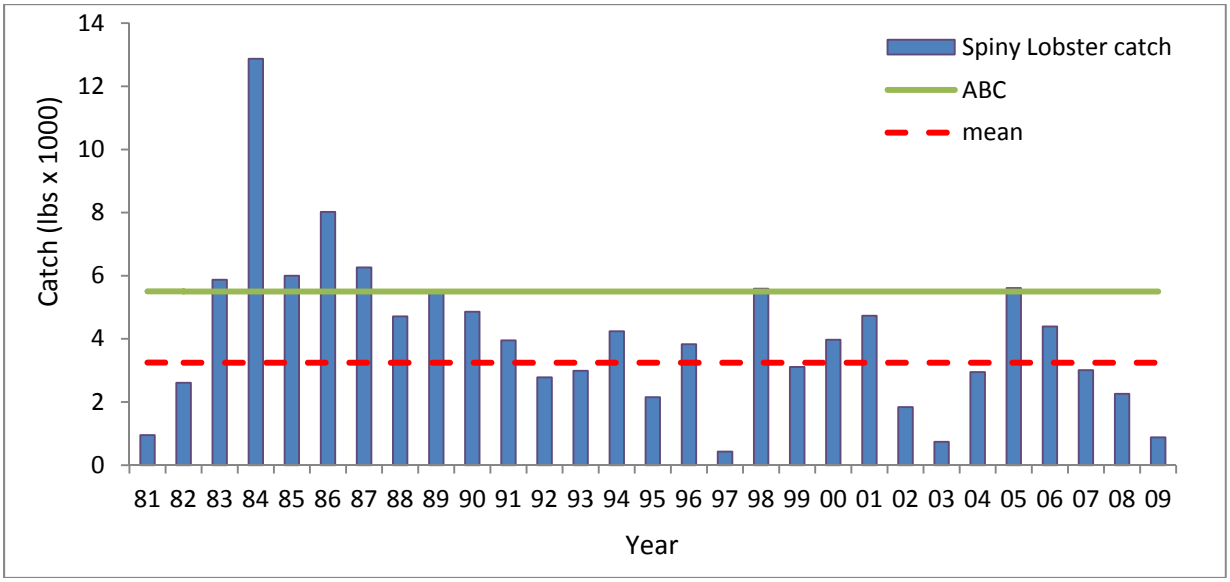

Figure 5. Average catch of spiny lobster in the CNMI (1982-2009) compared to acceptable biological catch (ABC)

Source: WPFMC 2011

Slipper Lobster

There is no MSY estimate for slipper lobsters in CNMI. Additionally, there are only three years of available catch information and, therefore, this precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating an ABC for the CNMI slipper lobster stock complex.

First, SSC recognized that essential fish habitat (EFH) designation for juvenile and adult slipper lobsters in CNMI included all bottom habitat from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that CNMI contains approximately 579 km² of lobster EFH as shown in Table 5. The SSC then developed an estimate of slipper lobster density based on the slipper lobster density estimated for Hawaii (the only area that has specifically documented harvesting of slipper lobster). To do this, the SSC applied the 75th percentile of slipper lobster catch from the MHI (which is 280 lb), and a MHI lobster EFH area of 2,535 km², and calculated that there are approximately 0.11 spiny lobsters per km² of EFH in the MHI. Using this spiny lobster density as a proxy for slipper lobsters, and applying the ratio of 0.11 lobsters per EFH area to the CNMI, the SSC calculated the ABC for the CNMI slipper lobster stock complex to be 64 lb, but rounded the ABC downward to 60 lb.

CNMI Slipper Lobster ABC Proxy Equation:

(280 lb slipper lobsters/2,535 km^2) * 579 km^2 (estimated EFH) = 64 lbs

For spiny lobsters in the CNMI, the SSC determined a multiplier of 1 was warranted because there is no evidence of a long-term trend toward depletion in 20 years of landings. Additional sources of assurance that overfishing is not occurring for both spiny and slipper lobsters in CNMI, there is a significant reservoir of biomass in the uninhabited islands and monument, a closed area of shallow reef off Farallon de Medinilla that provides habitat for lobsters, and territorial regulations that provide protection to lobsters less than 3 inches, berried females and unberried females, as well as prohibit any harvest mechanism other than by hand (DFW Fishing Regulations, Part 3, Section 50.1).

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting ACL for the CNMI spiny lobster stock complex and slipper lobster stock complex equal to the SSC-recommended ABCs which are 5,500 lb and 60 lb, respectively. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP. While setting ACL equal to ABC allows for no precaution in the fishery, the Council noted there is currently only a small commercial fishery occurring in CNMI waters. The Council also noted that numerous regulations are already in place in CNMI territorial waters that provide protection to the lobster stock populations.

2.2.3.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the CNMI spiny lobster stock complex or the CNMI slipper lobster stock complex and AMs would not be necessary. However,

this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the Mariana Archipelago FEP which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.2.3.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for CNMI's spiny lobster and slipper lobster stock complexes would be set equal to the ACL recommended by the Council which is 5,500 lb and 60 lb, respectively.

2.2.3.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for CNMI's spiny lobster and slipper lobster stock complexes would be set at 90% of the ABC recommended by the SSC. This would result in ACLs of 4,950 lb and 54 lb, respectively.

2.2.4 Guam Spiny and Slipper Lobster ACL Alternatives

Little is known about Guam's crustacean fisheries. Most fishing for crustaceans around Guam occurs in territorial waters in a subsistence or recreational context. Estimated commercial landings for spiny lobsters for the period 2000 through 2009 are available and summarized in Table 9. There are no documented landings of slipper lobsters in Guam. Additionally, there are currently no Federal crustacean permits issued for lobster harvest in Guam.

Table 9. Annual commercial landing of spiny lobsters in the Guam (2000-2009)

Fishing Year	Spiny Lobster Total Landing (lb)
2000	337
2001	1,296
2002	1,527
2003	2,235
2004	1,966
2005	2,704
2006	4,789
2007	4,725
2008	1,168
2009	1,144

Source: WPFMC 2011

NMFS/Council Estimation of OFL

There is no OFL estimate for slipper or spiny lobsters in Guam

SSC's Calculation of ABC

Spiny Lobster

There is no MSY estimate for spiny lobsters in Guam. At the 108th SSC meeting, the SSC recommended that, for species with no MSY estimates, the ABC be set in accordance with the

Tier 5 ABC control rule as described in the Mariana Archipelago FEP. See Section 1 for a description of the Council's default ABC control rule for Tier 5 data poor stocks.

In defining "Recent Catch" to apply in the ABC control rule, the SSC recommended using the 75th percentile of the entire catch history for spiny lobster as the definition of "Recent Catch." Based on this approach, the SSC recommended ABC for spiny lobsters in CNMI be set based on 1 x the 75th percentile of the long term catch history (Figure 6). Specifically, the SSC set ABC for spiny lobsters at 2,700 lb.

For spiny lobster, the SSC determined a multiplier of 1 was warranted because biomass is inevitably high due to the numerous closed areas on Guam, including marine protected areas and de-facto marine protected areas within U.S. military installations which account for a substantial amount of nearshore marine waters around Guam.

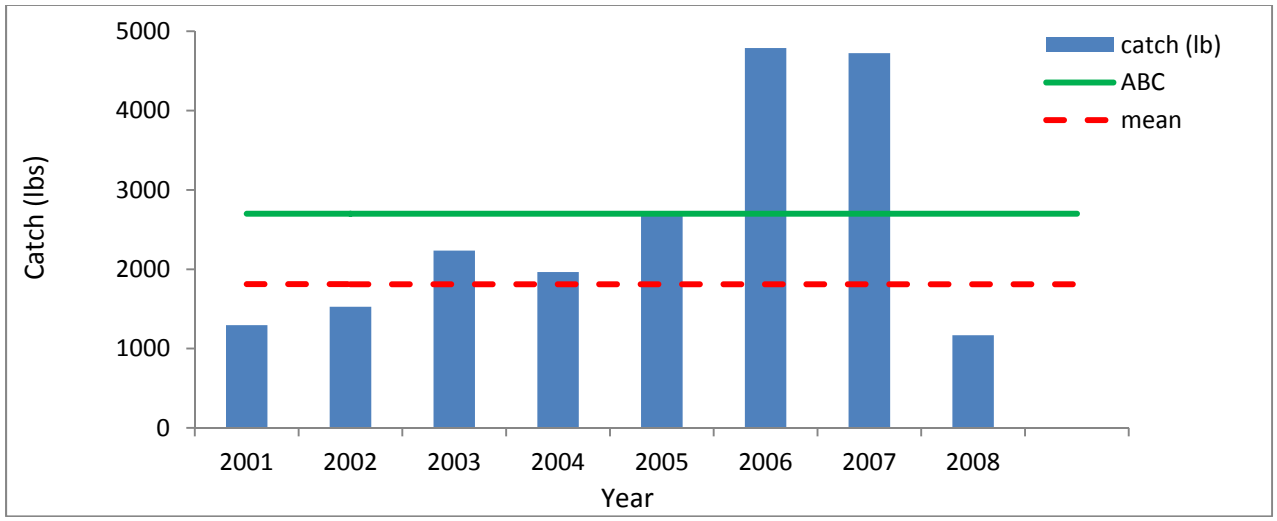

Figure 6. Average catch of spiny lobster in Guam (2001-2008) compared to ABC

Source: WPFMC 2011

Slipper Lobsters

There is no MSY estimate for slipper lobsters in Guam. Additionally, there is no catch information and, therefore, this precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating the ABC for the Guam slipper lobster stock complex.

First, the SSC recognized that essential fish habitat (EFH) designation for juvenile and adult slipper lobsters in Guam included all bottom habitat from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that Guam contains approximately 179 km² of lobster EFH as shown in Table 5. The SSC then developed an estimate of slipper lobster density based on the slipper lobster density estimated for Hawaii (the only area that has specifically documented harvesting of slipper lobster). To do this, the SSC applied the 75th percentile of slipper lobster catch from the MHI (which is 280 lb), and a MHI lobster EFH area of 2,535 km², and calculated that there are approximately 0.11 spiny lobsters per km² of EFH in

the MHI. Using this spiny lobster density as a proxy for slipper lobsters, and applying the ratio of 0.11 lobsters per EFH area in Guam, the SSC calculated the ABC for the Guam slipper lobster stock complex to be 20 lb.

Guam Slipper Lobster ABC Proxy Equation:

(280 lb slipper lobsters /2,535 km^2 (EFH in Hawaii) * 179 km^2 (EFH in Guam) = 20 lbs

The SSC determined a multiplier of 1 was warranted for slipper lobsters because of the various Guam territorial laws that aid in maintaining the spiny and slipper lobster biomasses, including commercial harvest size restrictions and a prohibition on berried females, a ban on spiny lobster export, as well as gear restrictions (no puncturing of spiny lobster intended for sale) (9 G.A.R. §12401). Additionally, Guam implemented measures for personal harvest of spiny and slipper lobsters, including no taking of berried females, size restrictions, and gear restrictions (9 G.A.R. §12402).

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for the Guam spiny lobster stock complex and slipper lobster stock complex equal to the SSC-recommended ABCs which are 2,700 lb and 20 lb, respectively. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP. While setting ACL equal to ABC allows for no precaution in the fishery, the Council noted there is currently only a small commercial fishery occurring in Guam waters. The Council also noted that numerous regulations are already in place in Guam territorial waters that provide protection to the lobster stock populations.

2.2.4.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the Guam spiny lobster stock complex or the Guam slipper lobster stock complex and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.2.4.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for Guam's spiny lobster and slipper lobster stock complexes would be set equal to the ACL recommended by the Council which is 2,700 lb and 20 lb, respectively.

2.2.4.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for Guam's spiny lobster and slipper lobster stock complexes would be set at 90% of the ABC recommended by the SSC. This would result in ACLs of 2,430 lb and 18 lb, respectively.

2.3 Development of the Alternatives for Crustaceans - Kona Crab

Kona crab (*Ranina ranina*), sometimes referred to as the spanner crab or frog crab, is the only species within its genus and is commercially exploited over much of its range in the equatorial Pacific. Very little is known about the life history of Kona crab, but it is believed that they are dioecious (i.e., the species has separate male and female individuals) and display sexual dimorphism, with males growing to a much larger size than females (Uchida, 1986). Adult Kona crabs are opportunistic carnivores that feed throughout the day and can be found inhabiting sandy bottom habitats at depths of up to 115 m. Crabs burrow into the sand where they lie in wait for prey or food particles (Uchida, 1986).

Currently, Kona crab fishing only occurs in Hawaii and is conducted by setting strings of baited circular shaped nets on sandy bottom habitats for an average soak time of one hour (Kennelly and Craig 1989). Nets are set during day-long trips from small boats from 10-12 m in length (Brown 1985). The net frames are built from ½ cm wire approximately 1 meter across. This frame is then covered in 1-2 layers of small gauge mesh netting which entangles the legs or claws of the crabs. There is some variation in size and type of material used to construct tangle nets (Onizuka 1972; Kennelly and Craig 1989). Upon retrieval, crabs are untangled and the nets reset.

Currently, there are no federal permits or reporting requirements for Kona crab harvests in the EEZ around Hawaii or other Pacific island area. However, fishermen are required to have State of Hawaii Commercial Marine License (CMLs) to harvest for commercial purposes and annual catch records are available from 1950 through 2009 (Table 10).

The SSC and Council developed the ABC and ACL recommendations for Kona crab in accordance with the Magnuson-Stevens Act and federal regulations at 50 CFR §665.4 that implement the ACL specification mechanism of the FEPs described in Section 1. The following section summarizes the data, methods, and procedures considered in SSC and Council deliberations as described in the Council's ACL specification document (WPFMC 2011). A full report of the 108th SSC and 152nd Council deliberations can be found on the Council website at: www.wpcouncil.org.

2.3.1 Hawaii Kona Crab ACL Alternatives

The number of CML holders in the Hawaii Kona crab fishery has declined in the past ten years, from approximately 24 in 2000, to 12 in 2010, with a low of five in 2007. Kona crab landings have ranged from around 6,000 – 31,000 pounds (mean = 17,000 pounds) with 30-75% of landings being made from the EEZ or federal waters. Participants in the fishery averaged about four trips per year during that period. Catch per unit effort also declined over that time, from 90

lb/trip in 2000 to about 55 lb/trip in 2005 to about 40 lb/trip in 2009. The number of crabbing trips taken has declined substantially in the past ten years. Approximately 175 trips were taken in 2000, while only about 20 fishing trips were conducted in 2009. From 2002-2009, only 3 fishers accounted for more than 50% of the trips.

Table 10. Annual reported commercial landing of Kona crab in the MHI (1950-2010)

Fishing Year	Kona Crab Total Landing (lb)
1950	4,327
1951	2,189
1952	641
1953	1,821
1954	2,753
1955	6,063
1956	5,801
1957	11,961
1958	3,856
1959	6,036
1960	11,063
1961	17,396
1962	29,107
1963	17,505
1964	9,595
1965	13,452
1966	9,294
1967	19,425
1968	37,241
1969	35,693
1970	38,626
1971	51,306
1972	72,401
1973	45,640
1974	37,050
1975	17,810
1976	27,132
1977	27,581
1978	27,620
1979	27,544
1980	8,147
1981	13,731
1982	8,013
1983	17,872
1984	19,320
1985	25,707
1986	22,695

Fishing Year	Kona Crab Total Landing (lb)
1987	16,385
1988	19,902
1989	9,358
1990	25,436
1991	32,207
1992	32,328
1993	27,052
1994	19,522
1995	28,298
1996	27,689
1997	26,196
1998	31,155
1999	18,862
2000	14,144
2001	10,896
2002	12,657
2003	12,064
2004	12,077
2005	10,016
2006	6,547
2007	9,843
2008	11,089
2009	9,292

Source: WPFMC 2011

NMFS/Council Estimation of OFL

There is no estimate of OFL at this time for Kona crab in Hawaii.

SSC's Calculation of ABC

There is no MSY estimate for Kona crab in Hawaii. At the 108th SSC meeting, the SSC recommended that, for species with no MSY estimates, the ABC be set in accordance with the Tier 5 ABC control rule as described in the Hawaii Archipelago FEP. See Section 1 for a description of the Council's default ABC control rule for Tier 5 data poor stocks.

In defining "Recent Catch" to apply in the ABC control rule, the SSC recommended using the 75th percentile of the entire catch history for Kona crab as the definition of "Recent Catch." Based on this approach, the SSC recommended the ABC for the Kona crab fishery in Hawaii be set based on 1 x the 75th percentile of the long term catch history (Figure 7). Specifically, the SSC calculated the ABC for Kona crab to be 27,560 lb, but rounded ABC upward to 27,600 lb.

The SSC determined a multiplier of 1 was warranted for Hawaii Kona crab because there is no long-term decline in harvest over the last 30 years and there are numerous Hawaii state regulations to conserve Kona crab resources including, , restrictions on taking of female Kona crab (Hawaii Revised Statutes §188-58.5), and minimum size restrictions, seasonal closures

(May-August), and gear restrictions (e.g. no spearing Kona crab, minimum net mesh size) (Hawaii Administrative Rule Title 13, Subtitle 4, Chapter 89 §13-95-52).

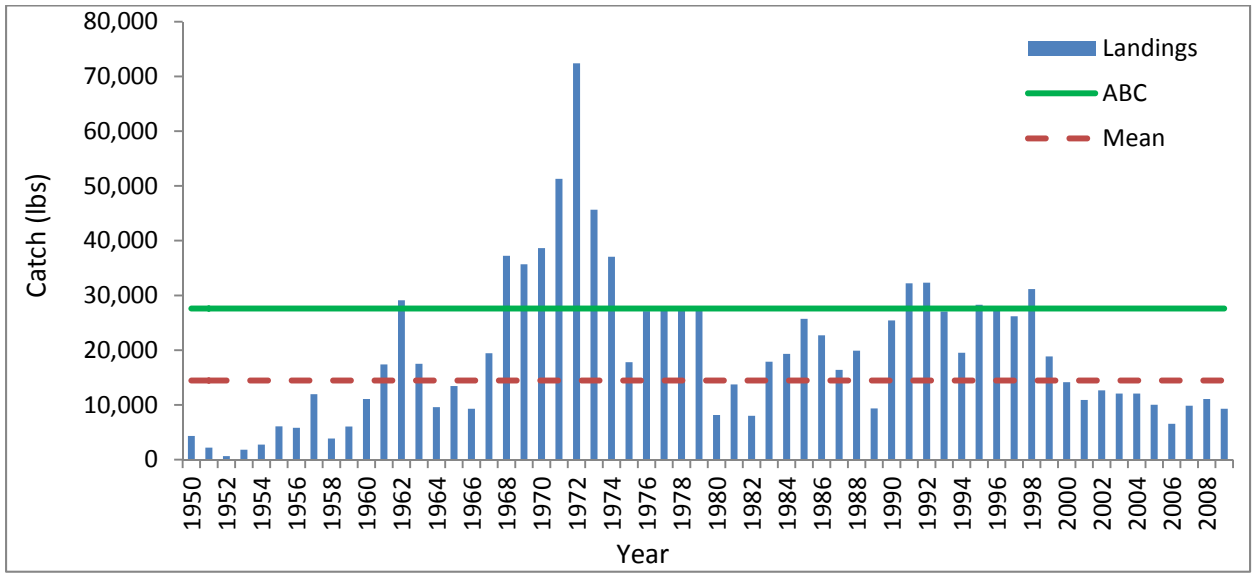

Figure 7. Average catch of Kona crab in the MHI (1950-2008) compared to ABC

Source: WPFMC 2011

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for Hawaii Kona crab equal to the SSC-recommended ABC of 27,600 lb. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP.

2.3.1.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for Hawaii Kona crab and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.3.1.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for Hawaii Kona crab would be set equal to the ACL recommended by the Council which is 27,600 lb.

2.3.1.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for Hawaii Kona crab would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 24,840 lb.

2.3.2 American Samoa Kona Crab ACL Alternatives

There is no record of any fishery for Kona crab in American Samoa. However, due to their documented presence in the territory, Kona crab is included in the crustacean management unit of the American Samoa FEP. Currently, there are no federal permit requirements for Kona crab in the EEZ around American Samoa.

NMFS/Council Estimation of OFL
There is no OFL estimate for Kona crab in American Samoa.

SSC's Calculation of ABC
There is no MSY estimate for Kona crab in American Samoa. Additionally, the lack of catch information precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating the ABC for Kona crab in American Samoa.

First, the SSC recognized that the essential fish habitat (EFH) designation for juvenile and adult Kona crab in American Samoa includes all bottom habitats from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that American Samoa contains approximately 296 km² of Kona crab EFH as shown in Table 5. Applying the 75th percentile of Kona crab catch from the MHI (which is 27,600 lb), and using the MHI Kona crab estimated EFH area of 2,535 km², the SSC determined that this would result in 10.88 Kona crabs per km² of EFH in the MHI. Applying the ratio of 10.87 Kona crabs per EFH area in American Samoa, the SSC calculated the ABC for American Samoa Kona crab to be 3,222 lb, but rounded ABC downward to 3,200 lb.

American Samoa Kona Crab ABC Proxy Equation:

(27,600 lb Kona crab /2,535 km^2 estimated Kona crab EFH in Hawaii) * 296 km^2 (estimated American Samoa Kona crab EFH) = 3,222 lb

Council ACL Recommendation
At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for American Samoa Kona crab equal to the SSC recommended ABCs of 3,200 lb. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the American Samoa Archipelago FEP.

2.3.2.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for American Samoa Kona crab and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.3.2.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for the American Samoa Kona crab fishery would be set equal to the ACL recommended by the Council which is 3,200 lb.

2.3.2.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for the American Samoa Kona crab fishery would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 2,880 lb.

2.3.3 CNMI Kona Crab ACL Alternatives

There is no record of any fishery for Kona crab in the CNMI. However, due to their documented presence, they are included in the crustacean management unit of the Mariana Archipelago FEP. Currently, there are no federal permit requirements for Kona crab in the EEZ around the CNMI.

NMFS/Council Estimation of OFL

There is no OFL estimate for Kona crab in the CNMI.

SSC's Calculation of ABC

There is no MSY estimate for Kona crab in the CNMI. Additionally, the lack of catch information precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating the ABC for the Kona crab fishery in the CNMI.

First, the SSC recognized that essential fish habitat (EFH) designation for juvenile and adult Kona crab in the CNMI includes all bottom habitats from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that the CNMI contains approximately 579 km² of Kona crab EFH as shown in Table 5. Applying the 75th percentile of Kona crab catch from the MHI which is 27,600 lb, and an estimated MHI Kona crab EFH area of 2,535 km², the SSC determined that this would result in 10.88 Kona crabs per km² of EFH in the MHI. Applying the ratio of 10.88 Kona crabs per EFH area in the CNMI, the SSC calculated the ABC for the CNMI Kona crab to be 6,303 lb, but rounded the ABC downward to 6,300 lb.

CNMI Kona crab ABC Proxy Equation:

(27,600 lb Kona crab /2,535 km^2 estimated Kona Crab EFH in Hawaii) * 579 km^2 (estimated Kona crab EFH in the CNMI) = 6,303 lb

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for the CNMI Kona crab fishery equal to the SSC-recommended ABC of 6,300 lb. The Council did not recommend reducing ACL from ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP.

2.3.3.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the CNMI Kona crab fishery and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.3.3.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for the CNMI Kona crab fishery would be set equal to the ACL recommended by the Council which is 6,300 lb.

2.3.3.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for the CNMI Kona crab fishery would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 5,670 lb.

2.3.4 Guam Kona Crab ACL Alternatives

There is no record of any fishery for Kona crab in Guam. However, due to their documented presence, they are included in the crustacean management unit of the Mariana Archipelago FEP. Currently, there are no federal permit requirements for Kona crab in the EEZ around the Guam.

NMFS/Council Estimation of OFL

There is no OFL estimate for Kona crab in Guam.

SSC's Calculation of ABC

There is no MSY estimate for Kona crab in Guam. Additionally, the lack of catch information precludes the use of the Tier 5 ABC control rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating the ABC for the Kona crab fishery.

First, SSC recognized that essential fish habitat (EFH) designation for juvenile and adult Kona crab in Guam included all bottom habitats from the shoreline to a depth of 100 m (see section 3.4 for EFH designations). Next, the SSC noted that Guam contains approximately 179 km² of Kona crab EFH as shown in Table 5. Applying the 75th percentile of Kona crab catch from the MHI which is 27,600 lb, and an estimated MHI Kona crab EFH area of 2,535 km², the SSC determined that this would result in 10.88 Kona crabs per km² of EFH in the MHI. Applying the ratio of 10.88 Kona crabs per EFH to the estimated Kona crab EFH area in Guam, the SSC calculated the ABC for the Guam Kona crab fishery to be 1,948 lb, but rounded ABC downward to 1,900 lb.

Guam Kona crab ABC Proxy Equation:

(27,600 lb Kona crab in Hawaii fishery /2,535 km^2 estimated Hawaii Kona crab EFH) * 179 km^2 (estimated Guam Kona crab EFH) = 1,948 lb

Council ACL Recommendation
At its 152nd meeting held October 17-19, 2011, the Council recommended setting the ACL for the Guam Kona crab fishery equal to the SSC-recommended ABC of 1,900 lb. The Council did not recommend reducing the ACL from the ABC for social, economic, ecological considerations or management uncertainty as described in the Mariana Archipelago FEP.

2.3.4.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the Guam Kona crab fishery and AMs would not be necessary. However, this alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.3.4.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for the Guam Kona crab fishery would be set equal to the ACL recommended by the Council which is 1,900 lb.

2.3.4.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for the Guam Kona crab fishery would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 1,729 lb.

2.4 Development of the Alternatives for Precious Corals

Precious corals managed under the FEPs for Hawaii, American Samoa and the Mariana Archipelago (including Guam and CNMI) include three species of black coral belonging to the genus *Antipathes*, three species of pink coral belonging to the genus *Corallium*, and several species of gold and bamboo corals. Pink, gold and bamboo corals are typically found at depth ranges between 350 to 1,500 m, while black coral occurs at considerably shallower depths around 100 m. All species are found on solid substrate and are slow growing, with low rates of mortality and recruitment. Table 11 lists the common and scientific names of all western Pacific precious coral management unit species.

Table 11. Western Pacific Precious Coral Management Unit Species

Common Name	Scientific Name
Black corals	*Antipathes dichotoma*[1], *Antipathes grandis, Antipathes ulex*
Pink corals	*Corallium secundum, Corallium regale, Corallium laauense*
Bamboo corals	*Lepidisis olapa, Acanella* sp.
Gold corals	*Gerardia* sp., *Callogoria gilberti, Narella* sp., *Calyptrophora* sp.

[1] *Antipathes dichotoma* was recently renamed *Antipathes griggi* by the scientific community

Each FEP treats precious coral beds as distinct management units. Classification of beds include: Established (appraisal of the MSY are reasonably precise), Conditional (optimum yields estimated on the basis of bed characteristics relative to established beds), Refugia (set aside for baseline studies and possible reproductive reserves), or Exploratory (unexplored portions of the EEZ). Federal regulations require permit and logbook reporting for each category of coral bed and beds are subject to harvest quotas which may be taken on an annual or biennial basis as shown in Table 12. Additionally, regulations allow only the use of selective gear methods to harvest precious corals and further limit harvest through minimum size restrictions on pink coral and bamboo coral. Currently, a moratorium on gold coral harvest is in place throughout the western Pacific through June 30, 2013 due to uncertainty in estimates of age and growth parameters (73 FR 47098, August 13, 2008). Additionally, fishing is prohibited at the Westpac Bed due to its status as a refugium. These prohibitions serve as the functional equivalent of an ACL of zero. The fishing year for precious corals begins on July 1 and ends June 30, the following year.

Precious corals are not being harvested in any island area except in the MHI where the fishery is limited to black coral harvests in the Auau channel. Fewer than three participants are currently active in the Hawaii black coral fishery; therefore, fishery information is confidential and can only be reported in aggregate years, except for years during which there have been three or more participants. Fishing for other precious corals (pink, bamboo, and gold) is not currently conducted in Hawaii. One company used two one-man submersibles to survey and harvest pink and gold corals at depths between 400 and 500 meters in the MHI during 1999 and 2001; however, they did not continue their operations after that time and the actual harvests cannot be reported here to protect the confidentiality of the proprietary fishery information (WPFMC 2009b).

Table 12. Current harvest quotas for precious coral permit areas

Name of Bed	Type of Bed	Harvest Quota (kg)	Harvest Timeframe
Auau Channel (MHI)	Established	Black – 5,000	2
Makapuu bed (MHI)	Established	Pink – 2,000	2
		Gold (zero)	
		Bamboo – 500	
180 Fathom Bank (NWHI)	Conditional	Pink – 222	1
		Gold (zero)	
		Bamboo – 56	
Brooks Bank (NWHI)	Conditional	Pink – 444	1
		Gold (zero)	
		Bamboo – 111	
Kaena Point	Conditional	Pink – 67	1
		Gold (zero)	
		Bamboo – 17	
Keahole Point	Conditional	Pink – 67	1
		Gold (zero)	
		Bamboo – 17	
Westpac	Refugia	All (zero)	1

Name of Bed	Type of Bed	Harvest Quota (kg)	Harvest Timeframe
U.S. EEZ around American Samoa, Guam, CNMI and Hawaii other than Established, Conditional or Refugia beds	Exploratory Area	1,000 per area (all species combined, except black coral	1

Comprehensive information on target, non-target stocks, bycatch, protected species and conservation and management measures for precious coral fisheries can be found in the American Samoa Archipelago FEP (WPFMC 2009a), the Hawaii Archipelago FEP (WPFMC 2009b) and the Mariana Archipelago FEP (WPFMC 2009c).

The SSC and Council developed the ABC and ACL recommendations for precious corals in accordance with the Magnuson-Stevens Act and federal regulations at 50 CFR §665.4 that implement the ACL specification mechanism of the FEPs described in Section 1. The following section summarizes the data, methods, and procedures considered in SSC and Council deliberations as described in the Council's ACL specification document (WPFMC 2011). A full report of the 108th SSC and 152nd Council deliberations can be found on the Council website at: www.wpcouncil.org.

2.4.1 Hawaii Precious Corals ACL Alternative

2.4.1.1 Black Coral – Auau Channel Established Bed

The ongoing collection of black coral from depths of 30–100 meters by scuba divers has continued in Hawaii since black coral beds were discovered off of Lahaina, Maui, in the late 1950s, although harvest levels have fluctuated with changes in demand. Since 1980, virtually all of the black coral harvested around the Hawaiian Islands has been taken by hand from a bed located in the Auau Channel. Most of the harvest has come from State of Hawaii waters; however, a portion of the black coral bed in the Auau Channel is located in the EEZ.

The current harvest quota for black coral in the Auau Channel is 5,000 kg (11,000 lb) which may be taken during any part of a two year fishing year cycle. Landings, almost exclusively from State waters, have been reported for black coral between 1982 and 2010; however, data cannot be reported because of the low number of active participants (fewer than three).

Table 13 summarizes total landings and average annual landings for black corals in the MHI for three decadal periods, 1982-1989, 1990-1999 and 2000-2010. Landing information is summarized in roughly 10 year intervals to protect confidentiality as fewer than three vessels participated in the fishery during most years. The data present landings from both inshore and offshore areas. For the most recent time period 2000-2010, approximately 5,587 lb of black coral were landed annually. There are no federal permits issued for black coral harvest in the Auau Channel and all of the recent harvest is occurring in State waters.

Table 13. Total and Average Annual Landings of Black Coral (1982-2010)

Years (Grouped)	Total Landing (lb) / year (average)
1982-1989	1,084
1990-1999	2,868
2000-2010	5,587

Source: Hawaii Division of Aquatic Resources (in WPFMC 2011)

NMFS/Council Estimation of OFL for Black Coral – Auau Channel Established Bed
There is no estimate of OFL provided for any black coral in Hawaii.

SSC's Calculation of ABC for Black Coral – Auau Channel Established Bed
The most current estimate of MSY for black coral in the Auau Channel is provided by Grigg (2004) which is 3,750 kg/yr (8,250 lb/yr). Based on this estimate, the current harvest quota for black coral in the Auau Channel is 5,000 kg (11,000 lb) which may be taken during any part of a two year fishing year cycle.

At 108th SSC meeting, the SSC considered the MSY estimate provided by Grigg (2004) including the current status of participation in the fishery, and average annual landings for 2000-2010 relative to the existing biennial harvest quota of 5,000 kg (11,000 lb). The SSC determined that the black coral fishery in the MHI can be regarded as Tier 4 because MSY is known, but there is little harvest. Therefore, consistent with the Tier 4 ABC control rule described in the Hawaii FEP which requires the ABC be set equal to 0.91*MSY, the SSC calculated ABC to be 3,413 kg/yr (7,508 lb/yr) and rounded the ABC downward to 7,500 lb/yr (Figure 8). As explained in the Hawaii FEP, the application of this control rule would result in a fishing mortality rate of 0.70 F_{MSY}, which would maximize yield while minimizing biomass impacts, and account for scientific uncertainty.

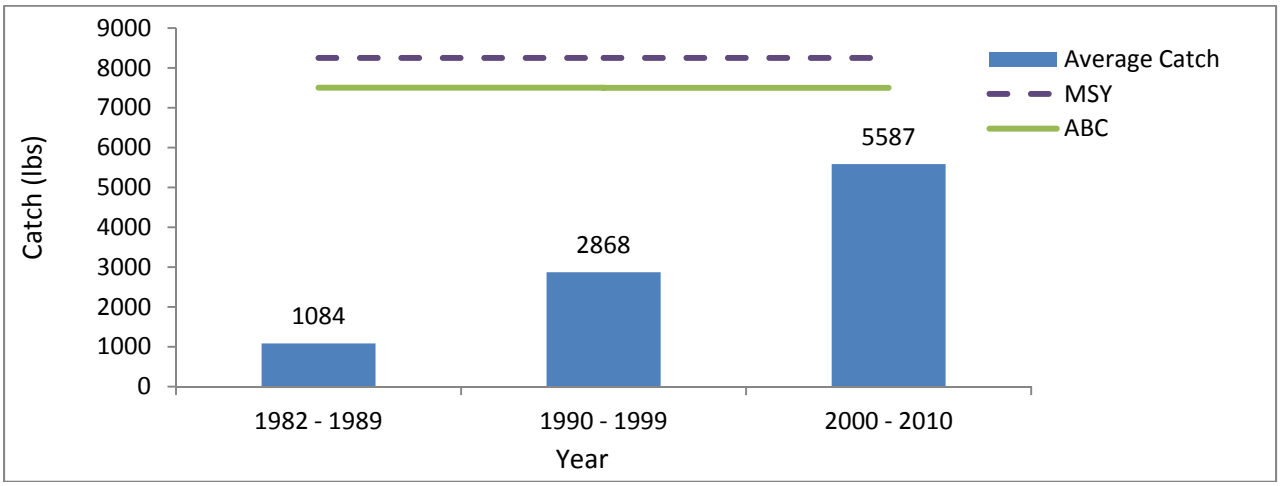

Figure 8. Average annual catch of black coral in the MHI (1982-2010) compared to the SSC-recommended acceptable biological catch (ABC)

Source: WPFMC 2011

Council ACL Recommendation for Black Coral – Auau Channel Established Bed
At its 152nd meeting held October 17-19, 2011, the Council considered the SSC-recommended ABC of 7,500 lb/yr; however, recommended maintaining the current harvest quota of 5,000 kg (11,000 lb) as the ACL. The Council further noted that while the current harvest quota may be taken over a two year period, ACLs must be specified annually. Therefore, the Council recommended the ACL for the Hawaii black coral fishery in the Auau Channel Bed be set at 2,500 kg/yr or 5,500 lb/yr. The ACL is thus 2,000 lb lower than SSC recommended ABC and 100 lb lower than average annual harvest of black coral from the Auau Channel Bed for the period 2000-2010 of approximately 5,600 lb shown in Table 13.

2.4.1.1.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for the black coral fishery in the Auau Channel of the MHI, and AMs would not be necessary. While the implementing regulations of the Hawaii FEP already provide for a harvest quota of 5,000 kg (11,000 lb) that may be taken over a two year period, this management system is not in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.4.1.1.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for the black coral fishery in the Auau Channel, MHI, would be set equal to the ACL recommended by the Council which is 2,500 kg (5,500 lb). This ACL would be equal to the current harvest quota if it were to be applied on an annual basis and is 2,000 lb lower than the SSC-recommended ABC of 7,500 lb (3,413 kg/yr).

2.4.1.1.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for the black coral fishery in the Auau Channel would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 6,750 lb (3,068 kg). This ACL would be 1,250 lb higher than the harvest quota of 2,500 kg (5,500 lb per year) if it were to be applied on an annual basis.

2.4.1.2 Pink, Gold Coral, and Bamboo Coral – Established Bed and Conditional Beds

Fishing for other precious corals (pink, bamboo and gold) is not currently conducted in Hawaii. One company used two one-man submersibles to survey and harvest pink and gold corals at depths between 400 and 500 meters in the MHI during 1999 and 2001; however, they did not continue their operations after that time and the actual harvests cannot be reported here in order to protect confidential information (WPFMC 2009b).

Estimates of MSY, including a description of calculation methods for pink, bamboo and gold coral at the Makapuu Established Bed, are provided in the Hawaii FEP (WPFMC 2009b) and summarized in Table 14.

Table 14. MSY Estimates for Precious Corals in the Makapuu Bed

Species (common name)	MSY (kg/yr)	Method of calculation
Corallium secundum (pink)	1,185	Beverton and Holt Cohort production model
Corallium secundum (pink)	1,148	Gulland model
Gerardia spp. (gold)	313	Gulland model
Lepidisis olapa (bamboo)	285	Gulland model

Source: WPFMC 2009b

Due to ecological considerations, MSY estimates were reduced for ecological considerations and thus, the rounded down MSY estimates or optimum yields (OY) for Makapuu Bed pink coral, gold coral and bamboo coral were set at 1,000 kg/yr, 300 kg/yr and 250 kg/yr, respectively (WPFMC 2009a). Additionally, as stated previously, a moratorium on gold coral harvest is currently in place throughout the western Pacific through June 30, 2013.

While OYs for pink and bamboo corals were specified on an annual basis, the Makapuu Bed harvest quotas listed in Table 12 are expressed as a two-year quota because it was considered economically disadvantageous to utilize the expensive specialized equipment required for selective harvesting of precious coral for only part of each year on only one coral bed. The more flexible biennial schedule allows the quota to be taken during any part of a two year period and makes it easier for harvesters to deploy in other areas once the two-year Makapuu Bed quota has been met (WPFMC 2009b).

Harvest quotas for pink, bamboo and gold coral at Hawaii's four Conditional Beds have been extrapolated based on bed size as compared with that of the Makapuu Established Bed using the following formula described in the Hawaii FEP (WPFMC 2009b).

$$\frac{\text{MSY for Makapuu Bed}}{\text{Area of Makapuu Bed}} = \frac{\text{MSY for Conditional Bed}}{\text{Area of Conditional Bed}}$$

Framework Amendment 1 to the Fishery Management Plan for Precious Coral Fisheries of the Western Pacific Region (WPFMC (2001) estimates the area of the Makapuu Established Bed as 3.60 km². For the Conditional Beds, WPFMC (2001) estimates the areas as follows: 180 Fathom Bank (0.8 km²), Brooks Bank (1.6 km²), and Kaena Point and Keahole Point (0.24 km²). Based on rounded down MSY (or OY) of 1,000 kg/yr for pink coral and 250 kg/yr for a bamboo coral at the Makapuu bed, and applying the formula above, WPFMC (2001) estimates OY for all Conditional beds as shown in Table 15 which are the harvest quotas listed in Table 12, except for pink and bamboo coral at Makapuu where the quota was doubled to 2,000 kg and may be taken over two year period.

Table 15. Estimated area and OY for pink and bamboo coral in Established and Conditional beds

Bed	Pink Coral OY			Bamboo Coral OY		
Makapuu Established Bed	$\frac{1{,}000\text{ kg}}{3.60\text{ km}^2}$	x 3.60 km²	= 1,000 kg	$\frac{250\text{ kg}}{3.60\text{ km}^2}$	x 3.60 km²	= 250 kg
180 Fathom Conditional Bed	$\frac{1{,}000\text{ kg}}{3.60\text{ km}^2}$	x 0.8 km²	= 222 kg	$\frac{250\text{ kg}}{3.60\text{ km}^2}$	x 0.8 km²	= 56 kg
Brooks Bank Conditional Bed	$\frac{1{,}000\text{ kg}}{3.60\text{ km}^2}$	x 1.6 km²	= 444 kg	$\frac{250\text{ kg}}{3.60\text{ km}^2}$	x 1.6 km²	= 111 kg
Kaena Point Conditional Bed	$\frac{1{,}000\text{ kg}}{3.60\text{ km}^2}$	x 0.24 km²	= 67 kg	$\frac{250\text{ kg}}{3.60\text{ km}^2}$	x 0.24 km²	= 17 kg
Keahole Point Conditional Bed	$\frac{1{,}000\text{ kg}}{3.60\text{ km}^2}$	x 0.24 km²	= 67 kg	$\frac{250\text{ kg}}{3.60\text{ km}^2}$	x 0.24 km²	= 17 kg

NMFS/Council Estimation of OFL for Pink, Bamboo and Gold Corals – Established Bed and Conditional Beds

There is no estimate of OFL provided for pink, bamboo or gold coral in Hawaii.

SSC's Calculation of ABC for Pink, Bamboo and Gold Corals – Established Bed and Conditional Beds

In calculating ABC for pink coral at the Makapuu Established Bed, at its 108th meeting the SSC relied on a revised estimate of MSY for pink coral reported in Grigg (2002). Specifically, Grigg (2002) estimated an MSY for pink coral at the Makapuu bed of 1,500 kg/year which is 30% greater than the initial MSYs shown in Table 14, and 50% higher than the current OY and of 1,000 kg/yr. In calculating ABC for bamboo coral at the Makapuu Established bed, the SSC relied on the initial MSY estimate of 285 kg/yr as shown in Table 14 and not the OY of 250 kg/yr which was used to specify the existing harvest quota.

The SSC then applied these MSY values into the formula provided above to extrapolate an MSY proxy for pink coral and bamboo coral at the four Conditional Beds (180 Fathom Bank, Brooks Bank, Kaena Point and Keahole Point). However, the SSC did not use the true size of the bed areas listed in Table 15 to apply in this formula as it was unaware of these values at the time.

Instead, for each bed, the SSC used the estimated size of the permit area provided in 50 CFR 665. Specifically, the regulations define the permit areas for Makapuu Bed, 180 Fathom Bank, and Brooks Bank to include the area within 2 nmi of a specified point. Based on the formula, Area = πr^2, the SSC determined the area for these three precious coral beds to be approximately 12.57 nm² whereas, WPFMC (2001) defines the true area of these beds to be 3.60 km², 0.8 km², and 1.6 km², respectively. Additionally, the regulations define the size of the permit areas for Kaena and Keahole Points to include the area within 0.5 nmi of a specified point. Applying the formula, Area = πr^2, the SSC determined the bed areas for Kaena and Keahole precious coral beds to be 0.79 nm² whereas, WPFMC (2001), defines the true area for both Keahole and Kaena as 0.24 km². Table 16 provides the results of the SSC's MSY proxy calculations.

Table 16. SSC's MSY proxies for pink and bamboo coral at Established and Conditional Beds

Bed	Pink Coral			Bamboo Coral		
Makapuu Established Bed	$\frac{1{,}500\text{ kg}}{12.57\text{ nm}^2}$	x 12.57 nm²	= 1,500 kg	$\frac{285\text{ kg}}{12.57\text{ nm}^2}$	x 12.57 nm²	= 285 kg
180 Fathom Conditional Bed	$\frac{1{,}500\text{ kg}}{12.57\text{ nm}^2}$	x 12.57 nm²	= 1,500 kg	$\frac{285\text{ kg}}{12.57\text{ nm}^2}$	x 12.57 nm²	= 285 kg
Brooks Bank Conditional Bed	$\frac{1{,}500\text{ kg}}{12.57\text{ nm}^2}$	x 12.57 nm²	= 1,500 kg	$\frac{285\text{ kg}}{12.57\text{ nm}^2}$	x 12.57 nm²	= 285 kg
Kaena Point Conditional Bed	$\frac{1{,}500\text{ kg}}{12.57\text{ nm}^2}$	x 0.79 nm²	= 94 kg	$\frac{285\text{ kg}}{12.57\text{ nm}^2}$	x 0.79 nm²	= 18 kg
Keahole Point Conditional Bed	$\frac{1{,}500\text{ kg}}{12.57\text{ nm}^2}$	x 0.79 nm²	= 94 kg	$\frac{285\text{ kg}}{12.57\text{ nm}^2}$	x 0.79 nm²	= 18 kg

The SSC then determined that deepwater precious coral fishery for pink and bamboo corals in the MHI can be regarded as Tier 4 because the MSY/MSY proxy is known, but there is no harvest. Therefore, consistent with the Tier 4 control rule described in the Hawaii FEP which requires ABC be set equal to 0.91*MSY, the SSC calculated ABC as shown in Table 17.

Table 17. SSC recommended ABCs for pink and bamboo coral at Established and Conditional Beds

Bed	Pink Coral		Bamboo Coral	
	MSY Proxy	ABC = *0.91*MSY*	*MSY Proxy*	ABC =*0.91*MSY*
Makapuu Established Bed	1,500 kg	1,400 kg	285 kg	260 kg
180 Fathom Conditional Bed	1,500 kg	1,400 kg	285 kg	260 kg
Brooks Bank Conditional Bed	1,500 kg	1,400 kg	285 kg	260 kg
Kaena Point Conditional Bed	94 kg	85 kg	18 kg	16 kg
Keahole Point Conditional Bed	94 kg	85 kg	18 kg	16 kg

However, because the SSC did not use the actual size of each bed in its calculation of MSY proxies, the values represented in Table 17 above may not be the best available scientific information. For this reason, NMFS has recalculated MSY proxies consistent with the intent of the SSC's recommendation using the actual size of each bed and described by WPFMC (2001). Table 18 provides the results of the corrected MSY proxy calculations conducted by the NMFS.

Table 18. NMFS's corrected MSY proxies for pink and bamboo coral at Established and Conditional Beds

Bed	Pink Coral			Bamboo Coral		
Makapuu Established Bed	$\frac{1{,}500\text{ kg}}{3.60\text{ km}^2}$	x 3.60 km²	= 1,500 kg	$\frac{285\text{ kg}}{3.60\text{ km}^2}$	x 3.60 km²	= 285 kg
180 Fathom Conditional Bed	$\frac{1{,}500\text{ kg}}{3.60\text{ km}^2}$	x 0.8 km²	= 333 kg	$\frac{285\text{ kg}}{3.60\text{ km}^2}$	x 0.8 km²	= 63 kg
Brooks Bank Conditional Bed	$\frac{1{,}500\text{ kg}}{3.60\text{ km}^2}$	x 1.6 km²	667 kg	$\frac{285\text{ kg}}{3.60\text{ km}^2}$	x 1.6 km²	= 127 kg
Kaena Point Conditional Bed	$\frac{1{,}500\text{ kg}}{3.60\text{ km}^2}$	x 0.24 km²	= 100 kg	$\frac{285\text{ kg}}{3.60\text{ km}^2}$	x 0.24 km²	= 19 kg
Keahole Point Conditional Bed	$\frac{1{,}500\text{ kg}}{3.60\text{ km}^2}$	x 0.24 km²	= 100 kg	$\frac{285\text{ kg}}{3.60\text{ km}^2}$	x 0.24 km²	= 19 kg

Additionally, consistent with the SSC's recommendation, NMFS also re-applied the Tier 4 control rule to the corrected MSY proxy values shown in Table 18 above and re-calculated the ABCs for Hawaii pink and bamboo corals in the Established and Conditional Beds as shown in Table 19.

Table 19. NMFS recalculated ABCs for pink and bamboo coral at Established and Conditional Beds

Bed	Pink Coral		Bamboo Coral	
	MSY Proxy	ABC = *0.91*MSY*	*MSY Proxy*	ABC =*0.91*MSY*
Makapuu Established Bed	1,500 kg	1,365 kg	285 kg	259 kg
180 Fathom Conditional Bed	333 kg	303 kg	63 kg	57 kg
Brooks Bank Conditional Bed	667 kg	607 kg	127 kg	116 kg
Kaena Point Conditional Bed	100 kg	91 kg	19 kg	17 kg
Keahole Point Conditional Bed	100 kg	91 kg	19 kg	17 kg

Council ACL Recommendation for Pink, Bamboo and Gold Corals – Established Bed and Conditional Beds

At its 152nd meeting held October 17-19, 2011, the Council considered the SSC' recommended ABC shown in Table 17, however, recommended maintaining the current harvest quotas as provided in Table 12 as they did not see a need to increase catch limits given no activity in the fishery for the past decade. The Council further noted that while the current harvest quota of 2,000 kg of pink coral and 500 kg or bamboo coral at Makapuu may be taken over a two year timeframe, ACLs must be specified annually. Therefore, the Council recommended ACL for pink coral and bamboo coral at Makapuu be set at one half of the current two year quota and recommended ACL for these species be set at 1,000 kg/yr and 250 kg/yr, respectively. The

harvest quotas for pink and bamboo coral at all other beds are annual, thus the recommended ACL remain identical to the current harvest quotas as presently shown in Table 12. Table 20 provides the Council's recommended ACLs for pink and bamboo coral at Established and Conditional Beds in relation to the NMFS-corrected ABC.[6]

Table 20. NMFS corrected ABC and Council recommended ACL for pink and bamboo coral at Established and Conditional Beds

Bed	Pink Coral ABC *(0.91*MSY)*	Council Recommended ACL	Bamboo Coral ABC *(0.91*MSY)*	Council Recommended ACL
Makapuu Established Bed	1,365 kg	1,000 kg	259 kg	250 kg
180 Fathom Conditional Bed	303 kg	222 kg	57 kg	56 kg
Brooks Bank Conditional Bed	607 kg	444 kg	116 kg	111 kg
Kaena Point Conditional Bed	91 kg	67 kg	17 kg	17 kg
Keahole Point Conditional Bed	91 kg	67 kg	17 kg	17 kg

2.4.1.2.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for pink or bamboo coral in any Established or Conditional Bed and AMs would not be necessary. While the implementing regulations of the Hawaii FEP already provide for a bank specific harvest quotas as listed in Table 12, this management system is not in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Additionally, the moratorium on harvesting gold coral would remain in place through June 30, 2013. Alternative 1 serves as the baseline for the environmental impact assessment.

2.4.1.2.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACLs for pink or bamboo coral in Established and Conditional Beds would be set equal to the ACLs recommended by the Council which are equal to the current harvest quotas as shown in Table 12. As previously noted, the current harvest quota for pink of 2,000 kg and the current harvest quota for bamboo coral of 500 kg at the Makapuu Bed may be taken over a two year timeframe. Therefore, to comply with the ACL requirement, the Council recommended the ACLs for pink coral and bamboo coral at the Makapuu Bed be set at one half of the current two year quota and recommended the ACL for these species be set at 1,000 kg/yr

[6] Currently, a moratorium on gold coral harvest is in place throughout the western Pacific through June 30, 2013 (73 FR 47098, August 13, 2008). Additionally, fishing is prohibited at Westpac Bed due to its status as a refugium. These prohibitions serve as functional equivalent of an ACL of zero.

and 250 kg/yr, respectively. Like Alternative 1 the moratorium on harvesting gold coral would remain in place through June 30, 2013 and would serve as the functional equivalent of an ACL of zero. Each of the proposed ACLs is lower than the ABCs as recalculated by NMFS and shown in Table 20.

2.4.1.2.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACLs for pink and bamboo corals in Established and Conditional Beds would be set at 90% of their ABC values. Like Alternative 1 the moratorium on harvesting gold coral would remain in place through June 30, 2013 and would serve as the functional equivalent of an ACL of zero. Table 21 shows the ACL values for each bed under this alternative relative to their ABC values.

Table 21. ACLs at 90% of ABC for pink and bamboo coral at Established and Conditional Beds

Bed	Pink Coral ABC	Proposed ACL at 90% of ABC	Bamboo Coral ABC	Proposed ACL at 90% of ABC
Makapuu Established Bed	1,365 kg	1,229 kg	259 kg	233 kg
180 Fathom Conditional Bed	303 kg	273 kg	57 kg	51 kg
Brooks Bank Conditional Bed	607 kg	546 kg	116 kg	104 kg
Kaena Point Conditional Bed	91 kg	82 kg	17 kg	15 kg
Keahole Point Conditional Bed	91 kg	82 kg	17 kg	15 kg

2.4.1.3 Pink, Gold and Bamboo Corals in the Hawaii Exploratory Area

Hawaii Exploratory areas (denoted as X-P-H) include coral beds, other than Established, Conditional or Refugia Beds within the EEZ. Currently there is a 1,000 kg limit for all deep water precious corals combined (all species except black coral) in the Hawaii Exploratory Area. The limit of 1,000 kg/year was determined with the goal of reducing the risk of overfishing a newly discovered bed while at the same time being large enough to provide economic incentive for fishers to engage in exploratory fishing (WPFMC 1979). There was no statistical basis for determining the limit, but instead it was based on Council judgment that 1,000 kg/yr should be sufficient incentive for exploratory fishing while posing little risk of overfishing (WPFMC 1979). The 1,000 kg/yr harvest quota in Hawaii represents about one-third of the estimated MSY for the precious coral species in all Established and Conditional beds while being large enough to offer an economic incentive for exploration (WPFMC 1979). Two fishing expeditions for precious corals occurred in the Hawaii Exploratory Area in the mid- to late 1980s (WPFMC 2009b). However, no activity has occurred since then. In 2011, NMFS issued two federal permits for fishing in the Hawaii Exploratory Area (X-P-HI); however, no trips have been made.

NMFS/Council Estimation of OFL
There is no estimate of OFL provided for precious corals the Exploratory Area around Hawaii.

SSC's Calculation of ABC
At its 108th meeting, the SSC recommended ABC be maintained at the current annual harvest quota of 1,000 kg/yr for pink and bamboo corals in the Hawaii Exploratory Area, and further recommended that this ABC be applicable to all EEZ waters of the State of Hawaii.

Council ACL Recommendation
At its 152nd meeting held October 17-19, 2011, the Council considered the SSC' recommended ABC and recommended maintaining the current harvest quota of 1,000 kg/yr for pink, and bamboo corals in the Exploratory Area around Hawaii. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

2.4.1.3.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for pink, bamboo and gold coral for the Exploratory Area around Hawaii and AMs would not be necessary. While the implementing regulations of the Hawaii FEP already provide for 1,000 kg/yr harvest quota for all precious corals (except black coral) in the Hawaii Exploratory Area, this management system is not in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

2.4.1.3.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the pink and bamboo coral ACLs in the Hawaii Exploratory Area would be set equal to the 1,000 kg/yr ACL recommended by the Council. This ACL would be equal to the current harvest quotas and is equal to the SSC recommended ABC. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013 and would serve as the functional equivalent of an ACL of zero.

2.4.1.3.3 Alternative 3: ACL equal to 90% of ABC
Under this alternative, the pink and bamboo coral ACLs in the Hawaii Exploratory Area would be set at 90% of the ABC recommended by the SSC resulting in an ACL of 900 kg. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013 and would serve as the functional equivalent of an ACL of zero.

2.4.2 American Samoa Precious Corals ACL Alternatives

2.4.2.1 Black Coral in American Samoa

There has never been a black coral fishery in American Samoa and no information on the species' presence or distribution in the territory. However, they are included in the management unit of the American Samoa FEP as it is reasonable that they may be found there. Federal permits are not required to harvest black coral in American Samoa.

NMFS/Council Estimation of OFL
There is no estimate of OFL provided for black coral in American Samoa.

SSC Calculation of ABC
There is no estimate of MSY for black coral in American Samoa. Additionally, there is no catch information available which precludes the use of the Tier 5 Control Rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating ABC for American Samoa black coral.

The MSY proxy was based on comparing available black coral habitat in Auau Channel of the MHI (Auau Channel, 241.7 nmi^2) and Hawaii's coastline length (653 nmi) to the coastline length of American Samoa (69 nmi). Using this ratio comparison provides a potential available area for black coral habitat in American Samoa (25.5 nmi^2).

American Samoa black coral habitat proxy Equation:
(241.7 nmi^2 / 653nmi) * 69 nmi = 25.5 nmi^2

The ratio of Hawaii black coral MSY (8,250 lbs) and habitat area in Hawaii (241.7 nmi^2) was then compared to potential habitat area in American Samoa, resulting in a potential MSY proxy of 872 lbs.

American Samoa black coral MSY proxy equation:
(8250 lbs / 241.7 nmi^2) * 25.5 nmi^2 = 872 lbs

This crude estimation does not take into account differences in available shelf habitat. For example, American Samoa does not have the shelf area afforded by Penguin Banks in Hawaii, which includes the Auau Channel. Thus, this MSY is likely an overestimation. The SSC then determined that the black coral fishery in American Samoa can be regarded as Tier 4 because MSY/MSY proxy is known, but there is no harvest. Therefore, consistent with the Tier 4 control rule described in the American Samoa FEP which requires the ABC be set equal to 0.91*MSY, the SSC calculated the black coral ABC as 794 lbs and rounded this value down to 790 lbs.

2.4.2.1.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for black corals in American Samoa and AMs would not be necessary. However, this is not in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.4.2.1.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for black corals in American Samoa equal to the 790 lb ACL recommended by the Council which is equal to the SSC's recommended ABC.

2.4.2.1.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for black corals in American Samoa would be set at 90% of the ABC recommended by the SSC. This would result in a black coral ACL of 711 lb.

2.4.2.2 Pink, Gold and Bamboo Coral in the American Samoa Exploratory Area

Exploratory areas (X-P-AS) include all EEZ waters around American Samoa as there are no known precious coral beds in the Territory. However, precious coral MUS are known to exist in the American Samoa EEZ, thus a fishery could possibly develop. The American Samoa Exploratory Area (X-P-AS) has a 1,000 kg/year limit of all species combined except black coral. The limit of 1,000 kg/year was developed with the goal of reducing the risk of overfishing a newly discovered bed while at the same time being large enough to provide economic incentive to engage in exploratory fishing (WPFMC 1979). There was no statistical basis for determining the limit, but instead was based on Council judgment that 1,000 kg/year should be sufficient incentive for exploratory fishing while posing little risk to overfishing (WPFMC 1979). No federal permit has ever been issued for precious coral fishing in the American Samoa Exploratory Area (X-P-AS).

NMFS/Council Estimation of OFL
There is no estimate of OFL provided for precious corals the exploratory area around American Samoa.

SSC's Calculation of ABC
At its 108th meeting, the SSC recommended the American Samoa black coral ABC be maintained at the current annual harvest quota of 1,000 kg/yr.

Council ACL Recommendation
At its 152nd meeting held October 17-19, 2011, the Council considered the SSC-recommended ABC and recommended maintaining the current harvest quota of 1,000 kg/yr for black corals harvested from the Exploratory Area around American Samoa. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

2.4.2.2.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for pink, bamboo and gold coral for the exploratory are around American Samoa and AMs would not be necessary. While the implementing regulations of the American Samoa FEP already provide for 1,000 kg/yr harvest quota for all precious corals (except black coral) in the American Samoa Exploratory Area, this management system is not in compliance with the Magnuson-Stevens Act or the provisions of

the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

2.4.2.2.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACLs for pink and bamboo corals in the American Samoa Exploratory Area would be set equal to the 1,000 kg/yr ACL recommended by the Council. This ACL would be equal to the current harvest quotas and is equal to the SSC-recommended ABC. Like Alternative 1, gold coral would continue to be subject to a fishing moratorium until June 30, 2013 and would serve as the functional equivalent of an ACL of zero.

2.4.2.2.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for pink and bamboo corals in the American Samoa Exploratory Area would be set at 90% of the ABC recommended by the SSC resulting in an ACL of 900 kg. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013 and would serve as the functional equivalent of an ACL of zero.

2.4.3 CNMI Precious Corals ACL Alternatives

2.4.3.1 Black Coral in CNMI

There has never been a black coral fishery in CNMI and no information on the species' presence or distribution in the Commonwealth. However, black corals are included in the management unit of the Mariana Archipelago FEP as it is reasonable that they may be found there. Federal permits are not required to harvest black coral in the CNMI.

NMFS/Council Estimation of OFL

There is no estimate of OFL provided for black corals in CNMI.

SSC Calculation of ABC

There is no estimate of MSY for black corals in CNMI, Additionally, there is no catch information available and this precludes the use of the Tier 5 Control Rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating the ABC for CNMI black coral.

The MSY proxy was based on comparing available black coral habitat in Auau Channel of the MHI (Auau Channel, 241.7 nmi^2) and Hawaii's coastline length (653 nmi) to the coastline length of the CNMI (179 nmi). Using this ratio comparison provides a potential available area for black coral habitat in CNMI (66.3 nmi^2).

CNMI black coral habitat proxy equation:
(241.7 nmi^2 / 653nmi) * 179 nmi = 66.3 nmi^2)

The ratio of Hawaii black coral MSY (8,250 lbs) and habitat area in Hawaii (241.7 nmi^2) was then compared to potential habitat area in CNMI, resulting in a potential MSY proxy of 2,261 lb.

CNMI black coral MSY proxy equation:
(8,250 lb / 241.7 nmi^2) * 66.3 nmi^2 = 2,261 lb

This crude estimation does not take into account differences in available shelf habitat. For example, CNMI does not have the shelf area afforded by Penguin Banks in Hawaii, which includes the Auau Channel. Thus, this MSY is likely an overestimation. The SSC then determined that the black coral fishery in CNMI can be regarded as Tier 4 because MSY/MSY proxy is known, but there is no harvest. Therefore, consistent with the Tier 4 control rule described in the Mariana Archipelago FEP which requires the ABC be set equal to 0.91*MSY, the SSC calculated the CNMI black coral ABC as 2,058 lb and rounded this value up to 2,100 lb.

2.4.3.1.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL black coral in the CNMI and AMs would not be necessary. However, this is not in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.4.3.1.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for black corals in the CNMI would be equal to the 2,100 lb ACL recommended by the Council which is equal to the SSC's recommended ABC.

2.4.3.1.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for black corals in the CNMI would be set at 90% of the ABC recommended by the SSC. This would result in an ACL of 1,890 lb.

2.4.3.2 Pink, Gold and Bamboo Coral in the CNMI Exploratory Area

The CNMI Exploratory Area (X-P-CNMI) includes all EEZ waters around the CNMI as there are no known precious coral beds in the Commonwealth. However, precious coral MUS are known to exist there and there has been a report of pink corals being harvested prior to World War II (WPFMC 2009c).

The CNMI Exploratory Area (X-P-CNMI) has a 1,000 kg/year limit of all deepwater precious coral species combined except black coral. The limit of 1,000 kg/year was developed with the goal of reducing the risk of overfishing a newly discovered bed, while at the same time being large enough to provide economic incentive to engage in exploratory fishing (WPFMC 1979). There was no statistical basis for determining the limit, but instead was based on Council judgment that 1,000 kg/year should be sufficient incentive for exploratory fishing while posing little risk to overfishing (WPFMC 1979). No federal permit has ever been issued for precious coral fishing in the CNMI Exploratory Area (X-P-CNMI).

NMFS/Council Estimation of OFL
There is no estimate of OFL provided for precious corals the Exploratory Area around the CNMI.

SSC's Calculation of ABC
At its 108th meeting, the SSC recommended the CNMI pink and bamboo coral ABCs be maintained at the current annual harvest quota of 1,000 kg/yr.

Council ACL Recommendation
At its 152nd meeting held October 17-19, 2011, the Council considered the SSC-recommended ABC and recommended maintaining the current harvest quota of 1,000 kg/yr for pink and bamboo corals in the Exploratory Area around the CNMI. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

2.4.3.2.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for pink, bamboo and gold coral for the exploratory are around CNMI and AMs would not be necessary. While the implementing regulations of the Mariana Archipelago FEP already provide for 1,000 kg/yr harvest quota for all precious corals (except black coral) in the CNMI exploratory area, this management system is not in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

2.4.3.2.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACLs for pink and bamboo corals in the CNMI Exploratory Area would be set equal to the 1,000 kg/yr ACL recommended by the Council. This ACL would be equal to the current harvest quotas and is equal to the SSC-recommended ABC. Like Alternative 1, gold coral would continue to be subject to a fishing moratorium until June 30, 2013 and would serve as the functional equivalent of an ACL of zero.

2.4.3.2.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACLs for pink and bamboo corals in the CNMI Exploratory Area would be set at 90% of the ABC recommended by the SSC resulting in an ACL of 900 kg. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013 and would serve as the functional equivalent of an ACL of zero.

2.4.4 Guam Precious Corals ACL Alternatives

2.4.4.1 Black Coral in Guam
There has never been a black coral fishery in Guam and no information on the species' presence or distribution in the Territory. However, black corals are included in the management unit of the

Mariana Archipelago FEP as it is reasonable that they may be found there. Federal permits are not required to harvest precious coral in Guam.

NMFS/Council Estimation of OFL
There is no estimate of OFL provided for black corals in Guam.
SSC Calculation of ABC
There is no estimate of MSY for black corals in Guam, Additionally, there is no catch information available, and this precludes the use of the Tier 5 Control Rule. Therefore, the SSC at its 108th meeting developed a proxy for calculating the ABC for Guam black corals.

The MSY proxy was based on comparing available black coral habitat in Auau Channel of the MHI (Auau Channel, 241.7 nmi^2) and Hawaii's coastline length (653 nmi) to the coastline length of the Guam (58 nmi). Using this ratio comparison provides an estimate of the potential available area for black coral habitat in Guam (21.5 nmi^2).

Guam estimated black coral habitat equation:
(241.7 nmi^2 / 653nmi) * 58 nmi = 21.5 nmi^2

The ratio of Hawaii black coral MSY (8,250 lb) and habitat area in Hawaii (241.7 nmi^2) was then compared to potential habitat area in Guam, resulting in a potential MSY proxy of 733 lb.

Guam black coral MSY proxy equation:
(8,250 lb / 241.7 nmi^2) * 21.5 nmi^2 = 733 lb

This crude estimation does not take into account differences in available shelf habitat. For example, Guam does not have the shelf area afforded by Penguin Banks in Hawaii, which includes the Auau Channel. Thus, this MSY is likely an overestimation. The SSC then determined that the black coral fishery in Guam can be regarded as Tier 4 because MSY/MSY proxy is known, but there is no harvest. Therefore, consistent with the Tier 4 control rule described in the Mariana Archipelago FEP which requires the ABC be set equal to 0.91*MSY, the SSC calculated the Guam black coral ABC as 667 lb and rounded this value up to 700 lbs.

2.4.4.1.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for black corals in Guam and AMs would not be necessary. However, this is not in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment.

2.4.4.1.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for black corals in Guam would be equal to the 700 lb ACL recommended by the Council which is equal to the SSC's recommended ABC.

2.4.4.1.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for black corals in Guam would be set at 90% of the ABC recommended by the SSC. This would result in a black coral ACL of 630 lb.

2.4.4.2 Pink, Gold and Bamboo Corals in the Guam Exploratory Area

The Guam Exploratory Area (X-P-Guam) includes all EEZ waters around Guam as there are no known precious coral beds in the Territory. However, precious coral MUS are known to exist there and have been collected in government surveys (WPFMC 2009c). The Guam Exploratory Area has a 1,000 kg/year limit for all species combined except black coral. The limit of 1,000 kg/year was developed with the goal of reducing the risk of overfishing a newly discovered bed, while at the same time being large enough to provide economic incentive to engage in exploratory fishing (WPFMC 1979). There was no statistical basis for determining the limit, but instead, it was based on Council judgment that 1,000 kg/year should be sufficient incentive for exploratory fishing while posing little risk to overfishing (WPFMC 1979). No federal permit has ever been issued for precious coral fishing in the Guam Exploratory Area (X-P-Guam).

NMFS/Council Estimation of OFL

There is no estimate of OFL provided for pink, bamboo, and gold corals the Exploratory Area around Guam.

SSC's Calculation of ABC

At its 108th meeting, the SSC recommended the pink and bamboo corals ABCs be maintained at the current annual harvest quotas of 1,000 kg/yr.

Council ACL Recommendation

At its 152nd meeting held October 17-19, 2011, the Council considered the SSC-recommended ABC and recommended maintaining the current harvest quota of 1,000 kg/yr for pink and bamboo corals harvested in the Exploratory Area around Guam. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

2.4.4.2.1 Alternative 1: No Action (Status Quo)

Under this alternative, NMFS would not specify an ACL for pink, bamboo and gold coral for the Exploratory Area around Guam and AMs would not be necessary. While the implementing regulations of the Mariana Archipelago FEP already provide for a 1,000 kg/yr harvest quota for all precious corals (except black coral) in the Guam Exploratory Area, this management system is not in compliance with the Magnuson-Stevens Act or the provisions of the FEPs which require ACLs to be specified for all stocks and stock complexes. Alternative 1 serves as the baseline for the environmental impact assessment. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

2.4.4.2.2 Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, the ACL for pink and bamboo corals harvested from the Guam Exploratory Area would be set equal to the 1,000 kg/yr ACL recommended by the Council. This ACL would be equal to the current harvest quotas and is equal to the SSC recommended ABC.

Like Alternative 1, gold coral would continue to be subject to a fishing moratorium until June 30, 2013 and would serve as the functional equivalent of an ACL of zero.

2.4.4.2.3 Alternative 3: ACL equal to 90% of ABC

Under this alternative, the ACL for pink and bamboo corals harvested from the Guam Exploratory Area would be set at 90% of the ABC recommended by the SSC resulting in an ACL of 900 kg. Gold coral would continue to be subject to a fishing moratorium until June 30, 2013 and would serve as the functional equivalent of an ACL of zero.

2.5 Alternatives Not Considered in Detail

2.5.1 Specification of ACLs for PRIA Crustaceans and Precious Corals

Although required by the PRIA FEP, ACLs will not be specified for any crustacean or precious coral MUS in the PRIA because commercial fishing is prohibited out to 50 nautical miles by Presidential Proclamation 8336, which established the Pacific Remote Island Marine National Monument (74 FR 1565, January 12, 2009), and there is no crustacean or precious coral habitat beyond the monument boundaries. ACLs for non-commercial crustacean and precious coral fisheries within the boundaries of the PRIA monument may be developed in the future through a separate action in accordance with Proclamation 8336, if the Secretary of Commerce determines non-commercial fishing can be allowed and managed as a sustainable activity. Therefore, until such determination is made, there is a functional equivalent of an ACL of zero for all crustacean and precious coral MUS in the PRIA.

2.5.2 Specification of ACLs for Gold Coral in Hawaii Established and Conditional Beds

Currently, a moratorium on gold coral harvest is in effect throughout the western Pacific through June 30, 2013 due to uncertainty in estimates of the age and growth (73 FR 47098, August 13, 2008). Therefore, ACLs will not be specified for gold coral in any established or conditional bed in Hawaii as the current moratorium serves as a functional equivalent of an ACL of zero through the end of the 2012-13 fishing year. While the proposed action would specify a limit of 1,000 kg for all deepwater precious corals combined (except black coral) in the exploratory areas around American Samoa, Guam, the CNMI and Hawaii, the current moratorium would preclude the harvest of gold coral in the exploratory areas through June 30, 2013. Additionally, due to its status as a refugium, the harvest of all precious corals is prohibited at Westpac Bed. Therefore, an ACL will not be specified for any precious coral at the Westpac Bed because the existing prohibition already serves as a functional equivalent of an ACL of zero.

2.5.3 Specification of In-Season AMs

To prevent ACLs from being exceeded, federal regulations implementing western Pacific FEPs in 50 CFR 665.4 state that when any ACL is projected to be reached, the Regional Administrator shall inform permit holders that fishing for that stock will be restricted on a specified date. Restrictions may include, but are not limited to, closing the fishery, closing specific areas, changing bag limits, or otherwise restricting effort or catch. However, near-real time processing of catch information is not possible in any western Pacific crustacean or precious fishery. Therefore, in-season AMs to prevent an ACL from being exceeded (e.g., fishery closures in federal waters) are not possible at this time.

While federal permit and reporting requirements have been implemented for lobster, deepwater shrimp, and precious coral fisheries in federal waters throughout the U.S. Pacific Islands, there have been few if any permitted vessels for these fisheries in the past decade. When permits were issued, no fishing was conducted. Additionally, any catch that is reported from these fisheries comes primarily from non-federal waters. Therefore, NMFS will continue to rely primarily on the fishery data collection programs administered by the respective local resource management agencies to obtain catch and effort data for crustacean and precious coral fisheries in the Pacific Islands. However, these agencies presently do not have the personnel or resources to process catch data in near-real time, and so fisheries statistics are generally not available until at least six months after the data has been collected. While the State of Hawaii has the capability to monitor and track the catch of seven preferentially-targeted bottomfish species (i.e. Deep 7 bottomfish) in near real time towards their specified catch limits, additional resources would be required to extend these capabilities to crustacean and precious coral fisheries. Significant resources would also be required to support the establishment of near-real time in-season monitoring capabilities in American Samoa, Guam and the CNMI. Until resources are made available, only AMs that consist of non-in-season management measures are being recommended at this time.

3 Potentially Affected Environment and Potential Impacts of Proposed ACL Specifications

This section describes the affected fisheries and fishery resources, other biological and physical resources, and potential impacts of the proposed ACL and AM specifications on these resources. Climate change and environmental justice are considered, along with potential impacts to fishing communities, special marine areas and other resources, and fishery administration and enforcement.

Overview of fishery data collection systems in American Samoa, Guam and the CNMI

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

Boat-based creel survey program

The boat-based creel survey program collects catch, effort, and participation data on offshore fishing activities conducted by commercial, recreational, subsistence and charter fishing vessels. Surveys are conducted at boat ports or ramps, and data collection consists of two main components - participation counts (trips) and fisher interviews. Survey days are randomly selected and the number of survey days range from 3-8 per month. Surveys are stratified by week-days, weekend-days and day- and night-time. Data expansion algorithms are applied by NMFS WPacFIN to estimate 100% "coverage" and are based on port, type of day, and fishing method (Impact Assessment, 2008).

Shore-based creel survey program

The shore-based creel survey program was established to randomly sample inshore fishing trip information and consists of two components - participation counts and fishers interviews. Participation counts are based on a 'bus route' method, with predefined stopping points and time constraints. Survey days are randomly selected, and range from 2-4 times per week. Data expansion algorithms are applied by NMFS WPacFIN to estimate 100% "coverage" and are based on island region, type of day and fishing method (Impact Assessment, 2008). The shore-based creel surveys cover fishing by persons engaged in commercial, recreational, and subsistence fishing activities.

Commercial purchase system

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

Overview of fishery data collection systems in Hawaii

In Hawaii, the majority of fisheries information is collected from the commercial fishing sector through a mandatory license and monthly reporting system administered by the State of Hawaii. Under State law, anyone who takes marine life for commercial purposes is required to obtain a

commercial marine license (CML) and submit a catch report (popularly known as a "C3" form) on a monthly basis. Required information collected includes day fished, area fished, fishing method used, hours fished per method, and species caught (number/pounds caught and released).

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

In 2008, NMFS established the National Saltwater Angler Registry Program as part of the Marine Recreational Information Program to improve recreational fisheries information (73 FR 79705, December 30, 2008). This program requires all recreational fishers in federal waters that are not otherwise permitted (e.g., through a State CML license, or another federal permit) to obtain a permit and report catches to NMFS.

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

Federal Permit and Reporting Requirements

Crustacean Fisheries

Any vessel used to fish for deepwater shrimp or lobsters in federal waters around American Samoa, CNMI, Guam and Hawaii must obtain a federal permit and submit catch logbooks to NMFS within 72 hours of landing. Crustacean Permit Area 1 includes the EEZ around the Northwestern Hawaiian Islands. Crustacean Permit Area 2 includes the EEZ around the main Hawaiian Islands. Crustacean Permit Area 3 includes the EEZ around American Samoa. Crustacean Permit Area 4 includes the EEZ waters around the U.S. Pacific Remote Island Areas. Crustacean Permit Area 5 includes the EEZ around Guam and EEZ waters three miles seaward of the CNMI. Federal permits are not required to harvest Kona crab at this time. The affected permit areas for the proposed action are Crustacean Permit Areas 2, 3, and 5.

Precious Coral Fisheries

Any vessel used to fish for pink, gold or bamboo precious corals in federal waters around American Samoa, CNMI, Guam and Hawaii must obtain a federal permit and submit catch logbooks to NMFS within 72 hours of landing. Permits are required for each category of coral bed as follows: American Samoa Exploratory Area (X-P-AS) includes all coral beds in the EEZ around American Samoa. Guam Exploratory Area (X-P-G) includes all coral beds in the EEZ

around Guam. CNMI Exploratory Area (X-P-CNMI) includes all coral beds in the EEZ around the CNMI.

In Hawaii, there are three categories of beds: Established, Conditional and Exploratory. Permits are required for harvesting black coral at the Established Auau Channel bed. Permits are also required to harvest pink and bamboo coral at the Established Makapuu Bed. A permit is required to fish for pink and bamboo corals at each of the following Conditional Beds: 180 Fathom, Brooks Bank, Keahole Point and Kaena Point. Finally, a permit is required to fish for pink and bamboo coral in the Hawaii Exploratory Area (X-P-HI) which includes all coral beds other than Established, Conditional and Refugia (no fishing is allowed at any Refugia Bed) in the EEZ around Hawaii.

3.1 Crustaceans – Deepwater Shrimp Fisheries

Adult deepwater shrimp species of the genus *Heterocarpus* have been reported throughout tropical waters of the Pacific including Hawaii (Clark 1972; Struhsaker and Aasted 1974; Dailey and Ralston 1986; Gooding et al. 1988; Tagami and Barrows 1988; Moffitt and Parrish 1992; Ralston and Tagami 1992; Polovina 1993), Guam (Wilder 1977), Western Samoa (King 1980), and the Northern Mariana Islands (Moffitt 1983; Ralston 1986). They are generally found in benthic deepwater habitats between 200-900 meters in depth, primarily on the steep outer reef slopes that surround the islands and deepwater banks. However, because they are found at such deep depths, accurate descriptions and characterization of preferred habitats are difficult to obtain and virtually non-existent in the scientific literature.

The distribution of these species tends to be stratified by depth with each species occupying different but often overlapping depths (Ralston 1986). Eight species belonging to the genus *Heterocarpus* (*Heterocarpus ensifer, H. laevigatus, H. sibogae, H. gibbosus, H. lepidus, H. dorsalis, H. tricarinatus and H. longirostris*) have been reported from the Western Pacific Region, although *Heterocarpus ensifer* and *H. laevigatus* have been the primary focus of fishery operations and research surveys.

Unlike shallow-water penaeid shrimps, *Heterocarpus* shrimps have a lifespan in excess of a year, and some species such as *H. laevigatus* may have life spans of up to eight years (King, 1993). King suggests that the natural mortality rates of *H. laevigatus* are about 50% per year. He also reports that *H. laevigatus* matures at about 75% of its maximum size or between 4-5 years old. Observations by Dailey and Ralston (1986) suggest that *Heterocarpus* shrimps may be semelparous, i.e., reproducing only once in their lifetime then dying. This semelparity and the relatively long life spans and delayed maturity of some species suggest that *Heterocarpus* shrimps are vulnerable to over-exploitation. Known fishing areas tend to be limited and subject to reduced catch rates following initially high harvests.

Traps made from steel, wire, and/or plastic with conical entrances that allow the shrimp to get into the trap, but not out, are used in the Western Pacific Region to catch deepwater shrimp. In Hawaii, shrimp trapping vessels have employed large pyramidal traps of about 2 m^3 in volume, setting up to 50 traps per day (Polovina 1993). A gear loss rate of 3.35% was estimated from fishing log data in Hawaii (Tagami and Barrows 1998). There is little information available on the impacts of the lost shrimp fishery traps on habitat and other species. Potential impacts of the

traps could include snagging and ghost fishing. Lost traps could also provide habitat for other organisms. The Council and NMFS are aware of this issue and are monitoring the fishery to evaluate whether the impacts are substantial and need to be addressed through future management measures.

Throughout the Pacific, deepwater shrimp fisheries have been sporadic in nature for many reasons (Hastie and Saunders 1992).Gear loss has been a common problem and made many past ventures unprofitable. A second difficulty is the short product shelf life and a history of inconsistent product quality, leading to fluctuating market demand for the shrimp. Lastly, these fisheries generally experience local depletion on known fishing grounds, which leads to much lower catch rates over time. This localized depletion appears to be short-term and the fishery returns every so often after the resource rebounds.

3.1.1 Hawaii Deepwater Shrimp Fishery, Affected Resources and Potential Impacts

3.1.1.1 Affected Target, Non-target and Bycatch Species in Hawaii

Within the Hawaii Archipelago, there are numerous banks and seamounts—with the majority located in the NWHI—that provide depth ranges suitable for the occurrence of deepwater shrimp. *Heterocarpus laevigatus* and *H. ensifer* have been reported in both the MHI and the NWHI (Gooding 1984; Dailey and Ralston 1986; Ralston and Tagami 1992; Moffitt and Parrish 1992). *H. ensifer* is believed to be the most abundant species (Struhsaker and Aasted 1974).

In the MHI, the largest bank in Federal waters is Penguin Bank, which is located southeast of Oahu. Trapping surveys in the MHI reported that the exploitable biomass of *H. laevigatus* was greatest at 460-640 meters and negligible amounts occurred shallower than 350 meters or deeper than 830 meters (Ralston and Tagami 1992). In the NWHI, the highest catch rates for *H. laevigatus* were made between 500 and 800 meters while the highest catch rates for *H. ensifer* occurred between 350 and 600 meters (Gooding 1984).

Deepwater shrimp resources around Hawaii are thought sufficient only to support a limited local fishery or perhaps periodic heavy pulse fishing (Polovina 1993). Initial high catch rates appear to drop rapidly, trapping depths result in costly gear loss, and markets have not historically been large. Maximum Sustainable Yield (MSY) for deepwater shrimp was estimated for the Hawaiian Islands at 125 mt/yr or 275,575 lb/yr (Tagami and Ralston 1988).

Current impacts of the fishery: target, non-target and bycatch species

Based on recent performance of the fishery between 2000 and 2010 shown in Table 3, the Hawaii deepwater shrimp fishery had an average annual landing of 18,743 lb of shrimp representing approximately 7% of the estimated 275,575 lb MSY. Currently, there is little information about bycatch associated with this fishery, and what is known comes primarily from research sampling in other Pacific Islands, such as the CNMI where species such as deepwater eels (*Synaphobranchus* sp.), dogfish sharks and geryonoid crabs have been reportedly caught (WPFMC 2008). However, research findings did not report whether the bycatch was released alive or dead. The sporadic nature of the fishery has not resulted in concerns about the sustainability of bycatch species in this fishery.

Potential Impacts of the Proposed Hawaii deepwater shrimp ACL specification and AM on Target, Non-target and Bycatch Species in Hawaii

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the Hawaii deepwater shrimp fishery and AMs would not be necessary. The fishery would continue to catch deepwater shrimp in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by Hawaii DAR. The average level of catch under this alternative is expected to continue as it currently has in recent years with average catch between 2000 and 2010 estimated to be 18,743 lb. This level of catch is approximately 7% of MSY (275,575 lb) and is sustainable. There is no information on any bycatch in the Hawaii deepwater shrimp fishery; however, the sporadic nature of the fishery has not resulted in concerns about the sustainability of bycatch species. The status of Hawaii deepwater shrimp would continue to be subject to ongoing discussion and review by the Council.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this Alternative, NMFS would specify an ACL of 250,773 lb of deepwater shrimp caught in the Hawaii EEZ in fishing years 2012 and 2013. This ACL is equal to the ABC recommended by the Council's SSC and is 91% of MSY. Based on past fishery performance in the past decade and shown in Table 3, this level of catch is not expected to be attained and, therefore, the ACL is not expected to change the conduct of the fishery in any way, even without an in-season AM.

Alternative 3: Specify ACL at 90% of ABC
Under this Alternative, NMFS would specify an ACL of 225,695 lb, which is 82% of MSY. This alternative is expected to have impacts similar to Alternative 2 because this level of catch is not expected to be attained, and because, with a high ACL and no in-season management measure (e.g., a fishery closure) there would be no change to the way the fishery is conducted.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affected the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because a limit would be established on the amount of fish that may be harvested annually where none previously existed. While the lack of in-season catch monitoring ability precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded, catches have never approached MSY in the past decade and are not expected under either action alternative to approach the ACLs in the 2012 or 2013. Additionally, the post-season review of catch relative to the proposed ACL is part of the fishery management and is designed to prevent deepwater shrimp stocks from becoming overfished. The added post season review of catch would also provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.1.1.2 Affected Fishery Participants in Hawaii

Overview of Hawaii's Deepwater Shrimp Fishery

In Hawaii, an intermittent deepwater shrimp fishery began in 1967 (Tagami and Ralston 1988) and continues to vary from year to year with an average of three vessels reporting the catch of deepwater shrimp to the State of Hawaii. Table 3 provides the total and average annual reported commercial landings of deepwater shrimp in Hawaii between 1982 and 2010. Landing information is summarized in approximately 10-year groupings to protect confidential fishery information, as there may have been less than three participants in the fishery during certain years. Individual years in which less than three vessels participated in the fishery cannot be reported.

While relatively small catches of shrimp have been common in the recent past, the fishery has seen more impressive harvests. For example, landings in 1984 and 1989 were approximately 275,000 lb and 270,000 lbs, respectively (WPFMC 2008). The estimated annual ex-vessel value associated with those totals was more than $1 million each year. Currently, there are no federal crustacean permits issued for deepwater shrimp fishing in Hawaii.

In 2009, the commercial price per pound for deepwater shrimp in Hawaii was $1.68. Based on an average annual landing of 18,743 lb, the annual commercial value of the fishery could be $31,488. Due to data confidentiality restrictions, information on the number of vessels that reported catch to the State of Hawaii in 2009 and the total catch cannot be reported

Potential Impacts of the Proposed ACL specification and AM on Hawaii's Deepwater Shrimp Fishery Participants

Alternative 1: No Action (Status Quo)

Under the no-action alternative, which is the baseline alternative, the Hawaii deepwater shrimp fishery would not be managed using annual catch limits, accountability measures would not be needed, and fishing would continue to be monitored by Hawaii DAR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected.

Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, NMFS would specify a Hawaii deepwater shrimp ACL of 250,773 lb in fishing years 2012 and 2013. This ACL is equal to the ABC recommended by the Council's SSC. Between 2000 and 2010, the average annual landing of deepwater shrimp was 18,743 lb, which is 7% of the proposed ACL. The proposed ACL specifications are substantially higher than recent commercial landings. Catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because in-season monitoring, and therefore in-season closure is not possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation.

Alternative 3: Specify ACL at 90% of ABC

Under this alternative, NMFS would specify a Hawaii deepwater shrimp ACL of 225,695 lb which is 90% of the ABC (250,773 lb) and 82% of MSY. An ACL at this level expected to have

impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3. Based on historical landings, is not likely that the fishery would achieve the ACL under this alternative.

Regardless of the alternative selected, the AM for the Hawaii deepwater shrimp fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded and adversely affected deepwater shrimp stocks, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

3.1.1.3 Affected Protected Resources in Hawaii

A number of protected species are documented as occurring in the waters around the Hawaiian Islands and there is the potential for interactions with the crustacean fisheries of the Hawaii Archipelago. The Hawaii crustacean fisheries have been evaluated for impacts on protected resources and are managed in compliance with the requirements of the MSA, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and other applicable statutes.

ESA listed species and ESA review of Hawaii Crustacean Fisheries

Table 22 lists endangered or threatened species occurring in the waters around Hawaii. They include a number of whales, the Hawaiian monk seal, and five listed sea turtles. Although there is currently no critical habitat designated for ESA-listed marine species around the main Hawaiian Islands, a proposal to designate portions of the nearshore marine environment around the main Hawaiian Islands as monk seal critical habitat is currently under review.

Table 22. Endangered and threatened marine species and seabirds occurring in the waters of the Hawaiian Archipelago

Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters of the Hawaiian Archipelago			
Common name	**Scientific Name**	**ESA listing status in Hawaii**	**Occurrence in Hawaii**
Listed Sea Turtles			
Green sea turtle	*Chelonia mydas*	Threatened	Most common turtle in the Hawaiian Islands. Most nesting occurs in the northwestern Hawaiian Islands. Foraging and haulout in the MHI.
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	Small population foraging around Hawaii and low level nesting on Maui and Hawaii Islands.

Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters of the Hawaiian Archipelago			
Common name	**Scientific Name**	**ESA listing status in Hawaii**	**Occurrence in Hawaii**
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	Not common in Hawaii.
Olive ridley sea turtle	*Lepidochelys olivacea*	Threatened	Range across Pacific:
North Pacific loggerhead sea turtle	*Caretta caretta*	Endangered Distinct Population Segment	Not common in Hawaii.
Listed Marine Mammals			
Hawaiian Monk seal	*Monachus schauinslandi*	Endangered	Endemic tropical seal. Occurs throughout the archipelago. Population in decline.
Blue whale	*Balaenoptera musculus*	Endangered	No sightings or strandings reported in Hawaii but acoustically recorded off of Oahu and Midway Atoll.
Fin whale	*Balaenoptera physalus*	Endangered	Infrequent sightings in Hawaii waters.
Humpback whale	*Megaptera novaeangliae*	Endangered	Migrate through the archipelago and breed during the winter. Est. 6,000-10,000 individuals.
Sei whale	*Balaenoptera borealis*	Endangered	Worldwide distribution. Primarily found in cold temperate to subpolar latitudes. Rare in Hawaii.
Sperm whale	*Physeter macrocephalus*	Endangered	Found in tropical to polar waters worldwide, most abundant cetaceans in the region. Sighted off the NWHI and the MHI.
Listed Sea Birds			
Newell's Shearwater	*Puffinus auricularis newelli*	Threatened	Rare. Breeds only in colonies on the MHI where it is threatened by predators and urban development.
Hawaiian petrel	*Pterodroma phaeopygia*	Endangered	Rare
Short-tailed Albatross	*Phoebastria albatrus*	Endangered	Found on Midway in the NWHI.

Applicable ESA Coordination – Hawaii crustacean fisheries
In a letter of concurrence covering the Fishery Management Plan (FMP) for the Crustacean Fisheries of the Western Pacific, dated April 4, 2008, NMFS determined crustacean fisheries of Hawaii that operate in accordance with regulations implementing the FMP, inclusive of the spiny and slipper lobster fisheries, deepwater shrimp fisheries, and Kona crab fishery were not likely to adversely affect ESA-listed species or their habitats.

In 2009, the Council recommended, and NMFS approved, the development of five archipelagic-based fishery ecosystem plans (FEPs) including the Hawaii Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Crustacean FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for the Hawaii Archipelago. No substantial changes to the crustacean fisheries around Hawaii have occurred since the FEP was implemented that have required further consultation.

Marine Mammals
Several whales, dolphins and porpoises, occur in waters around Hawaii and are protected under the Marine Mammal Protection Act (MMPA). Table 23, provides a list of marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago that have the potential to interact with the Hawaii crustacean fisheries. See Section 4.3 for more information on the MMPA determination.

The deepwater shrimp fishery is not known to have the potential for a large and adverse effect on proposed endangered false killer whales or endangered humpback whales. Although these species occur in the area the fishery operates, no reported or observed interactions have occurred. No cetacean entanglements in trap lines have been reported or observed to date.

Table 23. Non-ESA-listed marine mammals occurring in Hawaii

Non-ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago	
Common Name	**Scientific Name**
Blainville's beaked whale	*Mesoplodon densirostris*
Bottlenose dolphin	*Tursiops truncatus*
Bryde's whale	*Balaenoptera edeni*
Common dolphin	*Delphinus delphis*
Cuvier's beaked whale	*Ziphius cavirostris*
Dall's porpoise	*Phocoenoides dalli*
Dwarf sperm whale	*Kogia sima*
False killer whale	*Pseudorca crassidens*
Fraser's dolphin	*Lagenodelphis hosei*
Killer whale	*Orcinus orca*
Longman's beaked whale	*Indopacetus pacificus*

Non-ESA-listed marine mammals known to occur or reasonably expected to occur in waters around the Hawaiian Archipelago	
Common Name	**Scientific Name**
Melon-headed whale	*Peponocephala electra*
Minke whale	*Balaenoptera acutorostrata*
Pantropical spotted dolphin	*Stenella attenuate*
Pygmy killer whale	*Feresa attenuata*
Pygmy sperm whale	*Kogia breviceps*
Risso's dolphin	*Grampus griseus*
Rough-toothed dolphin	*Steno bredanensis*
Short-finned pilot whale	*Globicephala macrorhynchus*
Spinner dolphin	*Stenella longirostris*
Spotted dolphin	*Stenella attenuata*
Striped dolphin	*Stenella coeruleoalba*

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

On November 17, 2010, NMFS published a proposed rule to list the Hawaiian insular false killer whale as an endangered species under the ESA (75 FR 70169). NMFS is also proposing to designate areas in the main Hawaiian Islands as monk seal critical habitat. Specific areas proposed include terrestrial and marine habitats from 5 m inland from the shoreline extending seaward to the 500 m depth contour around Kaula Island, Niihau, Kauai, Oahu, Maui Nui (including Kahoolawe, Lanai, Maui and Molokai) and Hawaii Island (76 FR 32026, June 2, 1011). The final determinations on whether to list the Hawaiian insular false killer whale as an endangered species and designate monk seal critical habitat in the MHI have not been made. If these actions are approved, NMFS will initiate consultation in accordance with Section 7 of the ESA to ensure that Hawaii's fisheries are not likely to jeopardize the continued existence of the species, or result in the destruction or adverse modification of critical habitat.

All Hawaii crustacean fisheries, including the Hawaii lobster dive, net and trap fisheries, shrimp trap fishery and Kona crab loop net fishery are listed as a Category III fishery under Section 118 of the MMPA (76 FR 73912, November 29, 2011). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals. NMFS has also concluded that all Hawaii Archipelago commercial crustacean fisheries, including the deepwater shrimp fishery, as currently conducted, will not affect marine mammals in any manner not considered or authorized by the commercial fishing take exemption under the MMPA.

Sea Turtles

The breeding populations of Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. Additionally, the loggerhead sea turtle (*Caretta caretta*) population in the North Pacific Ocean was recently identified as a distinct population segment and listed 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). The green turtle is most commonly seen in the EEZ waters. Hawksbill turtles are known to nest on the Islands of Hawaii and Maui.

Seabirds

Seabirds found on and around Hawaii that could potentially interact with fisheries are listed in Table 24. The short-tailed albatross, which is listed as endangered under the ESA, is a migratory seabird that has nested in the NWHI and could be present in the waters of the Hawaii Archipelago. Other listed seabirds found in the region are the endangered Hawaiian petrel (*Pterodroma phaeopygia)* and the threatened Newell's shearwater (*Puffinus auricularis newelli*). Non-listed seabirds known to be present in Hawaii include the black-footed albatross (*Phoebastria nigripes*); Laysan albatross (*P. immutabilis*); wedge-tailed (*Puffinus pacificus*), sooty (*P. griseus*) and fleshfooted (*P. carneipes*) shearwaters, as well as the masked (*Sula dactylatra*), brown (*Sula leucogaster*), and red-footed *(Sula sula*) boobies (or gannets). Seabirds forage in both State and federal waters, but are not known to and are unlikely to interact with the Hawaii crustacean fisheries. There have been no reports of adverse interactions between the Hawaii crustacean fisheries and migratory seabirds.

Table 24. Seabirds occurring in the Hawaiian Islands

Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor)		
	Common name	***Scientific name***
R	Hawaiian petrel	*Pterodroma phaeopygia (ESA: Endangered)*
R	Newell's shearwater	*Puffinus auricularis newelli (ESA:Threatened)*
R	Short-tailed albatross	*Phoebastria albatrus (ESA: Endangered)*
R	Black-footed albatross	*Phoebastria nigripes*
R	Laysan albatross	*Phoebastria immutabilis*
R	Wedge-tailed shearwater	*Puffinus pacificus*
V	Audubon's shearwater	*Puffinus lherminieri*
Vc	Short-tailed shearwater	*Puffinus tenuirostris (common visitor)*
R	Christmas shearwater	*Puffinus nativitatis*
V	Leach's storm-petrel	*Oceanodroma leucorhoa*
V	Matsudaira's storm-petrel	*Oceanodroma matsudairae*
R	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 2009c

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Hawaii
None of the alternatives considered would modify operations of the Hawaii deepwater shrimp fishery in any way, and therefore, none of the alternatives would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the deepwater shrimp fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stock. Additionally, the current inability of in-season tracking of catch towards an ACL resulted in the Council not considering an in-season closure. Therefore, participants in the Hawaii deepwater shrimp fishery would continue to fish as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources. For the same reasons, none of the action alternatives would result in a change to the quality of the habitat being considered as critical habitat for the Hawaiian monk seal. The proposed ACLs and AMs would not result in impacts of deepwater shrimp fishing on false killer whales.

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 the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the Hawaii Archipelago, are a distinct population segment (DPS) that is endangered and at risk of extinction. While the North Pacific DPS of loggerheads may be found in federal waters in the MHI, their occurrence in federal waters where the fishery operate is extremely rare. Additionally, there have been no reported or observed incidental take of this species in the history of the fishery. Because none of the alternatives considered would modify operations of the Hawaii deepwater shrimp fishery in any way, there is no additional information that would change the conclusions of the April 4, 2008 informal consultation that determined this fishery was not likely to adversely affect ESA-listed species or their habitats.

3.1.2 American Samoa Deepwater Shrimp Fishery, Affected Resources and Potential Impacts

3.1.2.1 Affected Target, Non-target and Bycatch Species in American Samoa

Because of the steepness of Tutuila and the other islands that make up American Samoa, most of the available benthic habitat is composed of fringing coral reefs, a limited reef slope, and a few offshore banks. The islands are fringed by narrow reef flats (50–500 m wide) that drop to a depth of 3 to 6 meters and descend gradually to 40 meters. From this depth, the ocean bottom drops rapidly, reaching depths of 1,000 meters within 1 to 3 kilometers from shore. The following four banks around Tutuila, that are likely areas for deepwater shrimp fishing, have been identified: Taputapu, Mataula, Leone West Banks, and Steps Point (Severance and Franco 1989).

NMFS PIFSC conducted sampling at 10 shrimp trapping stations at depths ranging between 200 and 510 fathoms around American Samoa in 1987 (NOAA Ship Townsend Cromwell cruise 87-01). The gear used was large pyramid single set traps and some *Heterocarpus* were present in every trap haul. Unpublished results from the cruise showed that deepwater shrimp may be more abundant in some places than others, but deepwater shrimp were captured in most of the trap sets (PIFSC unpublished data). There are no available estimates of MSY values for deepwater shrimp in American Samoa because of the lack of fishing and the lack of research.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in American Samoa

Alternative 1: No Action (Status Quo)

Under the no-action alternative, an ACL would not be specified for the American Samoa deepwater shrimp fishery and AMs would not be necessary. However, since there has never been a deepwater shrimp fishery in American Samoa, this alternative would have no effect on any marine resource. Catches, if they were to occur, would be collected through fisheries monitoring programs administered by American Samoa DMWR and the status of American Samoa deepwater shrimp would be subject to discussion and review.

Alternative 2: Specify Council recommended ACL

Under this alternative, NMFS would specify an ACL of 80,000 lb for American Samoa deepwater shrimp in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC. To date, there has never been a fishery for deepwater shrimp in American Samoa. If a fishery were to develop, catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because no in-season monitoring, and therefore no in-season closure is possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation. With no change in the fishery, the ACLs and AMs would not have large or adverse impacts to target, non-target or bycatch species. The ACLs and AMs would provide a new level of post-season review of the fishery, however, and over time, the management of deepwater shrimp fisheries with ACLs and AMs is expected to help ensure long-term sustainability of the resource.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 72,000 lb for American Samoa deepwater shrimp in fishing years 2012 and 2013. The impacts under Alternative 3 would be identical to Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of fish that may be harvested annually where none previously existed. There is no ability to monitor catches in-season which precludes in-season management measures (such as a fishery closure); however, the post-season review of catch relative to the proposed ACL is part of the management of the fishery and is designed to prevent deepwater shrimp stocks from becoming overfished. The additional level of post season review of the catch would also an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.1.2.2 Affected Fishery Participants in American Samoa

No fishing for deepwater shrimp has ever been reported around American Samoa and no federal permits have ever been issued.

Potential Impacts of the Proposed ACL specification and AM on American Samoa's Deepwater Shrimp Fishery Participants
To date, there has not been a deepwater shrimp fishery in American Samoa. Therefore, there is no fishery participant that could be affected by any of the three alternatives considered. If a fishery were to occur, the ACLs and AMs proposed under alternatives 1 and 2 are expected to provide for additional management review of the fishery to promote long-term sustainability in the fishery, which by managing for a sustainable resource, would have a positive impact on fishery participants.

3.1.2.3 Affected Protected Resources in American Samoa

A number of protected species are known or believed to occur in the waters around American Samoa. The crustacean fisheries of the western Pacific region have been evaluated for impacts on protected species and are managed in compliance with the requirements of the MSA, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and other applicable statutes. Detailed descriptions of these potentially affected species and their life histories can be found in section 3.3.4 of the Fishery Ecosystem Plan (FEP) for the American Samoa Archipelago (WPFMC 2009a).

Listed species and ESA review of American Samoa Crustacean Fisheries

Table 25 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around American Samoa which may have the potential to interact with crustacean fisheries. They include a number of whales, five sea turtles, and a seabird. There is no critical habitat designated for ESA-listed marine species around American Samoa.

Table 25. Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters round the American Samoa Archipelago

Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the American Samoa Archipelago			
Common name	**Scientific Name**	**ESA listing status in American Samoa**	**Occurrence in American Samoa**
Listed Sea Turtles			
Green sea turtle (laumei enaena and fonu)	*Chelonia mydas*	Threatened	Frequently seen. Nest at Rose Atoll. Known to migrate to feeding grounds.
Hawksbill sea turtle (laumei uga)	*Eretmochelys imbricata*	Endangered	Frequently seen. Nest at Rose Atoll and Swain's Island.
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	Very rare in American Samoa. One recovered dead in experimental longline fishing.
Olive ridley sea turtle	*Lepidocheylys olivacea*	Threatened	Uncommon in American Samoa. Three sightings.
South Pacific Loggerhead sea turtle	*Caretta caretta*	Endangered Distinct Population Segment	Not known to occur in American Samoa
Listed Marine Mammals			
Blue whale	*Balaenoptera musculus*	Endangered	No known sightings.
Fin whale	*Balaenoptera physalus*	Endangered	No known sightings.
Humpback whale (tafola or i`a manu)	*Megaptera novaeangliae*	Endangered	Most common during Sept. and October. Southern humpback whales mate and calve from June – Sept.
Sei whale	*Balaenoptera borealis*	Endangered	No known sightings.
Sperm whale	*Physeter marcocephalus*	Endangered	Occurs in all months except. Feb. and March.
Listed Sea Birds			
Newell's Shearwater	*Puffinus auricularis*	Threatened	Uncommon visitor

Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the American Samoa Archipelago			
Common name	**Scientific Name**	**ESA listing status in American Samoa**	**Occurrence in American Samoa**
	newelli		

Applicable ESA Coordination – American Samoa Crustacean Fisheries
In a letter of concurrence covering the Fishery Management Plan (FMP) for the Crustacean Fisheries of the Western Pacific, dated September 28, 2007, NMFS determined crustacean fisheries of American Samoa that operate in accordance with regulations implementing the FMP, inclusive of the spiny and slipper lobster fisheries, and potential deep-water shrimp and Kona crab fisheries were not likely to adversely affect ESA-listed species or their habitats.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based fishery ecosystem plans (FEPs) including the American Samoa Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Crustacean Fisheries FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for American Samoa. No substantial changes to the crustacean fishery around American Samoa have occurred since the FEP was implemented that have required further consultation under the ESA.

Marine Mammals
Several whales, dolphins and porpoises occur in waters around American Samoa and are protected under the MMPA. Table 26 provides a list of marine mammals known to occur or reasonably expected to occur in waters around American Samoa. See Section 4.3 for more information on the MMPA determination.

Table 26. 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**
Humpback whale* (tafola or i`a manu)	*Megaptera novaeangliae*
Sperm whale*	*Physeter macrocephalus*
Blue whale*	*Balaenoptera musculus*
Fin Whale*	*Balaenoptera physalus*
Sei whale*	*Balaenoptera borealis*
Blainville's beaked whale	*Mesoplodon densirostris*
Bottlenose dolphin	*Tursiops truncatus*
Bryde's whale	*Balaenoptera edeni*
Common dolphin	*Delphinus delphis*
Cuvier's beaked whale	*Ziphius cavirostris*
Dwarf sperm whale	*Kogia sima*

False killer whale	*Pseudorca crassidens*
Fraser's dolphin	*Lagenodelphis hosei*
Killer whale	*Orcinus orca*
Melon-headed whale	*Peponocephala electra*
Minke whale	*Balaenoptera acutorostrata*
Pygmy killer whale	*Feresa attenuata*
Pygmy sperm whale	*Kogia breviceps*
Risso's dolphin	*Grampus griseus*
Rough-toothed dolphin	*Steno bredanensis*
Short-finned pilot whale	*Globicephala macrorhynchus*
Spinner dolphin	*Stenella longirostris*
Spotted dolphin (Pantropical spotted dolphin)	*Stenella attenuata*
Striped dolphin	*Stenella coeruleoalba*
Longman's beaked whale	*Indopacetus pacificus*

*Species is also listed under the Endangered Species Act.
Sources: NMFS PIRO and PIFSC unpublished data; Council website: http://www.wpcouncil.org

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). Because there is no deepwater shrimp fishery in American Samoa, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii shrimp trap fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a deepwater shrimp fishery in the American Samoa that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

Sea Turtles

There are five Pacific sea turtles designated under the Endangered Species Act (ESA) as either threatened or endangered (Table 25) that occur in waters around American Samoa. Green and hawksbill sea turtles are most likely to frequent nearshore habitat when foraging around American Samoa. The breeding populations of Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. This species is rare in American Samoa but one dead olive ridley turtle was found to have been injured by a shark and may have recently laid eggs. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. 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 South Pacific Ocean were recently identified as members of a distinct population segment (South Pacific Ocean) and

listed as endangered. These five species of sea turtles are highly migratory, or have a highly migratory phase in their life history (NMFS 2001).

Seabirds of American Samoa

Seabirds found on and around American Samoa that could potentially interact with fisheries are listed in Table 27. There have been no reports of adverse interactions between the American Samoa crustacean fishery and migratory birds.

Table 27. Seabirds occurring in American Samoa

Resident seabirds in American Samoa		
Samoan name	**Common name**	***Scientific name***
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 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	*Sterna fuscata*
gogo	Brown noddy	*Anous stolidus*
gogo	Black noddy	*Anous minutus*
laia	Blue-gray noddy	*Procelsterna cerulea*
manu sina	White tern / Common fairy-tern	*Gygis alba*

Note: An uncommon visitor in American Samoa is the ta'i'o, or Newell's shearwater.
Source: WPFMC 2009a

Newell's shearwater (*Puffinus auricularis newelli*) is listed as threatened under the ESA. Generally known with other shearwaters and petrels as ta`i`o in Samoan, this species breeds only in colonies on the main Hawaiian Islands. Newell's shearwater has been sighted once in American Samoa, but the species has also been observed in other parts of the western and South Pacific. It is considered an uncommon visitor to the archipelago.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in American Samoa

To date, there has not been a deepwater shrimp fishery around American Samoa. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that

would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

On September 22, 2011, NMFS and the US Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the South Pacific Ocean, which encompasses waters around American Samoa, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, due to the dearth of sightings/observations of loggerhead sea turtles, inclusive of the South Pacific Ocean DPS around American Samoa, no reported or observed incidental take of this species in the history of the fishery, and because none of the alternatives considered would modify operations of the American Samoa crustacean fisheries in any way, there is no additional information that would change the conclusions of the September 28, 2007 informal consultation which determined this American Samoa crustacean fisheries were not likely to adversely affect ESA-listed species or their habitats.

3.1.3 CNMI Deepwater Shrimp Fishery, Affected Resources and Potential Impacts

3.1.3.1 Affected Target, Non-Target Stocks and Bycatch in the CNMI

Shrimp trapping surveys conducted by NMFS at 22 islands and banks in the Mariana Archipelago between 1982 and 1984 reported the presence of all eight species of *Heterocarpus: Heterocarpus ensifer, H. laevigatus* and *H. longirostris* comprised 99 percent of the catch while *H. tricarinatus, H. gibbosus* and *H. sibogae* were rare (Moffitt and Polovina 1987). *H. ensifer* was found at depths between 350-550 m, *H. laevigatus* at depths between 500-900 m, and *H. longirostrus* at depths of 900 m and greater. *H. laevigatus* had the highest CPUE at 2.33 kg/trap and was also recorded as the largest of the shrimp caught, with an average carapace length of 38.2 mm (size range: 13-61mm). Based on an equilibrium yield assessment conducted by NMFS Southwest Fisheries Science Center in 1987, the most current estimate of maximum sustainable yield (MSY) for the deepwater shrimp stock complex in the CNMI is 137.4 mt/yr or 302,830 lb/yr (Moffitt and Polovina 1987) and is presented in Table 4.

Bycatch in CNMI’s deepwater shrimp fishery was reported during the commercial operations that occurred between May 1994 and February 1996 and included a few deepwater eels (*Synaphobranchus* sp.) and dogfish sharks. A large number of two species of geryonid crabs were also caught. The crabs are a marketable incidental catch and could contribute to the success of any deepwater shrimp fishery (WPFMC 2008).

Current impacts of the fishery: target, non-target and bycatch species

Currently, there is no fishery for deepwater shrimp in CNMI. Small amounts of catch were reported in 2001, 2005, and 2006 as local fishermen explored re-invigorating the deepwater shrimp fishery; however this data cannot be reported due to requirements to protect the confidentiality of fishery information. No catches have been reported from local waters since then. Currently, there is little information about bycatch associated with this fishery, and what is known comes primarily from research fishing in CNMI where species such as deepwater eels (*Synaphobranchus* sp.), dogfish sharks and geryonid crabs have been reportedly caught

(WPFMC 2008). However, research findings did not report whether the bycatch was released alive or dead. The sporadic nature of the fishery has not resulted in concerns about the sustainability of bycatch species in this fishery.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in the CNMI

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the CNMI deepwater shrimp fishery and AMs would not be necessary. Based on past fishery performance in the past decade, it is expected that fishing is not likely to occur in 2012 and 2013, as no catch has been reported since 2006. Catches, if they were to occur, could be similar to the maximum reported catches of approximately 27,000 lb taken between May 1994 and February 1996, 97 percent of which were *Heterocarpus laevigatus.* Catches would continue to be monitored through fisheries monitoring programs administered by CNMI DFW. The status of CNMI deepwater shrimp would continue to be subject to ongoing discussion and review by NMFS and the Council.

Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, NMFS would specify an ACL of 275,575 lb of deepwater shrimp in fishing years 2012 and 2013. This ACL is equal to the ABC recommended by the Council's SSC and is 91% of MSY. The proposed ACL specifications are substantially higher than recent commercial landings. If a fishery were to re-develop, catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because no in-season monitoring, and therefore no in-season closure is possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 247,018 lb of deepwater shrimp, which is 82% of MSY. If a fishery were to re-develop, catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because no in-season monitoring, and therefore no in-season closure is possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation.

Under all alternatives considered, including the proposed action, no new monitoring of CNMI deepwater shrimp is required to be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and adversely affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of shrimp that may be harvested annually where none previously existed.

There is no ability to implement in-season catch monitoring, which precludes an in-season fishery management measure (such as fishery closure) to prevent the ACL from being exceeded; however catches have never approached MSY in the past decade and are not expected to approach the ACL in the 2012 or 2013. Additionally, the post-season review of catch relative to the proposed ACL is part of the AM designed to prevent the fishery from becoming overfished. The additional level of post season review of the catch would also provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed. Therefore, the proposed ACL and AMs are expected to promote long-term sustainability in the CNMI deepwater shrimp fishery.

3.1.3.2 Affected Fishery Participants in the CNMI

Overview of CNMI's Deepwater Shrimp Fishery

A directed fishery for deepwater shrimp in the CNMI began in mid-1994, but lasted only two years. One of two companies involved stopped fishing in mid-1995, after fishing for a total of 193 days. The fishery is sporadic in nature due to gear loss, short product shelf life, and inconsistent fishery product quality, and due to local depletion that is generally experienced on known fishing grounds which leads to lower catch rates. Between May 1994 and February 1996, 27,000 lb. of deepwater shrimp were landed in the CNMI, with an approximate value of $162,000. Of the species landed, more than 97 percent were *Heterocarpus laevigatus.* The remainder of the catch was comprised of *Heterocarpus ensifer* (WPFMC 2008). A small amount of catch was reported in 2001, 2005, and 2006 as local fishermen explored re-invigorating the deepwater shrimp fishery; however this data cannot be reported in order to protect the confidentiality of fishery data. No catch has been reported from local waters since 2006. There is currently no Federal crustacean permits issued for deepwater shrimp harvest in CNMI.

Because no landings of deepwater shrimp have been reported since 2006, there is no economic value for this fishery at present.

Potential Impacts of the Proposed ACL specification and AM on CNMI's Deepwater Shrimp Fishery Participants

Alternative 1: No Action (Status Quo)

Under the no-action alternative, which is the baseline alternative, the CNMI deepwater shrimp fishery would not be managed using ACLs, AMs would not be needed, and fishing would continue to be monitored by the CNMI DFW, NMFS, and the Council. Fisheries statistics would become available approximately six months or longer after the data have been initially collected.

Alternative 2: Specify Council recommended ACL

Under this alternative, NMFS would specify an ACL of 275,575 lb of deep water shrimp in fishing years 2012 and 2013. This ACL is equal to the ABC recommended by the Council's SSC. Currently, there is no fishery for deepwater shrimp in the CNMI. Small amounts of catch were reported in 2001, 2005, and 2006 but cannot be reported because of the requirement to protect confidential fishery information. The proposed ACL would be several orders of magnitude higher than this level of catch.

If a fishery were to re-develop, catch would not likely exceed the proposed ACLs, and therefore, would not result in a race to fish. Because no in-season monitoring, and therefore no in-season closure is possible at this time, the proposed ACLs and AMs are not expected to change the conduct of the fishery, including types of gear, areas fished, effort, or participation.

The AM for the CNMI deepwater shrimp fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL were to be exceeded and adversely affect deepwater shrimp stocks, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 247,018 lb which is 90% of the ABC (275,575 lb) and 82% of MSY. An ACL at this level is expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3. If the ACL were to be exceeded, the post-season review by NMFS and the Council would provide additional evaluation of the reasons the ACL was exceeded, and allow the Council to consider future management adjustments.

3.1.3.3 Affected Protected Resources in the CNMI

A number of protected species are reported from the waters around the Mariana Islands and there is, therefore, the potential for interactions with the crustacean fisheries of the CNMI. The crustacean fisheries of the western Pacific region have been evaluated for impacts on protected resources and are managed in compliance with the requirements of the MSA, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, 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).

Listed species and ESA review of the CNMI Crustacean Fisheries
Table 28 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around the Mariana Archipelago, including the CNMI, which may have the potential to interact with fisheries. They include a number of whales, five sea turtles, and a seabird. There is no critical habitat designated for ESA-listed marine species around the CNMI.

Table 28. 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**
Listed Sea Turtles			
Green sea turtle	*Chelonia mydas*	Threatened	Most common turtle in the Mariana Archipelago. Foraging and minor nesting confirmed on Guam, Rota, Tinian and Saipan.
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	Small population foraging around Guam and suspected low level around southern islands of CNMI. Low level nesting on Guam.
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	Occasional sightings around Guam. Not 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
North Pacific loggerhead sea turtle	*Caretta caretta*	Endangered Distinct Population Segment	No known reports of loggerhead turtles in waters around the Mariana Archipelago
Listed Marine Mammals			
Blue whale	*Balaenoptera musculus*	Endangered	Extremely rare
Fin whale	*Balaenoptera physalus*	Endangered	Infrequent sightings.
Humpback whale	*Megaptera novaeangliae*	Endangered	Infrequent sightings. Winter in the CNMI.
Sei whale	*Balaenoptera borealis*	Endangered	Infrequent sightings.
Sperm whale	*Physeter macrocephalus*	Endangered	Regularly sighted; most abundant large cetaceans in the region.
Listed Sea Birds			
Newell's Shearwater	*Puffinus auricularis newelli*	Threatened	Rare visitor

Applicable ESA Coordination – CNMI Crustacean Fisheries
In a letter of concurrence covering the Fishery Management Plan (FMP) for the Crustacean Fisheries of the Western Pacific, dated September 28, 2007, NMFS determined crustacean fisheries of the CNMI that operate in accordance with regulations implementing the FMP, inclusive of the spiny and slipper lobster fisheries, deepwater shrimp fisheries, and potential Kona crab fisheries were not likely to adversely affect ESA-listed species or their habitats.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based fishery ecosystem plans (FEPs) including the Mariana Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Crustaceans FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for the Mariana Archipelago, including the CNMI. No substantial changes to the crustacean fishery around CNMI have occurred since the FEP was implemented that have required further consultation.

Marine Mammals
Several whales, dolphins, and porpoises occur in waters around the CNMI and are protected under the MMPA. Table 29 provides a list of marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago that have the potential to interact with the CNMI crustacean fishery. See Section 4.3 for more information on the MMPA determination for this fishery

Table 29. 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**
Humpback whale*	*Megaptera novaeangliae*
Sperm whale*	*Physeter macrocephalus*
Sei whale*	*Balaenoptera borealis*
Fin whale*	*Balaenoptera physalus*
Blue whale*	*Balaenoptera musculus*
Blainville's beaked whale	*Mesoplodon densirostris*
Bottlenose dolphin	*Tursiops truncatus*
Bryde's whale	*Balaenoptera edeni*
Common dolphin	*Delphinus delphis*
Cuvier's beaked whale	*Ziphius cavirostris*
Dwarf sperm whale	*Kogia sima*
False killer whale	*Pseudorca crassidens*
Fraser's dolphin	*Lagenodelphis hosei*
Killer whale	*Orcinus orca*
Longman's beaked whale	*Indopacetus pacificus*

Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (CNMI)	
Common Name	**Scientific Name**
Melon-headed whale	*Peponocephala electra*
Minke whale	*Balaenoptera acutorostrata*
Northern elephant Seal	*Mirounga angustirostris*
Pilot whale	*Globicephala malaena*
Pygmy killer whale	*Feresa attenuata*
Pygmy sperm whale	*Kogia breviceps*
Risso's dolphin	*Grampus griseus*
Rough-toothed dolphin	*Steno bredanensis*
Short-finned pilot whale	*Globicephala macrorhynchus*
Spinner dolphin	*Stenella longirostris*
Spotted dolphin	*Stenella attenuata*
Striped dolphin	*Stenella coeruleoalba*

*Species is also listed under the Endangered Species Act.
Source: Eldredge 2003, Randall et al. 1975, Pyle and Pyle 2005, Council website: http://www.wpcouncil.org

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). Because there is no deepwater shrimp fishery in the CNMI, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii shrimp trap fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a deepwater shrimp fishery in the CNMI that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

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 similar Hawaii shrimp trap fishery as a Category III fishery under Section 118 of the MMPA (76 FR73912, November 29, 2011), as the fishery is one with a low likelihood or no known incidental takings of marine mammals. In 2008, NMFS also concluded that the CNMI deepwater shrimp fishery, conducted on a small scale and sporadic level as in the mid-1990's, will not affect marine mammals in a manner not considered or authorized by the commercial fishing take exemption under section 118 of the MMPA.

Sea Turtles
There are five Pacific sea turtles designated under the Endangered Species Act (ESA) as either threatened or endangered. Green sea turtles are most likely to frequent nearshore habitat when foraging around Guam and other areas in the Mariana Islands. The breeding populations of

Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. 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 part of a distinct population segment (North Pacific Ocean) and listed as endangered. These five species of sea turtles are highly migratory, or have a highly migratory phase in their life history (NMFS 2001)

Based on nearshore surveys conducted jointly between the CNMI–DFW and NMFS around the southern Mariana Islands (Rota and Tinian 2001; Saipan 1999), an estimated 1,000 to 2,000 green sea turtles forage in these areas (Kolinski et al., 2001). Nesting beaches and seagrass beds on Tinian and Rota are in good condition but beaches and seagrass beds around Saipan have been impacted by hotels, golf courses and general tourist activities. Intensive monitoring in occurred on Saipan at seven beaches from March 4 to August 31, 2009 resulting in 16 green turtle nests documented. Rapid assessments at Rota beaches Okgok and Tatgua on July 12, 2009 yielded 13 nests. On Tinian, from July 22-31, 2009, 36 nests at five beaches were documented (Maison et al. 2010). There have been occasional sightings of leatherback turtles around Guam (Eldredge 2003); however, the extent to which leatherback turtles are present around the Mariana Archipelago is unknown. There are no known reports of loggerhead turtles in waters around the Mariana Archipelago (WPFMC 2009b). Olive ridley sea turtles are believed to occasionally transit the area (Starmer et al. 2005).

Seabirds

The following seabirds in Table 30 are considered residents of 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 30 have been sighted and are considered visitors (some more common than others) to the Mariana Archipelago: short-tailed shearwater (*Puffinus tenuirostris* - common visitor), Newell's shearwater (*Puffinus auricularis*- rare visitor), Audubon's shearwater (*Puffinus iherminieri*), Leach's storm-petrel (*Oceanodroma leucorhoa*), and the Matsudaira's storm-petrel (*Oceanodroma matsudairae*). Of these, only the Newell's shearwater is listed (as threatened) under the ESA. There have been no sightings of the endangered short-tailed albatross (*Phoebastria albatrus*) in the CNMI although CNMI is within the range of the species' largest breeding colony at Torishima, Japan (WPFMC 2009b). There are no known interactions between seabirds and any of the Mariana Archipelago crustacean fisheries (WPFMC 2009b).

Table 30. 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 auricularis 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*
R	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

Potential Impacts of the Proposed ACL specification and AM on Protected Species in the CNMI

Although the action alternative would implement ACLs and AMs, without an in-season closure, none of the alternatives would modify operations of the CNMI deepwater shrimp fishery in any way that would be expected to affect endangered or threatened species or critical habitat. Therefore, the existing MMPA and ESA consultations would continue to be applicable.

While Alternatives 2 and 3 would implement ACLs and a post-season review of the catch relative to the ACL, managing the deepwater shrimp fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stock. Additionally, there is currently no means of conducting in-season tracking of catch towards an ACL, and this precludes managers from implementing an in-season closure. This means that participants in the CNMI deepwater shrimp fishery would continue to fish as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the preferred alternative (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

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

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the CNMI, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, because loggerhead sea turtles, inclusive of the North Pacific Ocean DPS, are not known to nest or even transit the waters around the Mariana Archipelago, and because none of the action alternatives would modify operations of the CNMI crustacean fisheries in any way, there is no additional information that would change the conclusions of the September 28, 2007 informal consultation. The informal consultation concluded that the CNMI crustacean fisheries were not likely to adversely affect ESA-listed marine species or their designated critical habitat.

3.1.4 Guam Deepwater Shrimp Fishery Potentially Affected Resources and Potential Impacts

3.1.4.1 Potentially Affected Target, Non-target and Bycatch Species in Guam

Shrimp trapping surveys conducted by NMFS at 22 islands and banks in the Mariana Archipelago between 1982 and 1984 reported the presence of all eight species of *Heterocarpus: Heterocarpus ensifer, H. laevigatus* and *H. longirostris* comprised 99 percent of the catch while *H. tricarinatus, H. gibbosus* and *H. sibogae* were rare (Moffitt and Polovina 1987). *H. ensifer* was found at depths between 350-550 m, *H. laevigatus* at depths between 500-900 m, and *H. longirostrus* at depths of 900 m and greater. *H. laevigatus* had the highest CPUE at 2.33 kg/trap (max) and was also recorded as the largest of the shrimp caught, with an average carapace length of 38.2 mm (size range: 13-61mm). Based on an equilibrium yield assessment conducted by NMFS Southwest Fisheries Science Center in 1987, the most current estimate of maximum sustainable yield (MSY) for the deepwater shrimp stock complex in the Guam is 24.1 mt/yr or 53,116 lb/yr (Moffitt and Polovina 1987) and is presented in Table 4. This estimate is based on habitat areas around the Island of Guam and its offshore banks of Galvez and Santa Rosa.

Information on bycatch in Guam shrimp trap fishery is lacking because there has never been a fishery; however, if a fishery were to develop, bycatch could be similar to that of the CNMI research fishing which reported species such as deepwater eels (*Synaphobranchus* sp.), dogfish sharks and geryonid crabs have been reportedly caught (WPFMC 2008). However, research findings did not report whether the bycatch was released alive or dead. Because there is no fishery, there are no concerns about the sustainability of bycatch.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in Guam

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the Guam deepwater shrimp fishery and AMs would not be necessary. This alternative would not be consistent with requirements of the Guam FEP or the MSA which require the fishery be managed using ACLs and AMs. Catches, if they were to occur, could be similar to the maximum catches of approximately 27,000 lb taken in the CNMI between May 1994 and February 1996. Catches would be tracked through existing fisheries monitoring programs administered by Guam DAWR and the status of Guam's deepwater shrimp stocks would be subject to discussion and review by NMFS and the Council. Fishing for deepwater shrimp would likely be sporadic and not result in overfishing. Based on the past fishery in the CNMI, the potential impacts on non-target (bycatch) species under the no-action Alternative would likely also not result in large adverse effects to potential bycatch stocks of dogfish sharks and eels or geryonid crabs.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this alternative, NMFS would specify an ACL of 48,488 lb for Guam deepwater shrimp in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC. Although there has never been a deepwater shrimp fishery in Guam, there could be a fishery that begins that would be subject to the ACL and AM requirements. With no in-season closure, the ACLs and AMs would not constrain future fishing; however, managing the fishery with ACLs and AMs is part of an overall management scheme designed to ensure long-term sustainability of the resources.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 43,639 lb for Guam deepwater shrimp in fishing year 2012 and 2013. The impacts under Alternative 3 would be identical to Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of shrimp that may be harvested annually where none previously existed. While fishery managers lack the ability to monitor catch in-season and, therefore, cannot effect a fishery closure to prevent the ACL from being exceeded, the post-season review of catch relative to the proposed ACL is part of the fishery management and is designed to prevent shrimp stocks from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.1.4.2 Affected Fishery Participants in Guam

Overview of Guam's Deepwater Shrimp Fishery
A small-scale fishery for deepwater shrimp occurred in the 1970s, but ended shortly thereafter. No fishing or landings have been reported since. There is currently no federal crustacean permits issued for deepwater shrimp harvest in Guam and no reports of harvest reported from local waters in recent time.

Potential Impacts of the Proposed ACL specification and AM on Guam's Deepwater Shrimp Fishery Participants
To date, there has not been a deepwater shrimp fishery in Guam. Therefore, there is no fishery participant that could be affected by any of the alternatives considered. However, without an in-season fishery closure, neither of the proposed action alternatives would affect fishing for deepwater shrimps. Over the short term, increased management review of fishery harvests (called for in the AM) would provide additional management oversight of the fishery. Over the long term, management of the Guam deepwater shrimp fishery with an ACL and AMs is expected to promote long-term sustainability of the deepwater shrimp resource.

3.1.4.3 Affected Protected Resources in Guam

A number of protected species are reported from the waters around the Mariana Islands and there is, therefore, the potential for interactions with the fisheries of Guam. The crustacean fisheries of the western Pacific region have been evaluated for impacts on protected resources and are managed in compliance with the requirements of the MSA, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and other applicable statutes. Additional detailed descriptions of potentially affected protected resources and their life histories can be found in Section 3.3.3 of the FEP for the Mariana Archipelago (WPFMC 2009b).

Listed species and ESA review of Guam's Crustacean Fisheries
Table 31 identifies species listed as endangered or threatened under the ESA that are known to occur or could reasonably be expected to occur in marine waters around the Mariana Archipelago, including Guam, which may have the potential to interact with fisheries. They include a number of whales, five sea turtles, and a seabird. There is no critical habitat designated for ESA-listed marine species around Guam.

Table 31. Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)

Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Marina Archipelago (Guam)			
Common name	**Scientific Name**	**ESA listing status in Guam**	**Occurrence in Guam**
Listed Sea Turtles			
Green sea turtle	*Chelonia*	Threatened	Most common turtle in the

Endangered and threatened marine species and seabirds known to occur or reasonably expected to occur in waters around the Marina Archipelago (Guam)			
Common name	**Scientific Name**	**ESA listing status in Guam**	**Occurrence in Guam**
Haggan Betde	*mydas*		Mariana Archipelago. Foraging and minor nesting confirmed on Guam, Rota, Tinian and Saipan.
Hawksbill sea turtle Haggan Karai	*Eretmochelys imbricata*	Endangered	Small population foraging around Guam and suspected low level around southern islands of CNMI. Low level nesting on Guam.
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	Occasional sightings around Guam. Not 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
North Pacific Loggerhead sea turtle	*Caretta caretta*	Endangered Distinct Population Segment	No known reports of loggerhead turtles in waters around the Mariana Archipelago.
Listed Marine Mammals			
Blue whale	*Balaenoptera musculus*	Endangered	Extremely rare
Fin whale	*Balaenoptera physalus*	Endangered	Infrequent sightings.
Humpback whale	*Megaptera novaeangliae*	Endangered	Infrequent sightings. Winter in the CNMI.
Sei whale	*Balaenoptera borealis*	Endangered	Infrequent sightings.
Sperm whale	*Physeter macrocephalus*	Endangered	Regularly sighted
Listed Sea Birds			
Newell's Shearwater	*Puffinus auricularis newelli*	Threatened	Rare visitor

Applicable ESA Coordination – Guam Crustacean Fisheries

In a letter of concurrence covering the Fishery Management Plan (FMP) for the Crustacean Fisheries of the Western Pacific, dated September 28, 2007, NMFS determined crustacean fisheries of Guam that operate in accordance with regulations implementing the FMP, inclusive

of the spiny and slipper lobster fisheries, and potential deepwater shrimp and Kona crab fisheries were not likely to adversely affect ESA-listed species or their habitats.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based fishery ecosystem plans (FEPs) including the Mariana Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Crustacean Fisheries FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for the Mariana Archipelago. No substantial changes to the crustacean fishery around Guam have occurred since the FEP was implemented that have required further consultation under the ESA.

Marine Mammals

Several whales, dolphins and porpoises occur in waters around Guam and are protected under the MMPA. Table 32 provides a list of marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago that have the potential to interact with the crustacean fishery. See Section 4.3 for more information on the MMPA determination. A single dugong, listed as endangered, was observed in Cocos Lagoon, Guam in 1975 (Randall et al. 1975). Several sightings were reported in 1985 on the southeastern side of Guam (Eldredge 2003). Since that time, however no reports of dugong sightings have been made.

Table 32. 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**
Humpback whale*	*Megaptera novaeangliae*
Sperm whale*	*Physeter macrocephalus*
Sei whale*	*Balaenoptera borealis*
Fin whale*	*Balaenoptera physalus*
Blue whale*	*Balaenoptera musculus*
Blainville's beaked whale	*Mesoplodon densirostris*
Bottlenose dolphin	*Tursiops truncatus*
Bryde's whale	*Balaenoptera edeni*
Common dolphin	*Delphinus delphis*
Cuvier's beaked whale	*Ziphius cavirostris*
Dwarf sperm whale	*Kogia sima*
Dugong*	*Dugong dugong*
False killer whale	*Pseudorca crassidens*
Fraser's dolphin	*Lagenodelphis hosei*
Killer whale	*Orcinus orca*
Longman's beaked whale	*Indopacetus pacificus*
Melon-headed whale	*Peponocephala electra*

Marine mammals known to occur or reasonably expected to occur in waters around the Mariana Archipelago (Guam)	
Common Name	**Scientific Name**
Minke whale	*Balaenoptera acutorostrata*
Pygmy killer whale	*Feresa attenuata*
Pygmy sperm whale	*Kogia breviceps*
Risso's dolphin	*Grampus griseus*
Rough-toothed dolphin	*Steno bredanensis*
Short-finned pilot whale	*Globicephala macrorhynchus*
Sperm whale	*Physeter macrocephalus*
Spinner dolphin	*Stenella longirostris*
Spotted dolphin	*Stenella attenuata*
Striped dolphin	*Stenella coeruleoalba*

*Species is also listed under the Endangered Species Act.
Source: Eldredge 2003, Randall et al. 1975, (Guam DAWR 2005), Council website: http://www.wpcouncil.org

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S., and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). Because there is no deepwater shrimp fishery in Guam, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii shrimp trap fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a deepwater shrimp fishery in Guam that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

Sea Turtles
There are five Pacific sea turtles designated under the Endangered Species Act (ESA) as either threatened or endangered. Green sea turtles are most likely to frequent nearshore habitat when foraging around Guam and other areas in the Mariana Islands. The breeding populations of Mexico's olive ridley sea turtles (*Lepidochelys olivacea*) are currently listed as endangered, while all other olive ridley populations are listed as threatened. Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill turtles (*Eretmochelys imbricata*) are also classified as endangered. 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 part of a distinct population segment (North Pacific Ocean) and listed as endangered. These five species of sea turtles are highly migratory, or have a highly migratory phase in their life history (NMFS 2001)

Nesting surveys for green sea turtles have been done on Guam since 1973 with the most consistent data collected between 1990 and 2001 (Cummings 2002). Survey results show nesting in Guam to be generally increasing with 1997 having the most numerous nesting females at 60 (Cummings 2002). From October 1, 2006 through July 31, 2008, 55 green turtle nests were counted at various beaches during opportunistic surveys throughout Guam (Guam DAWR 2009). Aerial surveys done in 1990–2000 also found an increase in green sea turtle sightings around Guam with over 200 turtles counted in 2000 (Cummings 2002). There have been occasional sightings of leatherback turtles around Guam (Eldredge 2003); however, the extent to which leatherback turtles are present around the Mariana Archipelago is unknown. There are no known reports of loggerhead turtles in waters around the Mariana Archipelago (WPFMC 2009b). Olive ridley sea turtles are believed to occasionally transit the area (Starmer et al. 2005).

Seabirds

The following seabirds are considered residents of Mariana Archipelago: wedge-tailed shearwater (*Puffinus pacificus*), white-tailed tropicbird (*Phaethon lepturus*), red-tailed tropicbird (*Phaethon rubricauda*), masked booby (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 33 have been sighted and are considered visitors (some more common than others) to the Mariana Archipelago; short-tailed shearwater (*Puffinus tenuirostris;* common visitor), Newell's shearwater (*Puffinus auricularis;* rare visitor), Audubon's shearwater (*Puffinus iherminieri*), Leach's storm-petrel (*Oceanodroma leucorhoa*), and the Matsudaira's storm- Petrel(*Oceanodroma matsudairae*). Of these, only the Newell's shearwater is listed as threatened under the ESA. There have been no sightings of the endangered short-tailed albatross (*Phoebastria albatrus*) in the CNMI although CNMI is within the range of the largest breeding colony at Torishima, Japan (WPFMC 2009b).

There are no known interactions between seabirds and any of the Mariana Archipelago crustacean fisheries (WPFMC 2009b).

Table 33. 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 auricularis 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*

Seabirds of the Mariana Archipelago (R= Resident/Breeding; V= Visitor; Vr=rare visitor; Vc= Common visitor)		
	Common name	***Scientific name***
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

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Guam
A small-scale fishery for deepwater shrimp occurred in the 1970s, but ended shortly thereafter. No fishing or landings have been reported since. There are currently no federal crustacean permits issued for deepwater shrimp harvest in Guam and no reports of harvest reported from local waters in recent time. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.
If at any time the fishery, environment, or status of a listed species or marine mammal species were to change substantially, or if the fishery were found to be occurring in or near areas that were designated as critical habitat, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

On September 22, 2011, NMFS and the US Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which encompasses waters around Guam, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, because loggerhead sea turtles, inclusive of the North Pacific Ocean DPS, are not known to nest or even transit the waters around the Mariana Archipelago, and because none of the alternatives considered would modify operations of Guam crustacean fisheries in any way, there is no additional information that would change the conclusions of the September 28, 2007 informal consultation. The informal consultation determined that the Guam crustacean fisheries were not likely to adversely affect ESA-listed marine species or their designated critical habitat.

3.2 Crustaceans – Spiny and Slipper Lobster Fisheries

Lobsters are harvested on small scales throughout the inhabited islands of the western Pacific region. The most common crustacean harvests include lobster species of the taxonomic groups Palinuridae (spiny lobsters) and Scyllaridae (slipper lobsters). Spiny lobsters are nonclawed, decapod crustaceans with slender walking legs of roughly equal size. Spiny lobster have a large

spiny carapace with two horns and antennae projecting forward of their eyes, and a large abdomen terminating in a flexible tailfan (Uchida et al. 1980). The appearance of the slipper lobster is notably different than that of the spiny lobster. Uchida and Uchiyama (1986) provided a detailed description of the morphology of slipper lobsters (*S. squammosus* and *S. haanii*) and note that the two species are very similar in appearance and are easily confused.

Adult spiny lobsters are typically found on rocky substrate in well-protected areas, in crevices, and under rocks. Pitcher (1993) observed that, in the southwestern Pacific, spiny lobsters are typically found in association with coral reefs. Coral reefs provide shelter as well as a diverse and abundant supply of food items, he noted. Pitcher also stated that in this region, *P. penicillatus* inhabits the rocky shelters in the windward surf zones of oceanic reefs, an observation also noted by Kanciruk (1980). Other species of *Panulirus* show more general patterns of habitat utilization. At night, *P. penicillatus* moves onto the reef flat to forage, and they are often harvested in nearshore waters by night divers.

3.2.1 Hawaii Lobster Fishery, Affected Resources and Potential Impacts

3.2.1.1 Affected Target, Non-target and Bycatch Species in Hawaii

In Hawaii, fisheries for lobsters target the two species of spiny lobster and several species of slipper lobsters, although two species, the common slipper lobster (*Scyllarides squammosus*) and the ridgeback slipper lobster (*Scyllarides haanii*) are the principle species harvested. Gear types used in Hawaii's lobster fisheries include traps, nets and hand harvest, with the latter being the preferred method in recent years and accounting for nearly 80 percent of reported landings between 1994 and 2004 (Kelly and Messer, 2005).

Prior to 1999, the majority of spiny lobster production was attributed to the Northwestern Hawaiian Island lobster trap fishery. However, since the closure of the NWHI fishery in 1999, fishing is now confined to the main Hawaiian Islands (MHI) and with more than 97% of the total catch coming from state waters (WPFMC 2011).

Current impacts of the fishery: target, non-target and bycatch species

Between 1966 and 2010, spiny lobster production in the MHI ranged from just over 1,400 lbs to about 14,000 lbs with 16-69 commercial participants in any given year. During the same time period, slipper lobster landings range from about 40-900 lb with 4-12 commercial participants. Only about 2% of the spiny lobster landings from the MHI is estimated to have come from federal waters (WPFMC 2011). There is currently no Federal crustacean permits issued for lobsters in the MHI. Table 6 summarizes the reported commercial landing of spiny and slipper lobster landings between 1966 and 2010.

Hand harvest is the predominate gear employed in this fishery and results in no bycatch. Other gear types such as traps or nets could inadvertently catch other unintended species, but no information on composition or amount bycatch from these gear types is currently available.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in Hawaii

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the Hawaii lobster fishery and AMs would not be necessary. The fishery would continue to catch lobsters in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by Hawaii DAR. The current level of catch under this alternative is expected to continue as it currently has in recent years with 2009 catch for spiny and slipper lobster being 11,073 lb and 102 lb, respectively. The status of Hawaii lobsters would continue to be subject to ongoing discussion and review by the Council and NMFS. The current level of lobster fishing is considered to be sustainable as there have been no trends showing decreasing catches (Figure 2).

Alternative 2: Specify Council recommended ACL (Preferred)
Under this alternative, NMFS would specify an ACL of 10,000 lb for spiny lobsters and an ACL of 280 for slipper lobsters in Hawaii for fishing years 2012 and 2013. The ACLs are equal to the ABC recommended by the Council's SSC and are set at the 75th percentile of the long-term catch. The ACL for spiny lobster is lower than recent catch and therefore, could be exceeded. While MSY for the MHI lobsters are unknown, the impacts of an ACL specification and post-season AM calling for review of the Hawaii spiny and slipper lobster harvests are expected to be beneficial because it would establish a limit on the amount that may be harvested annually where none previously existed and would provide for additional management review of the fishery.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 9,000 lb for spiny lobster and 252 lb for slipper lobster and is expected to have impacts similar to Alternative 2.

Under all action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of lobsters that could be harvested annually where none previously existed. There is no ability to conduct in-season monitoring of catch relative to the proposed ACL, which precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of management of the lobster fishery that is designed to prevent lobster stocks from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.2.1.2 Affected Fishery Participants in Hawaii

Overview of Hawaii's Lobster Fishery

Prior to 1999, the majority of spiny lobster production was attributed to the Northwestern Hawaiian Island lobster trap fishery. However, since the closure of the NWHI fishery in 1999, fishing is now confined to the main Hawaiian Islands (MHI) and with more than 97% of the total catch coming from state waters (WPFMC 2011).

Between 1966 and 2010, spiny lobster production in the MHI ranged from just over 1,400 lbs to about 14,000 lbs with 16-69 commercial participants in any given year. During the same time period, slipper lobster landings range from about 40-900 lb with 4-12 commercial participants. Only about 2% of the spiny lobster landings from the MHI are estimated to have come from federal waters (WPFMC 2011). Table 6 summarizes the reported commercial landing of spiny and slipper lobster landings between 1966 and 2010. There is currently no Federal crustacean permit issued for lobsters in the MHI.

In 2009, the commercial price per pound for Hawaiian spiny lobster was $12.26. Slipper lobsters are not sold. Based on reported commercial landings of 11,073 lb for spiny lobster, the commercial value for the Hawaii lobster fishery was approximately $135,755. The exact number of participants in the MHI lobster fishery in 2009 is unknown but could range between 4 and 69 participants based on the information above.

Assuming participation and effort was equal throughout the fleet in 2009 each participant in the fishery could have caught between 160 lb to 2,768 lb of lobster with a value ranging between $1,961 and $33,936.

Potential Impacts of the Proposed ACL specification and AM on Hawaii's Lobster Fishery Participants

Alternative 1: No Action (Status Quo)

Under the no-action alternative, which is the baseline alternative, the Hawaii lobster fishery would not be managed using ACLs, AMs would not be needed, and fishing would continue to be monitored by Hawaii DAR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected. Lobster fishing is expected to continue to be sustainable as there have been no indications that the stocks are being depleted.

Alternative 2: Specify Council recommended ACL (Preferred)

Under this alternative, NMFS would specify an ACL of 10,000 lb for spiny lobsters and an ACL of 280 lb for slipper lobster in fishing years 2012 and 2013. The ACLs are equal to the ABCs recommended by the Council's SSC and are set at the 75th percentile of the long-term catch. However, the ACL for spiny lobster is lower than recent catch and therefore, could be exceeded.

The AM for the MHI lobster fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL were to be exceeded, NMFS, as recommended by the Council, would take action to correct the operational issue that caused the

ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Alternative 3: Specify ACL at 90% of ABC
Under this Alternative, NMFS would specify an ACL of 9,000 lb for spiny lobsters and an ACL of 252 lb for slipper lobster in fishing years 2012 and 2013. The ACLs are 90% of the ABCs which are 10,000 lb and 280 lb for spiny and slipper lobster, respectively. ACLs at this level are expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

Regardless of which action alternative is selected, because there would be no in-season closure, the proposed ACLs and AMs would not result in a change to fishing. The additional post-season review and adjustment to the ACL, as warranted by the effects on fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants.

3.2.1.3 Affected Protected Resources in Hawaii

Section 3.1.1.3 describes protected resources that have the potential to interact with the Hawaii lobster fishery. It also describes ESA consultations and MMPA determinations that have been made regarding all crustacean fisheries in federal waters around Hawaii.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Hawaii

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

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the lobster fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stock. As fishery managers do not have the ability to conduct in-season tracking of catch towards an ACL, there is no in-season closure being proposed. Therefore, participants in the Hawaii lobster fishery would continue to fish as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, neither of the 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 the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the Hawaii Archipelago, are a distinct population segment (DPS) that is endangered and at risk of extinction. While the North Pacific DPS of loggerheads may be found in federal waters in the MHI, their occurrence in federal waters where the fishery operates is extremely rare. Additionally, there have been no reported or observed incidental take of this species in the history of the fishery. Because neither action alternative would modify operations of the Hawaii lobster fishery in any way, there is no additional information that would change the conclusions of the 2008 informal consultation that determined this fishery was not likely to adversely affect ESA-listed species or their habitats.

3.2.2 American Samoa Lobster Fishery, Affected Resources and Potential Impacts

3.2.2.1 Affected Target, Non-target and Bycatch Species in American Samoa

In American Samoa, the spiny lobster (*Panulirus penicillatus*) is the main lobster species harvested and is primarily speared at night near the outer reef slope by free divers diving for finfish in territorial waters. Total landings expanded from a market survey conducted by the American Samoa Department of Marine and Wildlife Resources are estimated to average 1,271 lb of spiny lobsters sold per year, without taking subsistence and recreational catches into account (Coutures 2003).

Commercial landings reported by DMWR between 2000 and 2008 ranged from 170-5,404 lb (Table 7). According to landings records, slipper lobsters in American Samoa are not exploited. However, an SSC member from American Samoa reported at the 108th SSC meeting, that some slipper lobster are harvested but the catch is not identified to the species level in the DMWR fishery monitoring creel survey programs. There is currently no Federal crustacean permit issued for lobster harvest in American Samoa.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in American Samoa

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the American Samoa lobster fishery and AMs would not be necessary. The fishery would continue to catch lobsters in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by American Samoa DMWR. The current level of catch under this alternative is expected to continue as it currently has in recent years with 2008 catch for spiny lobster being 1,417 lb. Catch for slipper lobster would remain un-quantified. The status of American Samoa lobsters would continue to be subject to ongoing discussion and review by the Council and NMFS. The current level of lobster fishing is considered to be sustainable as there have been no trends showing decreasing catches or lobster size.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this alternative, NMFS would specify an ACL of 2,300 lb for spiny lobsters in American Samoa and an ACL of 30 for slipper lobsters for American Samoa in fishing years 2012 and 2013. The ACL for spiny lobster is equal to the ABC recommended by the Council's SSC and is set at the 75th percentile of the long-term catch. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.2.

Based on past fishery performance, landings of spiny lobster has exceeded 2,300 lb each year between 2005 and 2007, and the American Samoa fishery could potentially attain that level of catch in the future. While MSY for American Samoa lobsters is unknown, the impacts of an ACL specification for American Samoa spiny and slipper lobster are expected to be beneficial because it would establish a limit on the amount that could be harvested annually where none previously existed.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 2,070 lb for spiny lobster and 27 lb for slipper lobster and is expected to have impacts similar to Alternative 2, except that the ACL would be more likely to be exceeded under Alternative 3.

Under both action alternatives considered, including the preferred alternative, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of lobster that may be harvested annually where none previously existed. There is no ability to conduct in-season monitoring, which precludes in-season measures (such as a fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of fishery management that is designed to prevent the fishery from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.2.2.2 Affected Fishery Participants in American Samoa

Overview of American Samoa's Lobster Fishery
Aside for catch, there is no information available on American Samoa's lobster fishery in terms of participation and effort. Spiny lobster (*Panulirus penicillatus*) is the most-often targeted species, and is usually speared at night by free divers who are hunting for finish on the outer reef slope within territorial waters.

In 2008, the commercial price per pound for American Samoa spiny lobster was $4.95. Based on reported commercial landings of 1,417 lb for spiny lobster, the commercial value for the

American Samoa lobster fishery was approximately $7,014. The number of participants in the fishery is unknown. No economic data is available for slipper lobsters.

Potential Impacts of the Proposed ACL specification and AM on American Samoa's Lobster Fishery Participants

Alternative 1: No Action (Status Quo)
Under the no-action alternative, which is the baseline alternative, the American Samoa lobster fishery would not be managed using ACLs, AMs would not be needed, and fishing would continue to be monitored by American Samoa DMWR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this alternative, NMFS would specify an ACL of 2,300 lb for spiny lobsters and an ACL of 30 lb for slipper lobster in American Samoa in fishing years 2012 and 2013. The ACL for spiny lobster is equal to the ABC recommended by the Council's SSC and is set at the 75th percentile of the long-term catch. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.2.

Based on past fishery performance, landings of spiny lobster exceeded 2,300 lb each year between 2005 and 2007, and the fishery could potentially attain that level of catch in the future. The AM for the American Samoa lobster fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 2,070 lb for American Samoa spiny lobsters and an ACL of 27 lb for slipper lobster in fishing years 2012 and 2013. The ACLs are 90% of the ABCs which are 2,300 lb and 30 lb for spiny and slipper lobster, respectively. ACLs at this level are expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

Regardless of which action alternative is selected, because there is no in-season closure, the proposed ACL and AM would not result in a change to the manner in which lobster fishing is conducted. The additional post-season review and adjustment to the ACL, as warranted by the effects on fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants. Neither action alternative would affect bycatch or non-target stocks which are not an issue in this fishery.

3.2.2.3 Affected Protected Resources in American Samoa

Section 3.1.2.3 describes protected resources that have the potential to interact with the American Samoa lobster fishery. It also describes ESA consultations that have been made regarding all crustaceans, including lobster, fisheries in federal waters around American Samoa.

On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). However, due to the nature of this fishery as primarily a near-shore hand/spear fishery with relatively small levels of commercial harvest, NMFS has not classified this fishery in its LOF; however, NMFS classifies the similar Hawaii lobster dive, net and trap fisheries as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that the lobster fishery in the American Samoa would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in American Samoa

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

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the lobster fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stock. Additionally, there is currently no ability to conduct in-season tracking of catch in relation to an ACL which precludes an in-season closure. This means participants in the American Samoa lobster fishery would continue to fish for lobsters as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

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

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA

(76 FR 58868). Specifically, NMFS and the USFWS determined that the loggerhead sea turtles in the South Pacific Ocean, which encompasses waters around American Samoa, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, due to the dearth of sightings/observations of loggerhead sea turtles, inclusive of the South Pacific Ocean DPS around American Samoa, and because none of the alternatives considered would modify operations of the American Samoa lobster fishery in any way, there is no additional information that would change the conclusions of the September 28, 2007 informal consultation. The letter of concurrence concluded with the finding that the American Samoa crustacean fishery is not likely to adversely affect ESA-listed species known to occur in the waters around American Samoa or their designated critical habitat.

3.2.3 CNMI Lobster Fishery, Affected Resources and Potential Impacts

3.2.3.1 Affected Target, Non-target and Bycatch Species in the CNMI

The CNMI lobster fishery primarily targets spiny lobsters which are harvested by hand, with scuba or by free diving. This fishery occurs almost exclusively inside of three nautical miles of the inhabited southern islands of Saipan, Tinian and Rota although, anecdotal information indicates that in the northern islands on the reef surrounding Farallon de Medinilla, bottomfish fishermen anchored overnight occasionally dive for lobsters (WPFMC 2011; NMFS 2009). The peak of the fishery occurred in 1984 when over 12,000 lb of spiny lobsters were landed. However, between 2000 and 2009, landings ranged from 743 lb to 5,610 lb (Table 8). In 2009, spiny lobster landings were 881 lb. Slipper lobster catches have only recently been reported within the past several years with catches of 7 lb, 371 lb, and 165 lb reported in 2007, 2008 and 2009, respectively (WPacFIN unpublished data). There is currently no Federal crustacean permit issued for lobster harvest in CNMI and no catch limit on lobsters.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in the CNMI

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the CNMI lobster fishery and AMs would not be necessary. The fishery would continue to catch lobsters in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by CNMI DFW. The current level of catch under this alternative is expected to continue as it currently has in recent years with 2009 catch for spiny lobster being 881 lb. Catch for slipper lobster would remain small at less than 400 lb. The status of CNMI lobsters would continue to be subject to ongoing discussion and review by the Council and NMFS. The current level of catch for both species is not likely to result in overfishing as there are no clear trends indicating that lobster stocks in the CNMI have been declining (Figure 5). There are no adverse impacts to non-target species or bycatch associated with the CNMI lobster fishery which is target-specific.

Alternative 2: Specify Council recommended ACL
Under this alternative, NMFS would specify an ACL of 5,500 lb for spiny lobsters and an ACL of 60 for slipper lobster in fishing years 2012 and 2013. The ACL for spiny lobster is equal to the ABC recommended by the Council's SSC and is set at the 75th percentile of the long-term catch.

The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.3.

Based on past fishery performance for the period 2000-2009, landings of spiny lobster exceeded 5,500 lb once in 2005 when 5,610 lb were landed. Similarly, landings of slipper lobsters are beginning to be reported with landings of 371 lb and 165 lb occurring in 2007 and 2008, respectively. Therefore, there is a potential that the ACLs proposed under this alternative could be attained in the future. While MSY for CNMI lobsters is unknown, the impacts of an ACL specification for CNMI spiny and slipper lobster are expected to be beneficial because it would establish a limit on the amount that may be harvested annually where none previously existed.

Alternative 3: Specify ACL at 90% of ABC
Under this Alternative, NMFS would specify an ACL of 4,950 lb for spiny lobster and 54 lb for slipper lobster and is expected to have impacts similar to Alternative 2.

Regardless of which action alternative is selected, because there is no in-season closure, the proposed ACL and AM would not result in a change to fishing. The additional post-season review and adjustment to the ACL, as warranted by the effects of fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants. There would be no change to the impacts of the lobster fishery on non-target species.

3.2.3.2 Affected Fishery Participants in the CNMI

Overview of CNMI's Lobster Fishery
Aside for catch, there is no information available on CNMI's lobster fishery in terms of participation and effort.

In 2009, the commercial price per pound for CNMI spiny lobster was $4.98. Based on reported commercial landings of 881 lb for spiny lobster, the commercial value for the CNMI lobster fishery was approximately $4,388. The number of participants in the fishery is unknown. No economic data is available for slipper lobsters.

Potential Impacts of the Proposed ACL specification and AM on CNMI's Lobster Fishery Participants

Alternative 1: No Action (Status Quo)
Under the no-action alternative, which is the baseline alternative, the CNMI lobster fishery would not be managed using annual catch limits, accountability measures would not be needed, and fishing would continue to be monitored by CNMI DFW, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this alternative, NMFS would specify an ACL of 5,500 lb for spiny lobsters and an ACL of 60 lb for slipper lobster in fishing years 2012 and 2013. The ACL for spiny lobster is equal to the ABC recommended by the Council's SSC and is set at the 75th percentile of the long-term

catch. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.3.

Based on past fishery performance for the period 2000-2009, landings of spiny lobster has exceeded 5,500 lb once in 2005 when 5,610 lb were landed. Similarly, landings of slipper lobsters are beginning to be reported with landings of 371 lb and 165 lb occurring in 2007 and 2008, respectively. Therefore, there is the potential that the ACLs proposed under this alternative could be exceeded.

The AM for the CNMI lobster fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 4,950 lb for spiny lobsters and an ACL of 54 lb for slipper lobster in fishing years 2012 and 2013. The ACLs are 90% of the ABCs which are 5,500 lb and 60 lb for spiny and slipper lobster, respectively. ACLs at this level are expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

3.2.3.3 Affected Protected Resources in the CNMI

Section 3.1.3.3 describes protected resources that have the potential to interact with the lobster fishery in the CNMI. It also describes ESA consultations that have been made regarding all crustacean, including lobster, fisheries in federal waters around the CNMI.

On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). However, due to the nature of this fishery as primarily a near-shore hand harvest fishery with relatively small levels of commercial harvest, NMFS has not classified this fishery in its LOF; however, NMFS classifies the similar Hawaii lobster dive, net and trap fisheries as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that the lobster fishery in the CNMI would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in the CNMI

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

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the lobster fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stock. Additionally, the current inability of in-season tracking of catch towards an ACL prevents in-season closure ability, meaning participants in the CNMI lobster 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, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

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

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the CNMI, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, because loggerhead sea turtles, inclusive of the North Pacific Ocean DPS, are not known to occur around the Mariana Archipelago, and because none of the alternatives considered would modify operations of the CNMI lobster fishery in any way, there is no additional information that would change the conclusions of the September 28, 2007 informal consultation. The informal consultation concluded that the Mariana Archipelago crustacean fisheries were not likely to adversely affect ESA-listed marine species or their designated critical habitat.

3.2.4 Guam Lobster Fishery, Affected Resources and Potential Impacts

3.2.4.1 Affected Target, Non-target and Bycatch Species in Guam

Little is known about Guam’s crustacean fisheries. Most fishing for crustaceans around Guam occurs in territorial waters by hand in a subsistence or recreational context. Estimated commercial landings for spiny lobsters for the period 2000 through 2009 are available and summarized in Table 9. Between 2007 and 2009, annual landings of spiny lobsters were 5,008 lb, 4,724 lb and 1,167 lb, respectively. There are no documented landings of slipper lobsters in

Guam. Additionally, there is currently no Federal crustacean permit issued for lobster harvest in Guam.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in Guam

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the Guam lobster fishery and AMs would not be necessary. The fishery would continue to catch lobsters in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by Guam DAWR. The current level of catch under this alternative is expected to continue as it currently has in recent years with 2009 catch for spiny lobster being 1,167 lb. Catch for slipper lobster would remain un-quantified and the status of Guam lobsters would continue to be subject to ongoing discussion and review by the Council and NMFS. The current level of catch for both species is not likely to result in overfishing as there are no trends indicating that lobster stocks in Guam have been declining (Figure 6). There are no adverse impacts to non-target species or bycatch associated with the Guam lobster fishery which is target-specific.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this Alternative, NMFS would specify an ACL of 2,700 lb for spiny lobsters and an ACL of 20 for slipper lobster in fishing year 2012 and 2013. The ACL for spiny lobster is equal to the ABC recommended by the Council's SSC and is set at the 75th percentile of the long-term catch. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.4.

Based on past fishery performance for the period 2000-2009, landings of spiny lobsters exceeded 2,700 lb in 2005 when 2,704 lb were landed, in 2006 when 4,789 lb were landed and again in 2007 when 4,725 was landed. Therefore, there is the potential that proposed ACL under this alternative could be attained in the future. While MSY for Guam lobsters is unknown, the impacts of an ACL specification for Guam spiny and slipper lobster are expected to be beneficial because it would establish a limit on the amount that may be harvested annually where none previously existed. Even without an in-season management measure, lobster harvests on Guam would continue to be subject to local management measures that help ensure the fishery is sustainable. There would be no changes to bycatch or non-target species, as there are no issues associated with these in the Guam lobster fishery.

Alternative 3: Specify ACL at 90% of ABC
Under this Alternative, NMFS would specify an ACL of 2,430 lb for spiny lobster and 18 lb for slipper lobster and is expected to have impacts similar to Alternative 2.

Regardless of which action alternative is selected, because there is no in-season closure, the proposed ACL and AM would not result in a change to lobster fishing in Guam. The additional post-season review and adjustment to the ACL, as warranted by the effects of fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants.

3.2.4.2 Affected Fishery Participants in Guam

Overview of Guam's Lobster Fishery
Aside from catch, there is no information available on Guam's lobster fishery in terms of participation and effort.

In 2009, the commercial price per pound for Guam spiny lobster was $3.70 Based on reported commercial landings of 1,144 lb for spiny lobster, the commercial value for the Guam lobster fishery was approximately $4,233. The number of participants in the fishery is unknown. No economic data is available for slipper lobsters.

Potential Impacts of the Proposed ACL specification and AM on Guam's Lobster Fishery Participants

Alternative 1: No Action (Status Quo)
Under the no-action alternative, which is the baseline alternative, the Guam lobster fishery would not be managed using ACLs, AMs would not be needed, and fishing would continue to be monitored by Guam DAWR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this alternative, NMFS would specify an ACL of 2,700 lb for spiny lobsters and an ACL of 20 lb for slipper lobster on Guam in fishing years 2012 and 2013. The ACL for spiny lobster is equal to the ABC recommended by the Council's SSC and is set at the 75th percentile of the long-term catch. The ACL for slipper lobster is based on a proxy developed from Hawaii data and described in Section 2.2.4.

Based on past fishery performance for the period 2000-2009, landings of spiny lobsters exceeded 2,700 lb in 2005 when 2,704 lb were landed, in 2006 when 4,789 lb were landed and again in 2007 when 4,725 was landed. Therefore, there is the potential that the ACLs proposed under this alternative could be exceeded.

The AM for the Guam lobster fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL were to be exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 2,430 lb for spiny lobsters and an ACL of 18 lb for slipper lobster in fishing year 2012 and 2013. The ACLs are 90% of the ABCs which are 2,700 lb and 20 lb for spiny and slipper lobster, respectively. ACLs at this level are expected

to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

Regardless of which action alternative is selected, because there is no in-season closure, the proposed ACL and AM would not result in a change to fishing. The additional post-season review and adjustment to the ACL, as warranted by the effects of fishing on stocks, is designed to promote sustainability of lobster stocks, which, in turn, would benefit fishery participants. There would be no change to the impacts of the lobster fishery on non-target species.

3.2.4.3 Affected Protected Resources in Guam

Section 3.1.4.3 describes protected resources that have the potential to interact with the Guam lobster fishery. It also describes ESA consultations that have been made regarding all crustacean, including lobster, fisheries in federal waters around Guam.

On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). However, due to the nature of this fishery as primarily a near-shore hand harvest fishery with relatively small levels of commercial harvest, NMFS has not classified this fishery in its LOF; however, NMFS classifies the similar Hawaii lobster dive net and trap fisheries as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that the lobster fishery in Guam would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Guam

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

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the Guam lobster fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stocks. Additionally, the current inability of in-season tracking of catch towards an ACL prevents in-season closure ability, meaning participants in the Guam lobster fishery would continue to harvest lobsters as they do under the current management regime. However, because this fishery is currently subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the preferred alternative (Alternative 2), would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

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

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around Guam, are a distinct population segment (DPS) that is endangered and at risk of extinction. However, because loggerhead sea turtles, inclusive of the North Pacific Ocean DPS, are not known to occur around the Mariana Archipelago, and because none of the alternatives considered would modify operations of the Guam lobster fishery in any way, there is no additional information that would change the conclusions of the September 28, 2007 informal consultation. The informal consultation concluded that the Mariana Archipelago crustacean fisheries were not likely to adversely affect ESA-listed marine species or their designated critical habitat.

3.3 Crustaceans – Kona Crab Fisheries

3.3.1 Hawaii Kona Crab Fishery, Affected Resources and Potential Impacts

3.3.1.1 Affected Target, Non-target and Bycatch Species in Hawaii

The Kona crab, *Ranina ranina,* is found in the MHI and the NWHI at depths from 24 to 115 m. Kona crab fishing in Hawaii usually involves setting strings of baited tangle-nets on sandy bottom habitat for an average soak time of one hour (Kennelly and Craig 1989). Nets are set during day-trips from small boats (10-12 m in length) (Brown 1985). The net frames are built from ½ cm wire approximately 1 meter across. This frame is then covered in 1-2 layers of small gauge mesh netting to entangle the crabs. There is some variation in size and type of material used to construct tangle nets (Onizuka 1972; Kennelly and Craig 1989). Upon retrieval, crabs are untangled; female and undersized crabs are released.

While there are no Federal permit and reporting requirements for Kona crab fishing in the EEZ, fishermen are required to have Hawaii Commercial Marine Licenses (CMLs) for commercial Kona crab harvest. The Kona crab fishery is subject to State regulations that include a prohibition on taking females, no taking of crabs less than 4 inches, and a closed season from June to August. Commercial landings of Kona crab peaked in 1972 with over 72,000 lb landed. However, landings have declined since that time with catches ranging between 6,500 and 14,000 lb between 2000 and 2009. Landings in 2009 were 9,292 lb. Table 10 summarizes Kona crab landings in Hawaii from 1950 to 2009.

By the nature of the fishing method and fishing location on sandy bottoms, the Hawaii Kona crab incidental harvest of non-target species is minimal. Since the State of Hawaii implemented a prohibition on the retention of female Kona crabs, the only bycatch that occurs are regulatory discards of female crabs; however, the level of discards is currently unavailable.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in Hawaii

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the Hawaii Kona crab fishery and AMs would not be necessary. The fishery would continue to catch Kona crab in the manner and at levels described above and catches would continue to be monitored through fisheries monitoring programs administered by Hawaii DAR. The current level of catch under this alternative is expected to continue as it currently has in recent years with 2009 catch for Kona crab being 9,292 lb. The stock status of Hawaii Kona crab would continue to be subject to ongoing discussion and review by the Council and NMFS.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this alternative, NMFS would specify an ACL of 27,600 lb for Hawaii Kona crab in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC and is set at the 75th percentile of the long-term catch. The ACL is also higher than 2009 catch level of 9,292 lb and is not expected to be exceeded. While MSY for the Hawaii Kona crab is unknown, the impacts of an ACL specification is expected to be beneficial because it would establish a limit on the amount that may be harvested annually where none previously existed.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 24,840 lb and is expected to have impacts similar to Alternative 2.

Under both action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of Kona crab that may be harvested annually where none previously existed. While the lack of in-season catch monitoring ability precludes in-season measures (such as a fishery closure) to prevent the ACL from being exceeded, the post-season review of catch relative to the proposed ACL is part of the fishery management that is designed to prevent the Kona crab stock from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

The proposed ACLs and AMs would not affect bycatch or non-target catch in this fishery.

3.3.1.2 Affected Fishery Participants in Hawaii

Overview of Hawaii's Kona Crab Fishery

A recent assessment of the Hawaii Kona fishery was conducted by Thomas (2011) and reported that the number of State of Hawaii commercial marine license (CML) holders in the fishery has declined in the past ten years, from approximately 24 in 2000 to 12 in 2009, with a low of five in 2007. Participants averaged about four trips per year during that period. Catch per unit effort also declined over that time, from 90 lbs/trip in 2000 to about 55 lb/trip in 2005 to about 40 lb/trip in 2009. The number of crabbing trips taken has also declined substantially in the past ten years. Approximately 175 trips were taken in 2000, while only about 20 fishing trips were conducted in 2009. Table 10 summarizes Kona crab landings in Hawaii from 1950 to 2009.

Penguin Bank accounted for more than 50% of the total landings in the fishery from 1950 through 2009; although Penguin Bank accounts for less than 20% of all trips taken for Kona crab, it has a significantly higher CPUE and larger crabs (Thomas 2011). From 2002-2009, only 3 fishers accounted for more than 50% of the trips.

In 2009, the commercial price per pound for Kona crab in Hawaii averaged $4.82. Based on a catch of 9,292 lb, the annual commercial value of the fishery in 2009 was $44,787.

Assuming that three participants accounted for half of the total landing in 2009, these fishers would have caught 1,549 lb of Kona crab each with a value of $7,466 per vessel. Assuming participation and effort of the remaining 9 participants were equal, each would have caught 516 lb of Kona crab valued at $2,487 per vessel.

Potential Impacts of the Proposed ACL specification and AM on Hawaii's Kona Crab Fishery Participants

Alternative 1: No Action (Status Quo)
Under the no-action alternative, which is the baseline alternative, the Hawaii Kona crab fishery would not be managed using annual catch limits, accountability measures would not be needed, and fishing would continue to be monitored by Hawaii DAR, NMFS and the Council with fisheries statistics becoming available approximately six months or longer after the data have been initially collected.

Alternative 2: Specify Council recommended ACL
Under this Alternative, NMFS would specify an ACL of 27,600 lb for Hawaii Kona crab in fishing year 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC and is set at the 75th percentile of the long-term catch. The ACL is also higher than 2009 catch level of 9,292 lb and is not expected to be exceeded.

The AM for the Hawaii Kona crab fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might

be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Alternative 3: Specify ACL at 90% of ABC
Under this Alternative, NMFS would specify an ACL of 24,840 lb for Hawaii Kona crab in fishing year 2012 and 2013. The ACL is 90% of the ABC which is 27,600 lb. An ACL at this level is expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

3.3.1.3 Affected Protected Resources in Hawaii

Section 3.1.1.3 describes protected resources that have the potential to interact with the Hawaii Kona crab fishery. It also describes ESA consultations and MMPA determinations that have been made regarding all crustacean fisheries in federal waters around Hawaii.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Hawaii

None of the alternatives considered would modify operations of the Hawaii Kona crab fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the Kona crab fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stock. Additionally, there is currently no means of in-season tracking of catch in relation to an ACL which precludes the ability to implement an in-season closure. This means participants in the Hawaii Kona crab fishery would continue to fish for Kona crab as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

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

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the Hawaii Archipelago, are a distinct population segment (DPS) that is endangered and at risk of extinction. While the North Pacific DPS of loggerheads may be found in federal waters in the MHI, their

occurrence in federal waters where the fishery operate is extremely rare. Additionally, there have been no reported or observed incidental take of this species in the history of the fishery. Because none of the alternatives considered would modify operations of the Hawaii Kona crab fishery in any way, there is no additional information that would change the conclusions of the 2008 informal consultation that determined this fishery was not likely to adversely affect ESA-listed species or their habitats.

3.3.2 American Samoa Kona Crab Fishery, Affected Resources and Potential Impacts

3.3.2.1 Affected Target, Non-target and Bycatch Species in American Samoa

There is no record of any fishery for Kona crab in American Samoa. However, due to their documented presence in the Territory, they are included in the crustacean management unit of the American Samoa FEP. Currently, there are no federal permit requirements for Kona crab in the EEZ around American Samoa.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in American Samoa

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the CNMI Kona crab fishery and AMs would not be necessary. There has never been a Kona crab fishery in CNMI, so currently there is no catch data. If catches did occur, they would be documented through fisheries monitoring programs administered by American Samoa DMWR. Under the no-action Alternative the status of American Samoa Kona crab would continue to be subject to discussion and review by the Council and NMFS.

Alternative 2: Specify Council recommended ACL
Under this alternative, NMFS would specify an ACL of 3,200 lb for American Samoa Kona crab in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.3.2.

To date, there has never been a fishery for Kona crab in American Samoa. If a fishery were to develop, however, the ACL is not expected to change the manner in which the fishery would be conducted under the no-Action alternative. The AM does not include a fishery closure, rather a post-season review. Over time, management of a Kona crab fishery in American Samoa with ACLs and the AM is designed to prevent overfishing of the resource.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 2,880 lb for American Samoa Kona crab in fishing years 2012 and 2013. The impacts under Alternative 3 would be identical to Alternative 2.

Under both action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the

operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of Kona crab that could be harvested annually where none previously existed. There is no ability to monitor in-season catches which precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is designed to prevent the Kona crab stock from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.3.2.2 Affected Fishery Participants in American Samoa

Overview of American Samoa's Kona Crab Fishery

There is no record of a fishery for Kona crab in American Samoa.

Potential Impacts of the Proposed ACL specification and AM on American Samoa's Kona Crab Fishery Participants

To date, there has never been a fishery for Kona crab in American Samoa. Therefore, there is no fishery participant that could be affected by any three alternatives considered.

3.3.2.3 Affected Protected Resources in American Samoa

Section 3.1.2.3 describes protected resources that have the potential to interact with an American Samoa Kona crab fishery should one develop. It also describes ESA consultations that have been made regarding all crustacean, including Kona crab, fisheries in federal waters around American Samoa.

On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). Because there is no Kona crab fishery in American Samoa, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii Kona crab loop net fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a Kona crab fishery in American Samoa that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in American Samoa

To date, there has never been a Kona crab fishery around American Samoa. Even if one were to develop, none of the action alternatives to specify an ACL and implement post-season review, are expected to create a fishery or modify the crab fishery or any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

3.3.3 CNMI Kona Crab Fishery, Affected Resources and Potential Impacts

3.3.3.1 Affected Target, Non-target and Bycatch Species in the CNMI

There is no record of a fishery for Kona crab in CNMI. However, due to their documented presence, they are included in the crustacean management unit of the Mariana Archipelago FEP. Currently, there are no federal permit requirements for Kona crab in the EEZ around CNMI.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in the CNMI

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the CNMI Kona crab fishery and AMs would not be necessary. There has never been a Kona crab fishery in CNMI, so currently there is no catch data. If catches did occur, they would be documented through fisheries monitoring programs administered by CNMI DFW. Under the no-action alternative the status of CNMI Kona crab would continue to be subject to discussion and review by the Council and NMFS.

Alternative 2: Specify Council recommended ACL
Under this alternative, NMFS would specify an ACL of 6,300 lb for CNMI Kona crab in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.3.3.

To date, there has never been a fishery for Kona crab in CNMI. If a fishery were to develop, however, the ACL is not expected to change the manner in which the fishery would be conducted under the no-action alternative. The AM does not include a fishery closure, rather a post-season review. Over time, management of a Kona crab fishery in CNMI is designed to prevent overfishing of the resource.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 5,670 lb for CNMI Kona crab in fishing year 2012 and 2013. The impacts under Alternative 3 would be identical to Alternative 2.

Under both action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the Kona crab stock, NMFS would take action to

correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of Kona crab that may be harvested annually where none previously existed. There is no ability to monitor in-season catches which precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of the management of the fishery and is designed to prevent the Kona crab stock from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.3.3.2 Affected Fishery Participants in the CNMI

Overview of CNMI's Kona Crab Fishery

There is no record of any fishery for Kona crab in the CNMI.

Potential Impacts of the Proposed ACL specification and AM on CNMI's Kona Crab Fishery Participants

To date, there has never been a Kona crab fishery in the CNMI. Even if one were to develop, none of the action alternatives to specify an ACL and implement post-season review, are expected to create a fishery or modify the crab fishery or any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

3.3.3.3 Affected Protected Resources in the CNMI

Section 3.1.3.3 describes protected resources that have the potential to interact with a Kona crab fishery in the CNMI should a fishery develop. It also describes ESA consultations that have been made regarding all crustacean, including Kona crab, fisheries in federal waters around the CNMI.

On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). Because there is no Kona crab fishery in the CNMI, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii Kona crab loop net fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a Kona crab fishery in the CNMI that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in the CNMI

To date, there has never been a Kona crab fishery around the CNMI. Even if one were to develop, none of the action alternatives to specify an ACL and implement post-season review, are expected to create a fishery or modify the crab fishery or any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

3.3.4 Guam Kona Crab Fishery, Affected Resources and Potential Impacts

3.3.4.1 Affected Target, Non-target and Bycatch Species in Guam

There is no record of any fishery for Kona crab in Guam. However, due to their documented presence, they are included in the crustacean management unit of the Mariana Archipelago FEP. Currently, there are no federal permit requirements for Kona crab in the EEZ around Guam.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in Guam

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for the Guam Kona crab fishery and AMs would not be necessary. There has never been a Kona crab fishery in Guam, so currently there is no catch data. If catches did occur, they would be documented through fisheries monitoring programs administered by Guam DAWR. Under the no-action Alternative the status of Kona crab would continue to be subject to discussion and review by the Council and NMFS.

Alternative 2: Specify Council recommended ACL
Under this alternative, NMFS would specify an ACL of 1,900 lb for Guam Kona crab in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.3.4.

To date, there has never been a fishery for Kona crab in Guam, and consequently there would be no impacts to target, non-target or bycatch species from establishment of an ACL and AM for the fishery. If a fishery were to develop, however, the ACL is not expected to change the manner in which the fishery would be conducted under the no-Action alternative. The AM does not include a fishery closure, rather a post-season review. Over time, management of a Kona crab fishery in Guam is designed to prevent overfishing of the resource.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 1,729 lb for Guam Kona crab in fishing years 2012 and 2013. The impacts under Alternative 3 would be identical to Alternative 2.

Under both action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the

operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount of Kona crab that may be harvested annually where none previously existed. There is no ability to monitor in-season catches which precludes in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of the management of the fishery and is designed to prevent the Kona crab stock from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.3.4.2 Affected Fishery Participants in Guam

Overview of Guam's Kona Crab Fishery
There is no record of any fishery for Kona crab in Guam.

Potential Impacts of the Proposed ACL specification and AM on Guam's Kona Crab Fishery Participants
To date, there has never been a fishery for Kona crab in the Guam. Therefore, there is no fishery participant that could be affected by any three alternatives considered.

3.3.4.3 Affected Protected Resources in Guam

Section 3.1.4.3 describes protected resources that have the potential to interact with a Guam Kona crab fishery should a fishery develop. It also describes ESA consultations that have been made regarding all crustacean, including Kona crab, fisheries in federal waters around Guam.

On November 29, 2011, NMFS published the final List of Fisheries (LOF) for 2012 which classifies commercial fisheries of the United States into one of three categories based upon the level of serious injury and mortality of marine mammals that occurs incidental to each fishery with Category 1 being the highest and Category 3 being the lowest (76 FR 73912). Because there is no Kona crab fishery in Guam, NMFS has not classified this potential fishery in its LOF; however, NMFS classifies the similar Hawaii Kona crab loop net fishery as Category III fishery under Section 118 of the MMPA, as the fishery is one with a low likelihood or no known incidental takings of marine mammals. Therefore, NMFS concludes that a Kona crab fishery in Guam that may occur would be comparable to the Category III classification in Hawaii and would be one with a low likelihood of incidentally taking marine mammals.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Guam

To date, there has never been a Kona crab fishery around Guam. Even if one were to develop, none of the action alternatives to specify an ACL and implement post-season review, are expected to create a fishery or modify the crab fishery or any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

3.4 Precious Corals

In general, western Pacific precious corals share several ecological characteristics: they lack symbiotic algae in tissues (they are ahermatypic) and most are found in deep water below the euphotic zone; they are suspension feeders (they require external water motion to bring them food); and many are fan shaped to maximize contact surfaces with particles or microplankton in the water column.

All precious corals are slow growing and are characterized by low rates of mortality and recruitment. Natural populations are relatively stable, and a wide range of age classes is generally present. This life history pattern (longevity and many year classes) has two important consequences with respect to exploitation. First, the response of the population to exploitation is drawn out over many years. Second, because of the great longevity of individuals and the associated slow rates of turnover in the populations, a long period of reduced fishing effort is required to restore the ability of the stock to produce at the MSY if a stock has been over exploited for several years.

Precious corals MUS are taxonomically classified as members of the phylum Cnidaria, which includes all of the corals, hydroids, jellyfish and sea anemones. Within the Cnidaria, precious corals are placed in the class Anthozoa, which includes the corals, soft corals and sea anemones, all characterized by having a relatively complicated gut compared with other cnidarians. Living tissues are composed of polyps, each with a mouth surrounded by tentacles. Some species are composed of a single polyp while others are colonies of many polyps.

Within the Anthozoa, precious corals are members of three orders in two subclasses: 1) subclass Octocorallia (or Alcyonaria), order Gorgonacea and 2) subclass Hexacorallia (or Zoantharia), and orders Zoanthidae and Antipathidae. Members of the subclass Octocorallia are characterized by their eight tentacles. All octocorals are colonial, with each colony consisting of numerous polyps growing out of, and constituting the body of, the animal. Octocoral include the pink corals of the genus *Corallium* and the bamboo corals of the genera *Lepidisis* and *Acanella*.

Other anthozoans have their tentacles in multiples of six and are thus termed the Hexacorallia, or hexacorals. Hexacoral MUS include gold corals of the order Zoanthidea and black corals of the order Antipathidae.

Red, pink and bamboo octocorals are of the Order *Gorgonacea*. They are commonly called fan corals because their growth resembles that of a plant, with a main trunk fastened to the substrate, and lateral branching stems which may be in the same plane. Gorgonian colonies are all derived from one another and they are all one gender. The age at reproductive maturity is 12-13 years for *Corallium secundum* (WPFMC 2008).

Adult pink, bamboo and gold corals are found in deep water (100-1500 m) on solid substrate where bottom currents are strong. This is in contrast to black corals, discussed below, which also typically occur on solid substrate, but generally at depths between 30 and 110m.

Zoanthidea are a small group of hearty, solitary, sometimes colonial, anemone-like anthozoans that lack a skeleton. Gold corals (*Gerardia* sp., *Narella* sp., *Calyptrophora* sp., and *Callogoria*

gilberti) are Zoantharian corals that belong to the family Parazoanthus. Many are parasitic species that commonly overgrow other gorgonian corals. *Gerardia* seems to prefer overgrowing the bamboo corals (*Acanella* spp.).

The Western Pacific Region's gold coral fishery is currently dormant, although research on gold coral remains active. Recent research by Roark et al. (2006) suggests that the growth rates and age estimates for pink and gold are significantly slower and older than those used in estimating MSY. Therefore, in 2008, the Council recommended and NMFS implemented a five year moratorium on the harvest of gold coral in the Western Pacific Region (73 FR 47098, August 13, 2008). The moratorium extends through on June 30, 2013.

3.4.1 Hawaii Black Coral Fishery, Affected Resources and Potential Impacts

3.4.1.1 Affected Target, Non-target and Bycatch Species in Hawaii

Grigg and Opresko (1977) reported 14 species of black coral known to occur in Hawaiian waters. Historically, however, commercial fishermen have harvested only three species. *Antipathes dichotoma* (recently renamed *A. griggi*) is the most commonly harvested species accounting for almost 90% of commercial harvest, followed by *A. grandis* (10%), and *A. ulex* (1%). The two major species (*A. dichotoma* and *A. grandis*) are found in coastal waters from Hawaii to Niihau and their range may extend into the NWHI. *A. dichotoma* is found at depths from 30 to 110 m while *A. grandis* occurs at depths from 45 to 110 m. Within their depth ranges, both species can be found highly aggregated on, or under, vertical drop-offs, terraces, or undercut notches. The growth rates for *A. dichotoma* and *A. grandis* have been estimated to be 6.42 cm per year and 6.12 cm per year respectively. Plotting gonad diameter versus colony height, Grigg (1976) estimated the size of reproductively mature *A. dichotoma* colonies to range from 64 to 80 cm. This implies an age at reproduction of 10 to 12.5 year and reproduction may occur annually (Grigg 1976). A large six-foot (1.8 m) tall coral tree is estimated to be between 30 and 40 years old. The oldest black corals observed in the Maui Auau Channel Bed are thought to be 75 years old, and it is believed that black corals may live even longer. In 2006, growth rates of *A. dichotoma* was estimated using radio-carbon dating indicating growth rates ranged from130 μm/yr to1140 μm/yr (Roark et al. 2006).

There are two known major beds of black coral in Hawaii; the Auau Channel Bed located near Maui, Lanai and Molokai; and the bed off of Kauai. Most of these are located in Hawaii's State waters. However, the largest (the Auau Channel Bed) extends into the EEZ. Since 1980, virtually all of the black coral harvested around the Hawaiian Islands has been taken from the Auau Channel Bed. Most of this harvest has been confined to State waters. The Hawaii Department of Land and Natural Resources (DLNR) estimates that about 85% of the black coral harvested is hand harvested by scuba divers within three miles of the shoreline (WPFMC 2008), perhaps because gear constraints have restricted divers for black coral to relatively shallow waters (75 m or less) (Grigg 2002).

Black coral harvesters employ selective methods when harvesting black corals. Divers use SCUBA gear to reach the black coral resource. Hand held tools are used to remove the black coral from its base rock and float bags are used to bring the harvested black coral to the surface.

Therefore, there is virtually no bycatch in this fishery except species that may be attached to the base of a coral tree.

The current harvest quota for black coral in the Auau Channel is 5,000 kg (11,000 lb) which may be taken during any part of a two year fishing year cycle. For the most recent time period (2000-2010), approximately 5,587 lb of black coral were landed annually (Table 13).

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in Hawaii

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for black coral in Hawaii. However, the current harvested quota of 5,000 kg (11,000 lb) for the Auau Channel Established Bed would remain. Regulations which allow for this quota to be harvested over two consecutive fishing years would also remain in place. The average level of black coral harvest under this alternative is expected to continue as it currently has in recent years, where the average annual catch between 2000 and 2009 is estimated to be 5,587 lb/yr as shown in Table 13. This level of catch is approximately 68% of MSY (8,250 lb or 3,750 kg) and is sustainable. Catches would continue to be monitored through fisheries monitoring programs administered by Hawaii DAR and the status of Hawaii black coral would continue to be subject to ongoing discussion and review by the Council and NMFS.

Alternative 2: Specify Council recommended ACL
Under this alternative, NMFS would specify an ACL of 2,500 kg (5,500 lb) for black coral in the Auau Channel Established Bed in fishing years 2012 and 2013. This ACL would be equal to the current harvest quota if it was applied on an annual basis and is 67% of the estimated MSY. An ACL set at this level would also be 2,000 lb lower than the SSC recommended ABC of 7,500 lb (3,413 kg/yr). By creating an annual limit, there is a possibility that the ACL could be reached in fishing year 2012; however landings are expected remain below ABC of 7,500 lb and not exceed MSY of 8,250 lb.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 6,750 lb (3,072 kg) of black coral which is 90% of the SSC recommended ABC of 7,500 lb (3,413 kg/yr). This ACL would be 1,250 lb greater than the ACLs under Alternative 2 and therefore would have a less chance of being exceeded. An ACL at this level is expected to remain sustainable.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is exceeded and affects the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to provide limits to the amount of black coral that may be harvested in Hawaii annually. The

inability to conduct in-season monitoring of harvests precludes implementation of in-season measures (such as fishery closure) to prevent the ACL from being exceeded; however, the post-season review of catch relative to the proposed ACL is part of the management of the fishery that is intended to prevent black coral stocks from becoming overfished. The additional level of post season review of black coral harvest would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.4.1.2 Affected Fishery Participants in Hawaii

Overview of Hawaii's Black Coral Fishery

Black coral harvesters employ selective methods when harvesting black corals. Divers use SCUBA gear to reach the black coral resource. Hand held tools are used to remove the black coral from its base rock and float bags are used to bring the harvested black coral to the surface. Since 1980, virtually all of the black coral harvested around the Hawaiian Islands has been taken from the Auau Channel Bed. Most of this harvest has been confined to State waters. The Hawaii Department of Land and Natural Resources estimates that about 85% of the black coral harvested is hand harvested by scuba divers within three miles of the shoreline (WPFMC 2008).

The current harvest quota for black coral in the Auau Channel is 5,000 kg (11,000 lb) which may be taken during any part of a two year fishing year cycle. Landings, almost exclusively from State waters, have been reported for black coral between 1982 and 2010; however, data cannot be reported annually because of the low number of active participants (fewer than three). Therefore, to protect confidential fishery information, landing information is summarized in approximately 10-year intervals and shown in Table 13. For the most recent time period (2000-2010), approximately 5,587 lb of black coral were landed annually. There are no federal permits issued for black coral harvest in the Auau Channel.

Potential Impacts of the Proposed ACL specification and AM on Hawaii's Black Coral Fishery Participants

Alternative 1: No Action (Status Quo)

Under the no-action alternative, an ACL would not be specified for black coral in Hawaii. However, the current harvested quota of 5,000 kg (11,000 lb) for the Auau Channel Established Bed would remain. Regulations which allow for this quota to be taken over two consecutive fishing years would also remain in place. The average level of catch under this alternative is expected to continue as it currently has in recent years with average annual catch between 2000 and 2009 estimated to be 5,587 lb/yr as shown in Table 13. This level of catch is approximately 68% of MSY (8,250 lb or 3,750 kg) and is sustainable. Because harvest occurs predominantly in state waters, NMFS does not anticipate any federal permits would be issued in 2012 and fishing would continue to be monitored by Hawaii DAR, with fisheries statistics becoming available approximately six months or longer after the data has been initially collected.

Alternative 2: Specify Council recommended ACL

Under this alternative, NMFS would specify an ACL of 2,500 kg (5,500 lb) for black coral in the Auau Channel Established Bed in fishing year 2012 and 2013. This ACL would be equal to the

current harvest quota if it was applied on an annual basis and is 67% of the estimated MSY. An ACL set at this level would also be 2,000 lb lower than the SSC recommended ABC of 7,500 lb (3,413 kg/yr). By creating an annual limit, there is a possibility that the ACL could be reached in fishing year 2012.

The AM for Hawaii's black coral fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 6,750 lb (3,072 kg) which is 90% of the SSC recommended ABC of 7,500 lb (3,413 kg/yr). This ACL is expected to have impacts that are generally similar to Alternative 2 except that the potential to exceed ACL is lower under this alternative.

3.4.1.3 Affected Protected Resources in Hawaii

Section 3.1.1.3 describes protected resources that have the potential to interact with the Hawaii black coral fishery.

Applicable ESA and MMPA Coordination – Hawaii precious coral fisheries
In an informal consultation covering the Western Pacific Precious Corals FMP, dated December 20, 2000, NMFS determined precious coral fisheries of Hawaii that operate in accordance with regulations implementing the FMP were not likely to adversely affect ESA-listed species or their habitats. Later, a February 4, 2008 letter of concurrence opined that the approval and implementation of Amendment 7 to the Precious Corals FMP did not modify fishery operations in a manner that warranted reinitiating consultation.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based fishery ecosystem plans (FEP) including the Hawaii Archipelago FEP. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Precious Corals FMP, into a spatially-oriented management plan (75 FR 2198, January 14, 2010). All applicable regulations concerning crustacean fishing were retained through the development and implementation of the FEP for the Hawaii Archipelago, No substantial changes to the precious coral fisheries around Hawaii have occurred since the FEP was implemented that have required further consultation.

The Hawaii black coral diving fishery is listed as a Category III fishery under Section 118 of the MMPA (76 FR 73912, November 29, 2011). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals. NMFS has also concluded that the Hawaii Archipelago precious coral fisheries, as currently conducted, will not affect marine mammals in

any manner not considered or authorized by the commercial fishing take exemption under section 118 of the MMPA.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Hawaii

None of the alternatives considered would modify operations of the Hawaii black coral fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season accounting of the catch relative to the ACL, managing the black coral fishery using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stock. Additionally, the current inability of in-season tracking of catch towards an ACL prevents in-season closure ability, meaning participants in the Hawaii black coral fishery would continue as they do under the current management regime. However, because this fishery is currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

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

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the Hawaii Archipelago, are a distinct population segment (DPS) that is endangered and at risk of extinction. While the North Pacific DPS of loggerheads may be found in federal waters in the MHI, their occurrence in federal waters where the fishery operates is extremely rare. Additionally, there have been no reported or observed incidental take of this species in the history of the fishery. Because none of the alternatives considered would modify operations of the Hawaii black coral fishery in any way, there is no additional information that would change the conclusions of the December 20, 2000 and February 5, 2008 informal consultations that determined this fishery was not likely to adversely affect ESA-listed species or their habitats.

3.4.2 Hawaii Pink and Bamboo Fishery, Affected Resources and Potential Impacts

3.4.2.1 Affected Target, Non-target and Bycatch Species in Hawaii

To date, beds of pink, gold and/or bamboo corals have been found in eight locations in the EEZ around Hawaii. This number includes two recently discovered beds, one near French Frigate Shoals in the NWHI, and a second on Cross Seamount, approximately 150 nm south of Oahu.

Six of the beds have been classified as Established, Conditional or Refugia beds and have bank-specific harvest quotas assigned as discussed in Section 2.4. The remaining area of the EEZ around Hawaii has been classified as the Hawaii Exploratory Area and is subject to a 1,000 kg/yr harvest quota for all precious corals except black corals, which are subject to a separate quota.

Fishing for pink, bamboo, and gold is not currently conducted in Hawaii. One company used two one-man submersibles to survey and harvest pink and gold corals at depths between 400 and 500 meters in the MHI during 1999 and 2001; however, they did not continue their operations after that time and the actual harvests cannot be reported here because of data confidentiality (WPFMC 2009b). In 2011, NMFS issued two federal permits for coral harvesting in the Hawaii Exploratory Area (X-P-HI); however, no trips have been made.

Currently, a moratorium on gold coral harvest is in place throughout the western Pacific through June 30, 2013 due to uncertainty in estimates the age and growth (73 FR 47098, August 13, 2008). Additionally, fishing is prohibited at Westpac Bed due to its status as a refugium. These prohibitions serve as functional equivalent of an ACL of zero.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in Hawaii

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for precious corals in Hawaii. However, the current harvest quotas for all Established, Conditional and Refugia beds, and the quota of 1,000 kg/yr for the Hawaii exploratory area as listed in Table 12 would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2013 would also remain in place. Since there has not been a precious coral fishery in Hawaii for over a decade, this alternative would have no effect on any marine resource. Catches, in federal waters if they were to occur, would be documented through federal fisheries monitoring programs administered by NMFS and the status of Hawaii precious corals would be subject to discussion and review. While two federal permits have been, no fishing has been conducted.

Alternative 2: Specify Council recommended ACL
Under this alternative, NMFS would specify ACLs for pink, and bamboo corals for each Exploratory and Conditional bed, and the Hawaii exploratory area as shown in Table 20. The ACLs would be identical to the current harvest quotas listed in Table 12 except at the Makapuu Established bed where the ACL would be specified at one half of the current two year quota and would be set at 1,000 kg/yr and 250 kg/yr, respectively. ACLs set at this level would not exceed the estimated MSYs and ABCs shown in Tables 18 and 19, respectively and would be sustainable. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2013 and the zero harvest quotas for Westpac bed would also remain in place and would serve as a functional equivalent of an ACL of zero.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL that is 90% of ABC and is shown in Table 21. For the Hawaii exploratory area, NMFS would specify an ACL of 900 kg. Like under alternative 2, the current moratorium on gold coral harvest would remain in place through June

30, 2013 and fishing would remain prohibited at Wespac Bed. Because there is no fishery for deepwater precious corals in Hawaii, the impacts under this alternative would be identical to Alternative 2.

Under the action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to specify a limit on the amount of coral that may be harvested annually. While federal permit and reporting requirements are currently in place, and 2 federal permits have been for the Hawaii exploratory area, no fishing has been conducted. If fishing were to occur, NMFS does not anticipate the ACL would be reached as selective harvesting requirements provide for precision in the amounts harvest; however, the post-season review of catch relative to the proposed ACL is part of fishery management measures intended to prevent precious corals from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.4.2.2 Affected Fishery Participants in Hawaii

Overview of Hawaii's Pink and Bamboo Coral Fishery

Harvest operations for Hawaii deepwater precious coral have not occurred since 2001. In 2011 NMFS issued two permits for the Hawaii exploratory area although no fishing operation has commenced. No permits have been issued for any of the Established or Conditional beds.

Potential Impacts of the Proposed ACL specification and AM on Hawaii's Pink and Bamboo Coral Fishery Participants

Alternative 1: No Action (Status Quo)

Under the no-action alternative, an ACL would not be specified for precious corals in Hawaii. However, the current harvest quotas for all Established, Conditional and Refugia beds, and the quota of 1,000 kg/yr for the Hawaii exploratory area as listed in Table 12 would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2013 would also remain in place. Under this alternative catches would be reported under federal permits reported to NMFS within 72 hours of fishing. In 2011, NMFS issued two federal permits for fishing in the Hawaii Exploratory Area (X-P-HI); however, no trips have been made.

Alternative 2: Specify Council recommended ACL

Under this alternative, NMFS would specify ACLs for pink, and bamboo corals for each Exploratory and Conditional bed, and the Hawaii exploratory area as shown in Table 20. The ACLs would be identical to the current harvest quotas listed in Table 12 except at the Makapuu Established bed where the ACL would be specified at one half of the current two year quota and

would be set at 1,000 kg/yr and 250 kg/yr, respectively. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2013 and the zero harvest quotas for Westpac bed would also remain in place and would serve as a functional equivalent of an ACL of zero.

In 2011, NMFS issued two federal permits for fishing in the Hawaii Exploratory Area (X-P-HI); however, no trips have been made. Since the ACL would be essentially identical to the harvest quotas under the no action, the impacts would be identical to the no action alternative and is not expected to result in a change to the conduct of the fishery including gear types, areas fished, effort, or participation.

The AM for the Hawaii precious coral fishery would require a post-season review of the catch data to determine whether the ACL was exceeded. If the ACL is exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL that is 90% of ABC and is shown in Table 21. For the Hawaii exploratory area, NMFS would specify an ACL of 900 kg. Like under alternative 2, the current moratorium on gold coral harvest would remain in place through June 30, 2013 and fishing would remain prohibited at Wespac Bed. Because there is no fishery for deepwater precious corals in Hawaii, the impacts under this alternative would be identical to Alternative 2. ACLs at this level expected to have impacts that are generally similar to Alternative 2, except that the potential to exceed ACL is slightly higher under Alternative 3.

3.4.2.3 Affected Protected Resources in Hawaii

Section 3.1.1.3 describes protected resources that have the potential to interact with the Hawaii pink and bamboo coral fishery. Section 3.4.1.3 describes applicable ESA and MMPA consultations for the precious coral fisheries of Hawaii.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Hawaii

None of the alternatives considered would modify operations of the Hawaii pink and bamboo coral fishery in any way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

While Alternatives 2 and 3 would implement ACLs and a post season review of the catch relative to the ACL and other operational adjustments, as needed based on the potential impacts of fishing on stocks, managing the pink and bamboo coral fishery in Hawaii using an ACL and AM would be an addition to the current fishery management regime (Alternative 1: Status Quo) that is intended to promote long term sustainability of the fishery stocks. Without an in-season

fishery closure, participants in the Hawaii pink and bamboo fishery would continue to harvest corals as they would under the current management regime.

However, because the pink and bamboo coral fisheries are currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, and because no change would occur in the way fishing is conducted, none of the alternatives, including the proposed action (Alternative 2) would result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

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

On September 22, 2011, NMFS and the U.S. Fish and Wildlife Service (USFWS) determined that the loggerhead sea turtle population (*Caretta caretta*) is composed of nine distinct population segments (DPS) that constitute ‘‘species’’ that may be listed as threatened or endangered under the ESA (76 FR 58868). Specifically, NMFS and USFWS determined that the loggerhead sea turtles in the North Pacific Ocean, which includes waters around the Hawaii Archipelago, are a distinct population segment (DPS) that is endangered and at risk of extinction. While the North Pacific DPS of loggerheads may be found in federal waters in the MHI, their occurrence in federal waters where the fishery operates is extremely rare. Additionally, there have been no reported or observed incidental take of this species in the history of the fishery. Because none of the alternatives considered would modify operations of the Hawaii deepwater precious coral fishery in any way, there is no additional information that would change the conclusions of the December 20, 2000 and February 5, 2008 informal consultations that determined this fishery was not likely to adversely affect ESA-listed species or their habitats.

3.4.3 American Samoa Precious Coral Fishery, Affected Resources and Potential Impacts

3.4.3.1 Affected Target, Non-target and Bycatch Species in American Samoa

There is no record of any fishery for black, pink, gold or bamboo coral in American Samoa. However, they are included in the precious coral management unit of the American Samoa FEP. No federal permits have ever been issued for precious coral fishing in American Samoa.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in American Samoa

Alternative 1: No Action (Status Quo)

Under the no-action alternative, an ACL would not be specified for precious corals in American Samoa and the current harvest quota of 1,000 kg for pink, gold and bamboo corals (except black coral) in the American Samoa Exploratory Area would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2013 would also remain in place. Since there has never been a precious coral fishery in American Samoa, this alternative would have no effect on any marine resource. Catches, in federal waters if they were to occur, would be documented through federal fisheries monitoring programs administered by NMFS and the status of

American Samoa precious corals would be subject to discussion and review by the Council and NMFS.

Alternative 2: Specify Council recommended ACL
Under this alternative, NMFS would specify an ACL of 1,000 kg for pink, gold and bamboo corals in the American Samoa Exploratory Area in fishing years 2012 and 2013. The current moratorium on gold coral would remain in place through June 30, 2013. The ACL is equal to the ABC recommended by the Council's SSC and is identical to the current harvest guideline under Alternative 1.

Additionally, NMFS would also specify an ACL of 790 lb for American Samoa black coral in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.4.2.1.

To date, there has never been a fishery for precious corals in American Samoa. However, if a precious coral fishery were to develop the ACLs and AM is expected to provide for continued review of the fishery by the Council and NMFS and, over the long term, is expected to help maintain harvests at sustainable levels.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 900 kg for pink, gold and bamboo corals in the American Samoa Exploratory Area in fishing years 2012 and 2013. The current moratorium on gold coral would remain in place through June 30, 2013. For American Samoa black coral, NMFS would specify an ACL of 711 lb. To date, there has never been a fishery for precious corals in American Samoa. However, if a precious coral fishery were to develop the ACLs and AM is expected to provide for continued review of the fishery by the Council and NMFS and, over the long term, is expected to help maintain harvests at sustainable levels.

Under the action alternatives, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL is were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to specify limits to the amount of precious corals that may be harvested annually in American Samoa. While federal permit and reporting requirements are currently in place, no permits have ever been issued. If fishing were to occur, NMFS does not anticipate the ACL would be reached as selective harvesting requirements provides for precision in the amount of harvest.; however, the post-season review of harvests relative to the proposed ACL is part of the management of the fishery that are intended to prevent precious coral stocks from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.4.3.2 Affected Fishery Participants in American Samoa

Overview of American Samoa's Precious Coral Fishery
There is no record of any fishery for precious corals in American Samoa.

Potential Impacts of the Proposed ACL specification and AM on American Samoa's Fishery Participants
To date, there has never been a fishery for precious corals in American Samoa. Therefore, there is no fishery participant that would be affected by any of three alternatives considered.

3.4.3.3 Affected Protected Resources in American Samoa

Section 3.1.2.3 describes protected resources that have the potential to interact with an American Samoa precious coral fishery should one develop. However, if a precious coral fishery were to develop in American Samoa, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in American Samoa

To date, there has never been a precious coral fishery around American Samoa. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

3.4.4 CNMI Precious Coral Fishery, Affected Resources and Potential Impacts

3.4.4.1 Affected Target, Non-target and Bycatch Species in the CNMI
There is no record of any fishery for black, pink, gold or bamboo coral in the CNMI. However, they are included in the precious coral management unit of the Mariana Archipelago FEP. No federal permits have ever been issued for precious coral fishing in the CNMI.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in the CNMI

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for precious corals in CNMI and the current harvested quota of 1,000 kg for pink, gold and bamboo corals (except black coral) in the CNMI exploratory area would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2013 would also remain in place. Since there has never been a precious coral fishery in CNMI, this alternative would have no effect on any marine resource. Catches, in federal waters if they were to occur, would be documented through federal fisheries monitoring programs administered by NMFS and the status of CNMI precious corals would be subject to discussion and review by the Council and NMFS.

Alternative 2: Specify Council recommended ACL – Preferred
Under this alternative, NMFS would specify an ACL of 1,000 kg for pink, gold and bamboo corals (except black coral) in the CNMI exploratory area in fishing year 2012 and 2013. The current moratorium on gold coral would remain in place through June 30, 2013. The ACL is equal to the ABC recommended by the Council's SSC and is identical to the current harvest guideline under Alternative 1.

Additionally, NMFS would also specify an ACL of 2,100 lb for CNMI black coral in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.4.3.1. To date, there has never been a fishery for precious corals in CNMI and consequently there would be no impacts to target, non-target or bycatch species from establishment of an ACL and AM for the fishery.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 900 kg for pink, gold and bamboo corals in the CNMI exploratory area in fishing years 2012 and 2013. The current moratorium on gold coral would remain in place through June 30, 2013. For CNMI black coral, NMFS would specify an ACL of 1,890 lb. Because there has never been a fishery for precious corals in CNMI, the impacts under this alterative would be identical to Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to establish a limit on the amount of precious corals that may be harvested annually. While federal permit and reporting requirements are currently in place, no permits have ever been issued. If fishing were to occur, NMFS does not anticipate the ACL would be reached as selective harvesting requirements provides for precision in the amount of harvest; however,, the post-season review of catch relative to the proposed ACL is part of the fishery management that is designed to prevent the precious coral fishery from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.4.4.2 Affected Fishery Participants in the CNMI

Overview of CNMI's Precious Coral Fishery
There is no record of any fishery for precious corals in the CNMI.

Potential Impacts of the Proposed ACL specification and AM on CNMI's Fishery Participants
To date, there has never been a fishery for precious corals in the CNMI. Therefore, there is no fishery participant that would be affected by any of three alternatives considered.

3.4.4.3 Affected Protected Resources in the CNMI

Section 3.1.3.3 describes protected resources that have the potential to interact with a precious coral fishery in the CNMI should one develop. However, if a precious coral fishery were to develop, NMFS would undertake additional consultation as required to comply with requirements of the ESA and the MMPA.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in the CNMI

To date, there has never been a precious coral fishery around the CNMI. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

3.4.5 Guam Precious Coral Fishery, Affected Resources and Potential Impacts

3.4.5.1 Affected Target, Non-target and Bycatch Species in Guam

There is no record of any fishery for black, pink, gold or bamboo coral in Guam. However, they are included in the precious coral management unit of the Mariana Archipelago FEP. No federal permits have ever been issued for precious coral fishing in the Guam. Precious coral fisheries are target-specific and there are no known bycatch issues with this fishery.

Potential Impacts of the Proposed ACL specification and AM on Target, Non-target and Bycatch Species in Guam

Alternative 1: No Action (Status Quo)
Under the no-action alternative, an ACL would not be specified for precious corals in Guam and the current harvest quota of 1,000 kg for pink, gold and bamboo corals in the Guam exploratory area would remain. Additionally, the moratorium prohibiting the harvest of gold coral until June 30, 2013 would also remain in place. Since there has never been a precious coral fishery in Guam, this alternative would have no effect on any marine resource. Catches, in federal waters if they were to occur, would be documented through federal fisheries monitoring programs administered by NMFS and the status of Guam precious corals would be subject to discussion and review by the Council and NMFS.

Alternative 2: Specify Council recommended ACL (Preferred)
Under this alternative, NMFS would specify an ACL of 1,000 kg for pink, gold and bamboo corals in the Guam exploratory area in fishing years 2012 and 2013. The current moratorium on gold coral would remain in place through June 30, 2013. The ACL would be equal to the ABC recommended by the Council's SSC and is identical to the current harvest guideline under Alternative 1.

Additionally, NMFS would also specify an ACL of 700 lb for Guam black coral in fishing years 2012 and 2013. The ACL is equal to the ABC recommended by the Council's SSC and is based on a proxy developed from Hawaii data and described in Section 2.4.4.1. To date, there has never been a fishery for precious corals in Guam and, consequently, there would be no impacts to target, non-target or bycatch species from establishment of an ACL and AM for the fishery.

Alternative 3: Specify ACL at 90% of ABC
Under this alternative, NMFS would specify an ACL of 900 kg for pink, gold and bamboo corals in the Guam exploratory area in fishing years 2012 and 2013. The current moratorium on gold coral would remain in place through June 30, 2013. For Guam black coral, NMFS would specify an ACL of 630 lb. Because there has never been a fishery for precious corals in Guam, the impacts under this alterative would be identical to Alternative 2.

Under all alternatives considered, including the proposed action, no new monitoring would be implemented; however, under Alternatives 2 and 3, a post-season review of the catch data would be conducted as soon as possible after the fishing year to determine whether the ACL was exceeded. If the ACL were to be exceeded and affect the sustainability of the stock, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL in the subsequent fishing year.

The impacts of an ACL specification are expected to be beneficial because it would continue to place a limit on the amount of precious corals that may be harvested annually. While federal permit and reporting requirements are currently in place, no permits have ever been issued. If fishing were to occur, NMFS does not anticipate the ACL would be reached as selective harvesting requirements provides for precision in the amount of harvest; however, the post-season review of catch relative to the proposed ACL is part of the fishery management that is designed to prevent precious coral stocks from becoming overfished. The additional level of post season review of the catch would provide an enhanced level of management review of the fishery and would provide an opportunity for the Council to refine ACL and AM specifications, as needed.

3.4.5.2 Affected Fishery Participants in Guam

Overview of Guam's Precious Coral Fishery
There is no record of any fishery for precious corals in the Guam.

Potential Impacts of the Proposed ACL specification and AM on Guam's Fishery Participants
To date, there has never been a fishery for precious corals in Guam. Therefore, there is no fishery participant that would be affected by any of three alternatives considered.

3.4.5.3 Affected Protected Resources in Guam

Section 3.1.4.3 describes protected resources that have the potential to interact with a precious coral fishery in Guam should one develop. There is no fishery for precious corals in Guam;

however, if one were to develop, NMFS would initiate consultation, as required, to comply with requirements of the ESA and the MMPA.

Potential Impacts of the Proposed ACL specification and AM on Protected Species in Guam

To date, there has never been a precious coral fishery in federal waters around Guam. None of the alternatives considered is expected to create a fishery or modify any other fishery in a way that would be expected to affect endangered or threatened species or critical habitat in any manner not previously considered in previous ESA or MMPA consultations.

3.5 Potential Impacts to Essential Fish Habitat and Habitat Areas of Particular Concern

Essential fish habitat (EFH) is defined as those waters and substrate as necessary for fish spawning, breeding, feeding, and growth to maturity. This includes the marine areas and their chemical and biological properties that are utilized by the organism. Substrate includes sediment, hard bottom, and other structural relief underlying the water column along with their associated biological communities. In 1999, the Council developed and NMFS approved EFH definitions for management unit species (MUS) of the Bottomfish and Seamount Groundfish FMP (Amendment 6), Crustacean FMP (Amendment 10), Pelagic FMP (Amendment 8), and Precious Corals FMP (Amendment 4) (74 FR 19067, April 19, 1999). NMFS approved additional EFH definitions for coral reef ecosystem species in 2004 as part of the implementation of the Coral Reef Ecosystem FMP (69 FR8336, February 24, 2004). EFH definitions were also approved for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

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

The designated areas of EFH and HAPC for all FEP MUS by life stage are summarized in Table 34. The Council is currently reviewing habitat information relevant to Hawaii bottomfish and seamount groundfish and may refine these EFH/HAPC designations if warranted (76 FR 13604, March 14, 2011).

Table 34. EFH and HAPC for Western Pacific FEP 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)
	Hawaii bottomfish species: uku (*Aprion virescens*), thicklip trevally (*Pseudocaranx dentex*), giant trevally (*Caranx ignoblis*), black trevally (*Caranx lugubris*), amberjack (*Seriola dumerili*), taape (*Lutjanus kasmira*), ehu (*Etelis carbunculus*), onaga (*Etelis coruscans*), opakapaka (*Pristipomoides filamentosus*), yellowtail kalekale (*P. auricilla*), kalekale (*P. sieboldii*), gindai (*P. zonatus*), hapuupuu (*Epinephelus quernus*), lehi (*Aphareus rutilans*)	**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 fathoms) **Juvenile/adults:** the water column and all bottom habitat extending from the shoreline to a depth of 400 meters (200 fm)	All slopes and escarpments between 40–280 m (20 and 140 fm) Three known areas of juvenile opakapaka habitat: two off Oahu and one off Molokai

MUS	Species Complex	EFH	HAPC
Seamount Groundfish MUS	**Hawaii Seamount groundfish species (50–200 fm):** armorhead (*Pseudopentaceros wheeleri*), raftfish/butterfish (*Hyperoglyphe japonica*), alfonsin (*Beryx splendens*)	**Eggs and larvae:** the (epipelagic zone) water column down to a depth of 200 m (100 fm) of all EEZ waters bounded by latitude 29°–35° **Juvenile/adults:** all EEZ waters and bottom habitat bounded by latitude 29°–35° N and longitude 171° E–179° W between 200 and 600 m (100 and 300 fm)	No HAPC designated for seamount groundfish
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 :** 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)	All banks in the NWHI with summits less than or equal to 30 m (15 fathoms) from the surface
	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
Precious Corals MUS	**Shallow-water precious corals (10-50 fm) all FEP areas:** black coral (*Antipathes dichotoma*), black coral (*Antipathis grandis*), black coral (*Antipathes ulex*) **Deep-water precious corals (150–750 fm) all FEP areas:** Pink coral (*Corallium secundum*), red coral (*C. regale*), pink coral (*C. laauense*), midway deepsea coral (*C.* sp nov.), gold coral (*Gerardia* spp.), gold coral (*Callogorgia gilberti*), gold coral (*Narella* spp.), gold coral (*Calyptrophora* spp.), bamboo coral (*Lepidisis olapa*), bamboo coral (*Acanella* spp.)	EFH for Precious Corals is confined to six known precious coral beds located off Keahole Point, Makapuu, Kaena Point, Wespac bed, Brooks Bank, and 180 Fathom Bank EFH has also been designated for three beds known for black corals in the Main Hawaiian Islands between Milolii and South Point on the Big Island, the Auau Channel, and the southern border of Kauai	Includes the Makapuu bed, Wespac bed, Brooks Banks bed For Black Corals, the Auau Channel has been identified as a 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 western Pacific

Currently, precious coral fisheries only occur in Hawaii. The proposed ACL specification and AM would not have a direct effect on EFH or HAPC in any of the subject island areas because regulations require precious coral fisheries to use only selective gears such as hand harvest or submersible or remotely operated vehicle technologies which are not known to have large adverse effects on EFH or HAPC for any MUS. None of the alternatives considered are expected to result in substantial changes to the way the precious coral in Hawaii are conducted. Additionally, if precious coral fisheries were to develop in American Samoa, Guam, and CNMI, they would be required to use only selective gear technologies and are likely to be conducted in the same manner as done in Hawaii.

3.6 Potential Impacts on Fishery Administration and Enforcement

3.6.1 Federal Agencies and the Council

The Council in accordance with the approved FEPs currently manages fisheries in federal waters, and NMFS PIRO is responsible for implementing and enforcing fishery regulations that

implement the FEPs. NMFS PIFSC conducts research and reviews fishery data provided through logbooks and fishery monitoring systems administered by state and territorial resource management agencies. The Council, PIRO and PIFSC collaborate with local agencies in the administration of fisheries of the western Pacific through other activities including coordinating meetings, conducting research, developing information, processing fishery management actions, training fishery participants, and conducting educational and outreach activities for the benefit of fishery communities.

NOAA's Office of Law Enforcement (OLE) is responsible for enforcement of the nation's marine resource laws, including those regulating fisheries and protected resources. OLE, Pacific Islands Division oversees enforcement of federal regulations in American Samoa, Guam, the CNMI and Hawaii and enters into Joint Enforcement Agreements (JEA) with each participating state and territory.

The U.S. Coast Guard's (USCG) Fourteenth District (Honolulu) jurisdiction is the U.S. EEZ as well as the high seas in the Western and Central Pacific. At over 10 million square miles, its area of responsibility is the largest of any USCG District. The USCG patrols the region with airplanes, helicopters, and surface vessels, as well as monitors vessels through VMS. The USCG also maintains patrol assets on Guam.

Potential impacts to federal agencies

The proposed ACL and AM specifications would not require a change to monitoring or collecting fishery data. However, monitoring of catch data towards an ACL would be conducted by PIFSC in collaboration with local resource management agencies, and is expected to result in improved timeliness in processing species specific catch reporting on an annual basis. No changes to the role of law enforcement agents or the U.S. Coast Guard would be required in association with implementing these specifications. The ACL and AM specifications would not result in any change to the fishery that would pose an additional risk to human safety at sea.

3.6.2 Local Agencies

Currently, local marine resource management agencies in each of the four areas are responsible for the conservation and management of coral reef habitats and fishery resources. These agencies monitor catches through licenses and fishery data collection programs, conduct surveys of fishermen and scientific surveys of fish stocks, establish and manage marine protected areas, provide outreach and educational services, serve on technical committees, and enforce local and federal resource laws through JEAs, among other responsibilities.

Potential impacts to local agencies

The specification of ACLs and AMs for crustacean and precious coral fisheries of American Samoa, Guam, the CNMI, and Hawaii is not expected to result in changes to fishery monitoring by the local resource management agencies, at this time. However, monitoring of catch data for ACL purposes would continue to be conducted by PIFSC in collaboration with local resource management agencies and the requirements to conduct post-season review of catch relative to the ACLs are expected to result in improved timeliness in processing species specific catch reporting on an annual basis.

No change to enforcement activities would be required in association with implementing these specifications because there is no fishery closure recommended for any of the areas. Additionally, the ACL and AM specifications would not result in any change to any fishery and therefore, the proposed specification would not result in additional risk to human safety associated with crustacean fishing or precious coral harvesting in American Samoa, Guam, the CNMI, or Hawaii.

Substantial additional administrative resources would be required in the future to support the establishment of in-season monitoring capabilities in American Samoa, the Mariana Islands and Hawaii. Until additional resources are made available, only AMs that call for post-season management measures are possible at this time.

3.7 Environmental Justice

NMFS considered the effect of the proposed ACL specifications and AMs on Environmental Justice communities that include members of minority and low-income groups. The ACLs would apply to everyone that catches crustaceans and precious corals, and no new monitoring is required for the ACL specification or the AM to be implemented. The environmental review in this EA showed that the proposed specifications of ACLs and provisions for post-season harvest reviews as the AMs in the western Pacific crustacean and precious coral fisheries are not expected to result in a change to the way the fisheries are conducted. The ACLs and AMs are intended to provide for sustainability of crustaceans (shrimp, lobsters and kona crab) and precious corals (black, pink and bamboo corals) which are, in turn, expected to benefit these resources and the human communities that rely on their harvest. The proposed specifications are not likely result in any large adverse impacts to the environment that could have disproportionately large or adverse effects on members of Environmental Justice communities in American Samoa, Guam, the CNMI, or Hawaii.

3.8 Climate Change

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

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

The efficacy of the proposed ACL and AM specifications in providing for sustainable levels of fishing for deepwater shrimp, lobsters, Kona crabs and precious corals is not expected to be adversely affected by climate change. Recent catch and biological status of the species informed the development of the ACLs and AMs. Monitoring would continue, and, if harvests show reductions in biomass, ACLs could be adjusted in the future.

The proposed specifications are not expected to result in a change to the manner in which any of the affected fisheries are conducted, so no change in greenhouse gas emissions is expected.

3.9 Additional Considerations

3.9.1 Overall Impacts

When compared against recent fishing harvests, ACLs are generally higher but are, nevertheless, considered an acceptable level of catch that will prevent overfishing and provide for long-term sustainability of the target stocks. The specifications were developed using the best available scientific information, in a manner that accords with the fishery regulations, and after considering catches, participation trends, and estimates of the status of the fishery resources. The AMs are also not likely to cause large adverse impacts to resources because the fishery stocks would benefit from post-season data review. For these reasons, the proposed ACLs and AMs are not expected to result in large, irreversible, or irretrievable impacts to the environment.

3.9.2 Cumulative Effects of the Proposed Action

ACL and AM specifications for other western Pacific fisheries

In addition to the ACLs and AMs for crustacean and precious coral fisheries, NMFS is proposing to implement the Council's ACL and AM recommendations for all other western Pacific fisheries for the 2012 and 2013 fishing years, including bottomfish and coral reef fisheries. NMFS has developed environmental impact analysis documents on the proposed specifications for these fisheries, which can be obtained from NMFS or the Council by request, or at www.regulations.gov using the regulatory identification number (RIN) 0648-XA674. None of the MUS in these fisheries overlap, so the ACL and AM specifications would result in a unique ACL and AM for each particular stock or stock complex. The environmental impact review, however, considers the impacts of the proposed specifications and AMs in view of these concurrent and recent actions.

Foreseeable management actions related to western Pacific fisheries

In the foreseeable future, the Council may re-evaluate the need for conservation and management for federal crustacean and precious coral fisheries and may recommend NMFS remove certain species from the FEPs and/or re-classify species as "ecosystem component" (EC) species. To be considered for possible classification as an EC species, the species should be: 1) a non-target

species; 2) a stock that is not determined to be subject to overfishing, approaching overfished, or overfished; 3) not likely to become subject to overfishing or overfished; and 4) generally not retained for sale or personal use. Various methods for categorizing species and EC components have been preliminarily discussed at Council meetings. These include, but are not limited to, species that are caught exclusively or predominately in state/territorial waters, species that occur infrequently in the available time series, species that are non-native to an FEP area, and species associated with ciguatoxin poisoning and are generally discarded.

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

Other foreseeable NOAA/NMFS management actions

NMFS currently has two proposals concerning the Hawaiian monk seal population that occurs in federal waters of the exclusive economic zone (EEZ; generally 3-200 nmi) around the Hawaiian Islands. The first is a proposal to revise designated critical habitat for endangered Hawaiian monk seals to include areas in the MHI (76 FR 32026, June 2, 2011). The second considers Hawaiian monk seal management, research and enhancement activities including the translocation of up to 60 monk seal pups from the NWHI to the MHI (76 FR 51945; August 19, 2011). The AM being proposed in this action is a post-season review and does not include in-season management measures such as a fishery closure and no change to the conduct of the crustacean or precious coral fisheries in Hawaii is expected to occur as a result of specifying ACLs. Specifying ACLs will not have an environmental outcome that would affect the agency's decision of whether or not to designate critical habitat. The specification would not change the likelihood of interactions, or affect the survival, distribution or behavior of the species in any way. However, if the pending Hawaiian monk seal actions are approved, NMFS will initiate consultation in accordance with Section 7 of the ESA to ensure that Hawaii's fisheries are not likely to jeopardize the continued existence of the species, or result in the destruction or adverse modification of critical habitat.

NMFS is also considering listing the Hawaiian insular false killer whale as an endangered species based on its possible status as an endangered distinct population segment (75 FR 70169, November 17, 2010). The crustacean and precious coral fisheries that operate in the MHI are not known to interact with insular false killer whales. The proposal to specify ACLs would not result in a change to the way the fisheries are conducted and, therefore, is not expected to affect the agency's decision of whether or not to list the insular false killer whale as endangered. ACL specifications would not change the likelihood of interactions, or affect the survival, distribution or behavior of the species in any way. However, if this species is listed, NMFS will initiate consultation in accordance with Section 7 of the ESA to ensure that all Hawaii fisheries are not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of critical habitat.

Finally, NMFS has initiated a status review of the bumphead parrotfish or *Bolbometopon muricatum* (75 FR 16713, April 4, 2010) and 82 species of coral (75 FR 6616, February 10, 2010) to determine whether listing of these species under the Endangered Species Act (ESA) is warranted. Specifying ACLs will not have an environmental outcome that would affect the agency's decision of whether or not to list any of these species. It would not change the likelihood of interactions, or affect the survival, distribution or behavior of the species in any way. However, if these species are listed, NMFS will initiate consultation in accordance with Section 7 of the ESA to ensure that all fisheries of the western Pacific region are not likely to jeopardize the continued existence of the bumphead parrotfish or any species of coral or result in the destruction or adverse modification of critical habitat.

Other Foreseeable NOAA Actions

NOAA's Office of National Marine Sanctuaries (ONMS) has initiated a review of the Hawaiian Humpback Whale National Marine Sanctuary in the main Hawaiian Islands which may include revisions to its management plan and regulations to fulfill the purposes and policies of the National Marine Sanctuaries Act (75 FR 40579, July 14, 2010). As there are no in-season management measures proposed, the ways in which the crustacean and precious coral fisheries are conducted are not expected to change and, therefore, the proposed ACL specification and AMs would not have an environmental effect that would affect future decisions about possible changes to the sanctuary management plan nor would the proposed action affect sanctuary resources.

Additionally, NOAA's Office of National Marine Sanctuaries (ONMS) is proposing to add five additional discrete geographical areas to the Fagatele Bay National Marine Sanctuary and change the name of the sanctuary to the American Samoa National Marine Sanctuary (FR 76 65566, October 21, 2011). The proposed ACL specification and AMs would not result in environmental effects that could, in turn, affect future decisions about changes to the sanctuary nor would the proposed action affect sanctuary resources.

Foreseeable actions by others

Many other non-fishing related activities occur in the same areas where some crustacean and precious coral fisheries may take place. One activity that has the potential to affect the Guam's fishery resources is the Guam military buildup. This activity, involves 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 and establishment of 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).

Dredging activities have the potential to result in direct localized impact to lobster resources within Apra Harbor through loss of habitat, and indirect impacts through increased turbidity and sedimentation during and immediately after dredging occurs. Other support activities, including highway and utilities improvements may also the potential to impact marine resources through

run-off and sedimentation if conducted on and around nearshore areas. Measures to minimize and mitigate impacts 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. Other crustacean resources such as deepwater shrimp, and Kona crab, and precious coral resources are not likely to be affected by activities associated by the military buildup as they generally occur in deeper waters offshore from where these activities would occur.

For some fisheries, increased numbers of military and support personnel have the potential to result in an increase in use of nearshore waters, including more vessel activity, as well as add to the number of people that might participate in fisheries. With respect to the crustaceans and precious coral fisheries, the only fisheries that are likely to show an increase in participation would be nearshore lobster and crab fisheries.

The military buildup is not expected to result in increased likelihood of participants in the deepwater shrimp or precious coral fisheries. Harvest of all crustacean and precious coral resources around each island area would be counted toward the attainment of the annual catch limit. Any increase in fishery participants around Guam is not expected to interact with the proposed ACL specifications in a way that would affect either fishery resources or the environment because the ACLs are harvest limits, and the resource management objective (preventing overfishing through the use of ACLs and AMs) would not be affected by a change in the number of fishery participants. Current monitoring programs would continue, and if there were an increase in the number of participants (and harvest), the ACL is likely to be exceeded, but post-season evaluation would likely include consideration of any increase in participants as part of the reason the ACL was exceeded, if this should happen. Furthermore, the buildup is likely to be gradual and since the ACL specification and AM recommendations are reviewed annually, the Council and NMFS could modify the fishery management program, as needed, in response to changes in the fishery.

4 Consistency with Other Applicable Laws

4.1 National Environmental Policy Act

NOAA Administrative Order (NAO) 216-6, Environmental Review Procedures, in accordance with NEPA, requires the consideration of effects of proposed agency actions and alternatives on the human environment and allows for involvement of interested and affected members of the public before a decision is made. This EA has been written and organized to satisfy the requirements of NEPA. The NMFS Regional Administrator will use the analysis in this EA to determine whether the proposed action would have a significant environmental impact, which would require the preparation of an EIS.

4.1.1 Preparers and Reviewers

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4.1.2 Coordination with others

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

- American Samoa Department of Marine and Wildlife Resources
- Guam Department of Agriculture, Division of Aquatic and Wildlife Resources
- Hawaii Department of Land and Natural Resources, Division of Aquatic Resources
- Northern Marina Island Department of Land and Natural Resources, Division of Fish and Wildlife
- U.S. Coast Guard
- U.S. Fish and Wildlife Service
- U.S. Department of State

4.1.3 Public Coordination

The development of the proposed ACL and AM specifications for crustacean and precious coral fisheries of American Samoa, Guam, the CNMI, and Hawaii has taken place in public meetings of the SSC and the Council. In addition, the Council advertised the need to focus on federal annual catch limits in media releases, newsletter articles, and on the Council's website, http://www.wpcouncil.org.

NMFS is soliciting public comment on the proposed ACL and AM specifications described in this EA. This EA, the proposed specifications, and instructions on how to comment on the proposed specifications can be found by searching RIN 0648-XA674 at www.regulations.gov, or by contacting the responsible official or Council listed in this document.

4.2 Endangered Species Act

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

Pursuant to Section 7 of the ESA, NMFS has evaluated the crustacean and precious coral fisheries managed under the western Pacific Fishery Ecosystem Plans for potential impacts on ESA-listed species under the jurisdiction of NMFS. Table 35 summarizes ESA section 7 consultations for these fisheries managed under the FEPs for American Samoa, the Marianas (including Guam and CNMI) and Hawaii.

Table 35. ESA section 7 consultations for western Pacific crustacean and precious coral fisheries

Fishery	Consultation	NMFS Determination
American Samoa crustacean fisheries	September 28, 2007, Letter of Concurrence	Not likely to adversely affect any ESA-listed species or critical habitat
American Samoa precious corals	December 20, 2000, Letter of Concurrence	Not likely to adversely affect any ESA-listed species or critical habitat
Main Hawaiian Islands crustacean fisheries	April 4, 2008, Letter of Concurrence	Not likely to adversely affect any ESA-listed species or critical habitat
Hawaii precious coral fisheries	December 20, 2000, Letter of Concurrence, February 5, 2008, Letter of Concurrence	Not likely to adversely affect any ESA-listed species or critical habitat
CNMI crustacean fisheries	September 28, 2007, Letter of Concurrence	Not likely to adversely affect any ESA-listed species or critical habitat
CNMI precious coral fisheries	December 20, 2000, Letter of Concurrence	Not likely to adversely affect any ESA-listed species or

		critical habitat
Guam crustacean fisheries	September 28, 2007, Letter of Concurrence	Not likely to adversely affect any ESA-listed species or critical habitat
Guam precious coral fisheries	December 20, 2000, Letter of Concurrence	Not likely to adversely affect any ESA-listed species or critical habitat

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

On November 17, 2010, NMFS published a proposed rule to list the Hawaiian insular false killer whale as an endangered species under the ESA (75 FR 70169). NMFS is also proposing to designate areas in the MHI as monk seal critical habitat. Specific areas proposed include terrestrial and marine habitats from 5 m inland from the shoreline extending seaward to the 500 m depth contour around Kaula Island, Niihau, Kauai, Oahu, Maui Nui (including Kahoolawe, Lanai, Maui and Molokai) and Hawaii Island (76 FR 32026, June 2, 1011). Additionally, the agency is also evaluating whether to list the bumphead parrotfish and a number of coral species under the ESA although nothing specific has been proposed as of this date. If new species are listed, or if critical habitat is designated in areas that may be affected by federal fisheries, NMFS will re-initiate consultation under Section 7 of the ESA to determine the impact of fishing activities on listed species and their critical habitat as required by law.

The alternatives considered primarily consist of fishery review, and are intended to promote long-term sustainability of crustacean and precious coral stocks. Therefore, approval and implementation of the proposed ACL specifications and AMs would not result in a change to any of the affected fisheries, and, therefore, would not have an adverse effect on areas being proposed as critical habitat or on species proposed for listing.

4.3 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the take of marine mammals in the U.S. and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. The MMPA gives the Secretary of Commerce authority and duties for all cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions, except walruses). Under section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries that classifies U.S. commercial fisheries into one of three categories. Specifically, the MMPA mandates that each fishery be classified according to whether it has a frequent, occasional, or remote likelihood of, or no known, incidental mortality or serious injury to marine mammals.

All of the affected crustacean and precious coral fisheries are either classified as Category III fisheries under section 118 of the MMPA or are conducted in a similar manner as the classified fisheries. Because the proposed action would not modify vessel operations or other aspects of any fishery, NMFS concludes that these fisheries, as currently conducted under the proposed action, would not negatively affect marine mammals in any manner not previously considered or authorized the commercial fishing take exemption under section 118 of the MMPA.

4.4 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) requires a determination that a recommended management measure has no effect on the land, water uses, or natural resources of the coastal zone or is consistent to the maximum extent practicable with an affected state's enforceable coastal zone management program. On November 16, 2011, NMFS sent a letter to the appropriate state government agencies in American Samoa, Guam, Hawaii 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 programs.

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 and therefore it is not subject to the provisions of the Paperwork Reduction Act.

4.6 Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) requires government agencies to assess and present the impact of their regulatory actions on small entities including small businesses, small organizations, and small governmental jurisdictions. The assessment is done by preparing an Initial Regulatory Flexibility Analysis when impacts are expected. The purpose and need for action is described in Section 1.2. Section 2.0 describes the management alternatives considered to meet the purpose and need for action. Section 3.0 provides a description of the fisheries that may be affected by this action and analyzes environmental impacts of the alternatives considered.

The proposed action would specify an annual catch limit (ACL) for crustacean and precious coral fisheries in American Samoa, Guam, CNMI and Hawaii in 2012. If the ACL for any of these fisheries is exceeded, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL for that stock or stock complex in the subsequent fishing year, or other measures, as appropriate.

NMFS does not have annual revenue information on a per-vessel basis, but given the relatively small levels of landings for most fisheries, and total inactivity for others, NMFS assumes all commercial crustacean and precious coral fishery participants where they exist, to be small entities based on the SBA size standard for defining a small business entity in this industry with average annual receipts less than $4.0 million. The proposed action of specifying ACL and AMs is expected to have little, if any, direct adverse economic impact, as described in the EA and the RIR. There are no disproportionate economic impacts between large and small entities. Furthermore, there are no disproportionate economic impacts among the universe of vessels based on gear, home port, or vessel length.

4.7 Administrative Procedures Act

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

The specification of ACLs for lobsters, Kona crab, deepwater shrimp, and precious corals in American Samoa, Guam, the CNMI and Hawaii 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 recommendations. Additionally, NMFS will publish a proposed rule announcing the proposed ACL specifications described in this document which will include requests for public comments. After considering public comments, NMFS will publish a final rule which will become effective 30 days after publication.

4.8 Environmental Justice

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

The ACLs and AMs are intended to provide for long-term sustainability of Crustacean MUS and Precious Coral MUS. Specification of the ACLs and post-season reviews are expected to benefit the target resources and, therefore, the human communities that rely on their harvest. The proposed specifications are not likely to result in a large adverse impact to the environment that could have disproportionately large or adverse effects on members of Environmental Justice communities in American Samoa, Guam, the CNMI, or Hawaii.

4.9 Executive Order 12866

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

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

The specification of ACLs for coral reef fisheries of the western Pacific has been determined to be not significant under E.O. 12866 because it will not: have an annual effect on the economy of $100M, create a serious inconsistency or otherwise interfere with an action taken or planned by another agency, materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof, or raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order. A Regulatory Impact Review has been prepared which provides an overview of the problem, policy objectives, and anticipated impacts of the proposed action, and ensures that management alternatives are systematically and comprehensively evaluated such that the public welfare can be enhanced in the most efficient and cost effective way (Appendix C).

Based on analysis provided in the RIR, the proposed action is not expected to have an adverse effect of $100 million or more, create a serious inconsistency or otherwise interfere with an action taken by another agency, materially alter the budgetary impact of programs or rights or obligations of recipients, or raise novel legal or policy issues. Therefore, it is not considered to be a significant regulatory action. However, there is expected to be an increased interest on the part of fishermen regarding catch limits, especially where specified ACLs are low because of the limits to the data used in developing ACLs.

4.10 Information Quality Act

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

Council and NMFS staffs prepared the document based on information provided by NMFS Pacific Islands Fisheries Science Center (PIFSC) and NMFS Pacific Islands Regional

Office (PIRO) and after providing opportunities for members of the public to comment at Council meetings and the EA will be made available to the public during the comment period for the proposed specification. The process of public review of this document provides an opportunity for comments on the information contained in this document, as well as for the provision of additional information regarding the proposed specifications and potential environmental effects.

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Appendix A Western Pacific Crustacean Management Unit Species

American Samoa Crustacean Management Unit Species

Scientific Name	English Common Name	Local Name
Panulirus marginatus	spiny lobster	ula
Panulirus penicillatus	spiny lobster	ula-sami
Family Scyllaridae	slipper lobster	papata
Ranina ranina	kona crab	pa‘a
Heterocarpus spp.	deepwater shrimp	NA

Hawaii Crustacean Management Unit Species

Scientific Name	English Common Name	Local Name
Panulirus marginatus	spiny lobster	ula
Panulirus penicillatus	spiny lobster	ula
Family Scyllaridae	slipper lobster	ula papapa
Ranina ranina	Kona crab	papa‘i kua loa
Heterocarpus spp.	deepwater shrimp	NA

Mariana Crustacean Management Unit Species (CNMI and Guam)

Scientific Name	English Common Name	Local Name (Chamorro/Carolinian)
Panulirus penicillatus	spiny lobster	mahongang
Family Scyllaridae	slipper lobster	pa‘pangpang
Ranina ranina	Kona crab	NA
Heterocarpus spp.	deepwater shrimp	NA

Appendix B Western Pacific Precious Coral Management Unit Species

(This species list applies to American Samoa, Guam, the CNMI and Hawaii)

Scientific Name	English Common Name	Local Name
Corallium secundum	pink coral (also called red coral)	NA
Corallium regale	pink coral (also called red coral)	NA
Corallium laauense	pink coral (also called red coral)	NA
Gerardia spp.	gold coral	NA
Callogoria gilberti	gold coral	NA
Narella spp.	gold coral	NA
Calyptrophora spp.	gold coral	NA
Lepidisis olapa	bamboo coral	NA
Antipathes dichotoma	black coral	NA
Antipathes grandis	black coral	NA
Antipathes ulex	black coral	NA

Appendix C Regulatory Impact Review

Regulatory Impact Review for Proposed Annual Catch Limit Specifications and Accountability Measures for Pacific Island Crustacean and Precious Coral Fisheries in 2012 and 2013

1. Introduction

This document is a regulatory impact review (RIR) prepared under Executive Order (E.O.) 12866, "Regulatory Impact Review." The regulatory philosophy of E.O. 12866 stresses that in deciding whether and how to regulate, agencies should assess all costs and benefits of all regulatory alternatives and choose those approaches that maximize the net benefits of all regulatory alternatives and choose those approaches that maximize the net benefits to the society. To comply with E.O. 12866, NMFS prepares an RIR for all regulatory actions that are of public interest. The RIR provides a review of the problems, policy objectives, and anticipated impacts of regulatory actions.

This RIR is for the proposed annual catch limit (ACL) specifications and accountability measures (AM) in fishing years 2012 and 2013 for crustaceans and in fishing years 2011-12 and 2012-13 for precious coral fisheries in the Western Pacific.

2. Problems and Management Objective

In order to comply with the Magnuson-Stevens Act and provisions of the FEPs for American Samoa, the Mariana Archipelago, and Hawaii, NMFS must specify an ACL for each stock and stock complex of management unit species (MUS) in western Pacific crustacean and precious coral fisheries.

The management objective is to specify an ACL for all western Pacific crustacean and precious coral fisheries to prevent overfishing from occurring, and ensure long-term sustainability of the resource while allowing fishery participants to continue to benefit from its utilization. AMs are also needed to correct or mitigate overages of the ACL, should overages occur.

3. Description of the Fisheries

The management action will affect U.S. subsistence, recreational and commercial fishermen who fish for crustaceans and harvest precious corals in American Samoa, CNMI, Guam, and Hawaii. The descriptions of these fisheries are provided in Sections 2 and 3 of the Environmental Assessment (EA). These sections include general information about the crustacean and precious coral fisheries for each of the four regions, along with descriptions, if available, of fishing practices, vessel characteristics, and most recent price and landing and harvesting information.

4. Description of the Alternatives

4.1 Description of the Alternatives for Crustacean MUS in 2012 and 2013

The alternatives described here would apply to following Western Pacific stock complexes of crustaceans: deepwater shrimp, spiny lobster, slipper lobster, and Kona crab.

4.1.1 Alternative 1: No Action (Status Quo)

Under the No Action Alternative, NMFS would not specify an ACL for the Hawaii, American Samoa, CNMI, and Guam deepwater shrimp stock complexes. In addition, NMFS would not specify an ACL for the Hawaii, American Samoa, CNMI, and Guam spiny lobster stock complex or the Hawaii, American Samoa, CNMI, and Guam slipper lobster stock complex. Finally, NMFS would not specify an ACL for Kona crab in Hawaii, American Samoa, CNMI, and Guam. With the lack of specifications of ACLs for any of these fisheries, AMs would not be necessary.

This alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs for American Samoa, Mariana Archipelago, and Hawaii, which require ACLs to be specified for all stocks and stock complexes in Western Pacific crustacean fisheries.

4.1.2 Alternative 2: Specify Council recommended ACLs (Preferred)

Under this alternative, the 2012 and 2013 ACL for western Pacific deepwater shrimp stock complexes would be set equal to the ACL recommended by the Council and specified to be as follows: 250,773 lb for the Hawaii stock complex, 80,000 lb for the American Samoa stock complex, 275,575 lb for the CNMI stock complex, and 48,488 lb for the Guam stock complex. These ACLs are equal to the Acceptable Biological Catch (ABC) recommended by the SSC.

For western Pacific spiny and slipper lobster stock complexes, the 2012 and 2013 ACLs would be set equal to the ACL recommended by the Council. For the spiny lobster stock complexes, these would be specified to be as follows: 10,000 lb for the Hawaii stock complex, 2,300 lb for the American Samoa stock complex, 5,500 lb for the CNMI stock complex, and 2,700 lb for the Guam stock complex. For the slipper lobster stock complex, these would be specified to be as follows: 280 lb for the Hawaii stock, 30 lb in American Samoa, 60 lb in CNMI, and 20 lb in Guam.

Finally, for western Pacific Kona crab stock complexes, the 2012 and 2013 ACLs would be set equal to the ACL recommended by the Council. These would be specified to be as follows: 27,600 lb for the Hawaii stock complex, 3,200 lb for the American Samoa stock complex, 6,300 lb for the CNMI stock complex, and 1,900 lb for the Guam stock complex.

4.1.3 Alternative 3: Specify ACLs equal to 90% of ABC

Under Alternative 3, the 2012 and 2013 ACL for western Pacific deepwater shrimp stock complexes would be set equal to 90% of the ABC recommended by the SSC and specified to be

as follows: 225,695 lb for the Hawaii stock complex, 72,000 lb for the American Samoa stock complex, 248,018 lb for the CNMI stock complex, and 43,639 lb for the Guam stock complex.

For western Pacific spiny and slipper lobster stock complexes, the 2012 and 2013 ACLs would be set equal to 90% of the ABC recommended by the SSC. For the spiny lobster stock complexes, these would be specified to be as follows: 9,000 lb for the Hawaii complex, 2,070 lb for the American Samoa stock complex, 4,950 lb for the CNMI stock complex, and 2,430 lb for the Guam stock complex. For the slipper lobster stock complexes, these would be specified to be as follows: 252 lb for the Hawaii stock complex, 27 lb for the American Samoa stock complex, 54 lb for the CNMI stock complex, and 18 lb for the Guam stock complex.

Finally, for western Pacific Kona crab stock complexes, the 2012 and 2013 ACLs would be set equal to 90% of the ABC recommended by the SSC and specified to be as follows: 24,840 lb for the Hawaii stock complex, 2,880 lb for the American Samoa stock complex, 5,670 lb for the CNMI stock complex, and 1,729 lb for the Guam stock complex.

Accountability Measures:
Under the action alternatives considered (Alternatives 2 and 3) the Council would determine as soon as possible after the fishing year, whether or not an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate. Additionally, as a performance measure specified in each FEP, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Each alternative also assumes continuation of all existing federal and local resource management laws and regulations.

4.2 Description of the Alternatives Precious Coral MUS in 2012 and 2013

The alternatives described here would apply to following western Pacific stock complexes of precious corals: black coral, pink coral, gold coral, bamboo coral.

4.2.1 Alternative 1: No Action (Status Quo)

Under the No Action Alternative, NMFS would not specify an ACL for black corals, pink corals, gold corals, or bamboo corals in the American Samoa, CNMI, Guam and Hawaii and AMs would not be necessary. Current harvested quota for specific coral beds would remain, as would regulations that allow for this quota to be harvested over the currently specified timeframes. Table 12 of the EA summarizes the current harvest criteria for all western Pacific precious corals. Additionally, under the baseline, gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

This alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs for American Samoa, Mariana Archipelago, and Hawaii, which require ACLs to be specified for all stocks and stock complexes in western Pacific precious coral fisheries.

4.2.2 Alternative 2: Specify Council recommended ACLs (Preferred)

Under this alternative, the ACLs for precious coral fisheries in fishing year 2011-2012 and 2012-2013 would be set at the Council recommended level. In general, this alternative specifies precious coral ACLs to be kept at current quota levels, except in cases where the harvest quota is currently allowed to be spread over two years, the current two year quota would be divided in half and applied on an annual basis. The ACLs for precious corals located in Hawaii would be as follows:

1) Auau Channel black coral (2,500 kg)
2) Makapuu Bed pink coral (1000 kg) and bamboo coral (250 kg)
3) 180 Fathom Bank pink coral (222 kg) and bamboo coral (56 kg)
4) Brooks Bank pink coral (444 kg) and bamboo coral (111 kg)
5) Kaena Point Bed pink coral (67 kg) and bamboo coral (17 kg)
6) Keahole Bed pink coral (67 kg) and bamboo coral (17 kg)

Precious corals in the U.S. EEZ around American Samoa, Guam, and CNMI would be subject to an ACL of 1,000 kg for all species combined, excluding black coral, for each area. The 1,000 kg ACL would also apply in the precious coral exploratory area around Hawaii. The ACLs for black corals outside of Hawaii would be specified as follows: 790 lb in American Samoa, 2,100 lb in CNMI, and 700 lb in Guam.

Like Alternative 1, gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

4.2.3 Alternative 3: Specify ACLs equal to 90% of ABC

Under this alternative, the 2011-2012 and 2012-2013 ACLs for the precious coral fisheries would be set at the Council recommended level. In general, this alternative specifies precious coral ACLs would be set at 90% of the SSC's recommended ABC. Under this alternative, the ACLs for precious corals by location in Hawaii would be as follows:

1) Auau Channel black coral (3,068 kg)
2) Makapuu Bed pink coral (1,229 kg) and bamboo coral (233 kg)
3) 180 Fathom Bank pink coral (273 kg) and bamboo coral (51 kg)
4) Brooks Bank pink coral (546 kg) and bamboo coral (104 kg)
5) Kaena Point Bed pink coral (82 kg) and bamboo coral (15 kg)
6) Keahole Bed pink coral (82 kg) and bamboo coral (15 kg)

Precious corals in the U.S. EEZ around American Samoa, Guam, and CNMI would be subject to an ACL of 900 kg for all species combined, excluding black coral, for each area. The 900 kg ACL would also apply in the exploratory area around in Hawaii. The ACLs for black corals

outside of Hawaii would be specified as follows: 711 lb in American Samoa, 1,890 lb in CNMI, and 630 lb in Guam.

Gold coral would continue to be subject to a fishing moratorium until June 30, 2013 in Hawaii, American Samoa, CNMI and Guam.

Accountability Measures:
Under the action alternatives considered (Alternatives 2 and 3) the Council would determine as soon as possible after the fishing year, whether or not an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate. Additionally, as a performance measure specified in each FEP, if an ACL is exceeded more than once in a four-year period, the Council is required to re-evaluate the ACL process, and adjust the system, as necessary, to improve its performance and effectiveness. Each alternative also assumes continuation of all existing federal and local resource management laws and regulations.

5. Analysis of the Alternatives

This section describes the potential economic effects of all alternatives that were considered and evaluates the impacts of each action alternative relative to the no-action alternative.

5.1 Analysis of the Alternatives for Crustacean Fisheries

5.1.1 Alternative 1: No Action (Status Quo)

Under Alternative 1, the no-action alternative, deepwater shrimp, spiny lobster, slipper lobster, and Kona crab fisheries in American Samoa, Guam, CNMI, and Hawaii would not be managed using ACLs and AMs would not used. Fishing would continue to be monitored by each of four local resource management agencies (American Samoa Department of Marine and Wildlife Resources, Guam Division of Aquatic and Wildlife Resources, CNMI Division of Fish and Wildlife, and Hawaii Division of Aquatic Resources), NMFS and the Council. Fisheries statistics would continue to be made available approximately six months or longer after the data have been initially collected. The status of crustaceans would continue to be subject to ongoing discussion and fisheries scientific and management review.

This alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs of American Samoa, Mariana Archipelago, and Hawaii, which require ACLs be specified for all stocks and stock complexes.

5.1.2 Alternative 2: Specify Council recommended ACLs (Preferred)

Under this alternative, the 2012 and 2013 ACL for western Pacific deepwater shrimp stock complexes would be set as follows: 250,773 lb for deepwater shrimp in Hawaii, 80,000 lb in American Samoa, 275,575 lb in the CNMI, and 48,488 lb in Guam.

Between 2000 and 2010, estimated annual commercial landings level for deepwater shrimp in Hawaii averaged 18,743 lb[7]. The proposed ACL specification exceeds this level. In American Samoa, no fishing for deepwater shrimp has ever been reported. In CNMI, a directed fishery for deepwater shrimp emerged in the mid 1990's, but lasted only two years. During those two years, about 27,000 lb of deepwater shrimp were landed. Smaller landing levels were reported in 2001, 2005, and 2006. In Guam, a small-scale fishery for deepwater shrimp occurred in the 1970s, but ended shortly thereafter. No fishing or landings have been reported since. Since 2012 and 2013 deepwater shrimp ACL specifications for American Samoa, Guam and CNMI are higher than reported current levels harvest and catch in 2012 or 2013 are not expected to exceed the ACL.

Under Alternative 2, the 2012 and 2013 ACLs for western Pacific spiny lobster stock complexes would be specified to be as follows: 10,000 lb for spiny lobster caught in Hawaii, 2,300 lb in American Samoa, 5,500 lb in CNMI, and 2,700 lb in Guam. For the slipper lobster stock complex, these would be specified to be as follows: 280 lb for slipper lobster in Hawaii, 30 lb in American Samoa, 60 lb in CNMI, and 20 lb in Guam.

Table 6 of the EA shows that between 1966 and 2010, spiny lobster harvest in the main Hawaiian Islands (MHI) ranged from 1,411 lb to 14,933 lb. Spiny lobster landings exceeded the proposed 10,000 lb ACL about 13 times since 1966; six of those events occurred since 2000. Between 16 and 69 commercial participants landed spiny lobster in any given year. During those same years, slipper lobster landings ranged from 0 to about 2,395 lb with 4 to 12 commercial participants. Slipper lobster exceeded the proposed 280 lb ACL nine times since 1966. This last occurred in 1998. Most spiny and slipper lobsters were caught in Hawaii state waters. Table 7 of the EA shows that between 2000 and 2008, commercial landings of spiny lobster in American Samoa ranged between 170 lb to 5,405 lb. During those eight years, the commercial landings of spiny lobster exceeded the proposed 2,300 lb ACL three times. There is no catch information for slipper lobster in American Samoa. In CNMI, commercial landings of spiny lobsters ranged from 433 lb to 12,868 lb between 1981 and 2009. During those years, the commercial landings exceeded the proposed 5,500 lb ACL seven times, most recently in 2005. Slipper lobster catches in CNMI have only recently been reported within the past several years with catches of 7 lb, 371 lb and 165 reported in 2007, 2008 and 2009. Landings from two of those three years exceed the proposed 60 lb ACL. Finally, in Guam, spiny lobster commercial landings ranged from 337 lb to 4,789 lb between 2000 and 2009 (Table 9 of the EA). During those years, commercial landings exceeded the proposed 2,700 lb ACL for spiny lobster three times. There is no catch information for slipper lobster in Guam. Based on historical landings, there is a high likelihood of catch levels exceeding one or more ACLs in spiny lobster or slipper lobster fisheries during 2012 or 2013.

[7] Landings from individual years were provided in multi-year bins, rather than on an annual basis in the EA, to protect confidential fishing data

For the western Pacific Kona crab stock complexes, the 2012 and 2013 ACLs would be set equal to the ACL recommended by the Council. These would be specified to be as follows: 27,600 lb for the Hawaii stock complex, 3,200 lb for the American Samoa stock complex, 6,300 lb for the CNMI stock complex, and 1,900 lb for the Guam stock complex.

Kona crab commercial landings have ranged from 641 lb to 72,401 lb from 1950 to 2009. Kona crab landings have exceeded the proposed 27,600 lb ACL 14 times since 1950; the most recent time that this occurred was in 1998. There is no record of any fishery for Kona crab in American Samoa, CNMI, or Guam, therefore it is unlikely that the ACL for the Kona crab fishery will be exceeded in American Samoa, CNMI, or Guam and it also appears fairly unlikely that the Kona crab ACL will be exceeded in Hawaii based on recent landings information.

The AM for deepwater shrimp, spiny lobster, slipper lobster, and Kona crab fisheries in Hawaii, American Samoa, CNMI, and Guam would require a post-season review of the catch data to determine whether any of those ACLs had been exceeded. If any ACL had been exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year or other measures, as appropriate. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Under Alternative 2, as with the other action alternative, the inability of fishery management entities to conduct in-season tracking of catch in relation to the ACLs, resulted in the Council and NMFS not considering in-season closures. This means that participants in Hawaii, American Samoa, Guam, and CNMI deepwater shrimp, spiny lobster, slipper lobster, and Kona crab fisheries would be able to fish throughout the entire season. The ACLs as specified under Alternative 2, (as well as under Alternative 3) would not change the conduct of the fishery each year, including gear types, areas fished, effort, or participation. Even if the post-season assessment determines that ACL overages had occurred and that downward adjustments to that ACL are needed for the following fishing year, the lack of ability in assessing catch levels during the ongoing fishing season would not result in any impact to these fisheries which could still continue. Therefore, due to the lack of an in-season fishery closure, these fishery participants should not face any direct adverse economic impacts in 2012 and 2013 as a result of the proposed ACL and AMs. Indirect adverse economic effects could result should catch restrictions occur as a result of the specified ACLs. NMFS cannot predict which of these fisheries that are currently active would be affected or the magnitude of the overage adjustment that might be taken; therefore, the fishery and economic impacts of future actions such as changes to ACLs or AMs would be evaluated separately, once those future actions are available for consideration.

As the choice of the ACL under Alternative 2 would have little, if any, impact on deepwater shrimp, spiny lobster, slipper lobster, and Kona crab fishing activities, this suggests that there should be no change in the amount of these crustaceans supplied to local markets or available for subsistence and cultural sharing practices in 2012 and 2013 as a result of this action.

Incremental costs associated with this alternative are expected to be incurred by the requirement for the Federal agency to conduct post-season fishery review in order to determine whether one or more ACLs had been exceeded and then would incur costs related to corresponding activities to address the overage. These costs may include, but are not limited to Council costs of documentation preparation, meetings, public hearings, and information dissemination. NMFS administrative costs of document preparation, meetings and reviews supporting rulemaking or otherwise respond to Council proposal. Although each alternative would have the same costs involved with post-season fishery performance review, the other incremental costs are expected to be higher when the potential to exceed one or more ACLs is higher, so Alternative 2 is more likely to incur lower public and private administrative costs than Alternative 3, but higher than the no action alternative. It should be noted that none of the administrative activities under any of the alternatives would be substantially higher than the ongoing costs that the Council and its organizational bodies would bear in response to continuing to comply with national requirements under the MSA that call for the Council to develop and recommend appropriate ACLs and AMs, and for NMFS to implement the specifications.

5.1.3 Alternative 3: Specify ACLs equal to 90% of ABC

Under this alternative, the 2012 and 2013 ACL for western Pacific deepwater shrimp stock complexes would be set as follows: 225,695 lb for deepwater shrimp in Hawaii, 72,000 lb in American Samoa, 248,018 lb in the CNMI, and 43,639 lb in Guam.

Under Alternative 3, the 2012 and 2013 ACLs for the spiny lobster stock complexes would be specified to be as follows: 9,000 lb for spiny lobster caught in Hawaii, 2,070 lb in American Samoa, 4,950 lb in CNMI, and 2,430 lb in Guam. For the slipper lobster stock complex, these would be specified to be as follows: 252 lb for slipper lobster in Hawaii, 27 lb in American Samoa, 54 lb in CNMI, and 18 lb in Guam.

For the western Pacific Kona crab stock complexes, the 2012 and 2013 ACLs would be specified to be as follows: 24,840 lb for the Hawaii stock complex, 2,880 lb for the American Samoa stock complex, 5,670 lb for the CNMI stock complex, and 1,729 lb for the Guam stock complex.

Impacts to fisheries are generally the same as those described in Alternative 2, except that the probability of exceeding ACL for each active fishery is slightly higher under Alternative 3, since the proposed ACLs are all lower under Alternative 3 compared to Alternative 2.

Impacts are generally the same as those described in Alternative 2, except that the probability of exceeding an ACL, and therefore triggering AMs, is slightly higher under Alternative 3.

5.2 Analysis of the Alternatives for Precious Coral Fisheries

5.2.1 Alternative 1: No Action (Status Quo)

Under Alternative 1, the no-action alternative, black coral, pink coral, gold coral, or bamboo coral in American Samoa, Guam, CNMI, and Hawaii would not be managed using annual catch limits and accountability measures would not used. Current harvested quota would remain, as

would regulations that allow for this quota to be harvested over the currently specified timeframes. Additionally, gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

This alternative would not be in compliance with the Magnuson-Stevens Act or the provisions of the FEPs for American Samoa, Mariana Archipelago, and Hawaii which require ACLs be specified for all stocks and stock complexes.

5.2.2 Alternative 2: Specify Council recommended ACLs (Preferred)

Under this alternative, the 2011-2012 and 2012-2013 ACLs for the precious coral fisheries would be set at the Council recommended level. In general, this alternative specifies precious coral ACLs to be kept at current quota levels, except in cases where the harvest quota is currently allowed to be spread over two years, the current two year quota would be divided in half and applied on an annual basis. The ACLs for precious corals by location in Hawaii would be as follows:

1) Auau Channel black coral (2,500 kg)
2) Makapuu Bed pink coral (1000 kg) and bamboo coral (250 kg)
3) 180 Fathom Bank pink coral (222 kg) and bamboo coral (56 kg)
4) Brooks Bank pink coral (444 kg) and bamboo coral (111 kg)
5) Kaena Point Bed pink coral (67 kg) and bamboo coral (17 kg)
6) Keahole Bed pink coral (67 kg) and bamboo coral (17 kg)

Precious corals in the U.S. EEZ around American Samoa, Guam, and CNMI would be subject to an ACL of 1,000 kg for all species combined, excluding black coral, for each area. The 1,000 kg ACL would also apply in the precious coral exploratory area around Hawaii. The ACLs for black corals outside of Hawaii would be specified as follows: 790 lb in American Samoa, 2,100 lb in CNMI, and 700 lb in Guam.

Like Alternative 1, gold coral would continue to be subject to a fishing moratorium until June 30, 2013.

Precious corals are not being harvested in any island area except in the MHI where the fishery is limited to black coral harvests in the Auau channel. Fishing for other precious corals (pink, bamboo, and gold) has not been conducted in Hawaii during the past 10 years.

Harvest levels of black coral in Auau Channel are not reported annually, but over 10 year periods, to protect confidential harvesting information. The current biennial harvest quota is 5,000 kg or roughly 11,000 lb which may be taken over a two year period. For the most recent time period 2000-2010, approximately 5,587 lb of black coral were harvested annually. The proposed ACL for the Auau Channel under Alternative 2 would be specified at one half of the current biennial quota or 2,500 kg or 5,512 lb, so on an annual basis, the quota would not represent a change. For those harvesters that are accustomed to harvesting black coral in Auau every other year, the proposed ACL would require a change in the timing patterns of their harvest.

The AM for precious coral fisheries in Hawaii, American Samoa, CNMI, and Guam would require a post-season review of the catch data to determine whether any of those ACLs had been exceeded. If any ACL had been exceeded, NMFS, as recommended by the Council would take action to correct the operational issue that caused the ACL overage. This could include a downward adjustment to the ACL in the subsequent fishing year, or other measure, as appropriate. NMFS cannot speculate on operational measures or the magnitude of the overage adjustment that might be taken; therefore, the fishery and environmental impacts of future actions such as changes to the ACL or AM would be evaluated separately, once details are available.

Under Alternative 2, as with the other action alternative, the inability of fishery management entities to conduct in-season tracking of catch in relation to the ACLs, resulted in the Council and NMFS not considering in-season closures. This means that participants in Hawaii, American Samoa, Guam, and CNMI precious coral fisheries would be able to fish throughout the entire season. The ACLs as specified under Alternative 2, (as well as under Alternative 3) would not change the conduct of the fishery each year, including gear types, areas fished, effort, or participation. Even if the post-season assessment determines that ACL overages had occurred and that downward adjustments to that ACL are needed for the following fishing year, the lack of ability in assessing catch levels during the ongoing fishing season would not result in any impact to these fisheries which could still continue. Therefore, due to the lack of an in-season fishery closure, these fishery participants should not face any direct adverse economic impacts in 2012 and 2013 as a result of the proposed ACL and AMs. Indirect adverse economic effects could result should catch restrictions occur as a result of the specified ACLs. NMFS cannot predict which of these fisheries that are currently active would be affected or the magnitude of the overage adjustment that might be taken; therefore, the fishery and economic impacts of future actions such as changes to ACLs or AMs would be evaluated separately, once those future actions are available for consideration.

As the choice of the ACL under Alternative 2 would have little, if any, impact on precious coral harvesting activities, this suggests that there should be no change in the amount of these precious corals supplied to local markets or available for cultural sharing practices in 2012 and 2013 as a result of this action.

Incremental costs associated with this alternative are expected to be incurred by the requirement for the Federal agency to conduct post-season fishery review in order to determine whether one or more ACLs had been exceeded and then would incur costs related to corresponding activities to address the overage. These costs may include, but are not limited to Council costs of documentation preparation, meetings, public hearings, and information dissemination. NMFS administrative costs of document preparation, meetings and reviews supporting rulemaking or otherwise respond to Council proposal. Although each alternative would have the same costs involved with post-season fishery performance review, the other incremental costs are expected to be higher when the potential to exceed one or more ACLs is higher. With the exception of bamboo corals in Makapuu Bed, 180 Fathom Bank, and Brooks Bank, the proposed ACLs under Alternative 2 are all lower than those proposed in Alternative 3, resulting in a higher likelihood of incurring higher public and private administrative costs than Alternative 3. It should be noted that none of the administrative activities under any of the alternatives would be substantially

higher than the ongoing costs that the Council and its organizational bodies would bear in response to continuing to comply with national requirements under the MSA that call for the Council to develop and recommend appropriate ACLs and AMs, and for NMFS to implement the specifications.

5.2.3 Alternative 3: Specify ACLs equal to 90% of ABC

Under this alternative, the 2011-2012 and 2012-2013 ACLs for the precious coral fisheries would be set at the Council recommended level. In general, this alternative specifies precious coral ACLs to be kept at current quota levels, except in cases where the harvest quota is currently allowed to be spread over two years, the current two year quota would be divided in half and applied on an annual basis. The ACLs for precious corals by location in Hawaii would be as follows:

1) Auau Channel black coral (3,068 kg)
2) Makapuu Bed pink coral (1,229 kg) and bamboo coral (233 kg)
3) 180 Fathom Bank pink coral (273 kg) and bamboo coral (51 kg)
4) Brooks Bank pink coral (546 kg) and bamboo coral (104 kg)
5) Kaena Point Bed pink coral (82 kg) and bamboo coral (15 kg)
6) Keahole Bed pink coral (82 kg) and bamboo coral (15 kg)

Precious corals in the U.S. EEZ around American Samoa, Guam, and CNMI would be subject to an ACL of 900 kg for all species combined, excluding black coral, for each area. The 900 kg ACL would also apply to the precious coral exploratory area around Hawaii. The ACLs for black corals outside of Hawaii would be specified as follows: 711 lb in American Samoa, 1,890 lb in CNMI, and 630 lb in Guam.

Impacts to fisheries are generally the same as those described in Alternative 2, except that for the most part, the probability of exceeding ACL for each active fishery is slightly lower under Alternative 3, since the proposed ACLs are generally higher under Alternative 3 compared to Alternative 2. The proposed ACLs under Alternative 3 for bamboo coral in Makapuu Bed, 180 Fathom Bank, and Brooks Bank are lower than those for Alternative 2, so the probability of exceeding the ACLs for bamboo coral in those locations would be higher under Alternative 3, should harvesting activities emerge in those locations.

6. Changes in Net Benefit

Among the action alternatives, it is not possible to provide a quantitative assessment of which would provide a greater net benefit. While Alternative 3 for crustaceans and Alternative 2 for precious corals may incur higher incremental costs in implementing AMs, because of the higher likelihood of triggering AMs, the additional level of post-season review of the catch would also provide an enhanced level of management review of the fishery and further help the fishery from becoming overfished. The action alternatives are expected to have no distributional effects among large and small vessels or by geographic region, because the proposed measures should not cause an adverse economic impact to fishermen in 2012 and 2013, as described earlier.

7. Changes in Income and Employment

The action alternatives are not expected to cause adverse economic impacts to fishermen in 2012 and 2013; therefore, changes in income and regional employment are unlikely to occur as a direct consequence of the proposed measures.

8. Determination of a Significant Regulatory Action

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

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

The proposed action is not expected to have an adverse effect of $100 million or more, create a serious inconsistency or otherwise interfere with an action taken by another agency, materially alter the budgetary impact of programs or rights or obligations of recipients, or raise novel legal or policy issues. Therefore, it is not considered to be a significant regulatory action. However, there is expected to be an increased interest on the part of fishermen regarding catch limits, especially where specified ACLs are low because of the limits to the data used in developing ACLs.

9. Impact on Small Entities

This section provides a description of the economic impacts of the proposed alternative on small entities as well as that of the alternatives that were considered in the amendment but not selected.

The reasons why the action is being considered, the objectives of, and the legal basis for the proposed action are addressed in Section 1.0 of the EA. NMFS does not anticipate that the proposed specifications would conflict with or duplicate other Federal regulations. Sections 2 and 3 of the EA provide descriptions of the fisheries that may be affected by this action.

The proposed action would specify an annual catch limit (ACL) for crustacean and precious coral fisheries in American Samoa, Guam, CNMI and Hawaii as described in the RIR. If the ACL for any of these fisheries is exceeded, NMFS would take action to correct the operational issue that caused the ACL overage, as recommended by the Council which could include a downward adjustment to the ACL for that stock or stock complex in the subsequent fishing year, or other measures, as appropriate.

NMFS does not have annual revenue information on a per-vessel basis, but given the relatively small levels of landings for most fisheries, and total inactivity for others, NMFS assumes all commercial crustacean and precious coral fishery participants where they exist, to be small entities based on the SBA size standard for defining a small business entity in this industry with average annual receipts less than $4.0 million. The proposed action of specifying ACL and AMs is expected to have little, if any, direct adverse economic impact, as described in the EA and the RIR. There are no disproportionate economic impacts between large and small entities. Furthermore, there are no disproportionate economic impacts among the universe of vessels based on gear, home port, or vessel length.

NMFS is recommending that the Office of General Counsel for Department of Commerce certify to the Chief Counsel for Advocacy of the Small Business Administration that the proposed action would not have a significant economic impact on a substantial number of small entities.

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FINDING OF NO SIGNIFICANT IMPACT

Proposed Annual Catch Limit Specifications and Accountability Measures for Pacific Islands Crustacean and Precious Coral Fisheries in 2012 and 2013

(RIN 0648-XA674)

December 2011

Introduction

The National Marine Fisheries Service (NMFS), prepared this Finding of No Significant Impact (FONSI) according to guidelines established in NMFS Instruction 30-124-1 (July 22, 2005) and the requirements set forth in National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6 (NAO 216-6, May 20, 1999), concerning compliance with the National Environmental Policy Act (NEPA). The environmental impact analysis prepared in accordance with the requirements of NEPA and documented in the attached environmental assessment (EA) supports this FONSI.

NMFS is not specifying ACLs for any crustacean or precious coral fisheries in the Pacific Remote Island Areas (PRIA) at this time because commercial fishing is prohibited out to 50 nautical miles by Presidential Proclamation 8336 which established the Pacific Remote Island Marine National Monument (74 FR 1565; January 12, 2009), and there is no crustacean or precious coral habitat beyond the monument boundaries. NMFS is also not specifying ACLs for gold coral, because NMFS implemented a fishing moratorium on this species throughout the Pacific Islands which will remain in place through June 30, 2013.

Because these existing fishing prohibitions are the functional equivalent of an ACL of zero, ACLs are not specified in this EA.

Proposed Action

After considering a range of alternatives developed in coordination with its plan team members, the Scientific and Statistical Committee (SSC), and members of the public, the Western Pacific Fishery Management Council (Council) recommended Alternative 2 of this EA (see Table 2 in the EA for a summary of the alternatives). If approved, NMFS proposes to specify an annual catch limit (ACL) and accountability measures (AM) for crustacean and precious coral fisheries of American Samoa, the Commonwealth of the Northern Mariana Islands or the CNMI, Guam, and Hawaii. Section 1 of the EA gives an overview of the ACL process as required by the Hawaii Archipelago, American Samoa, and Mariana Archipelago Fishery Ecosystem Plans (FEP) and implemented by 50 CFR §665.4 (76 FR 37285, June 27, 2011).

The proposed ACL specifications and AMs will apply to the harvest of deepwater shrimps, spiny and slipper lobsters, Kona crab, black coral, pink coral, and bamboo coral. Currently there is little to no fishing of these resources in areas administered as federal fisheries. Precious coral fisheries have only developed in Hawaii and have historically targeted black corals, pink corals and bamboo corals. Currently, only the fishery for black corals is active with fewer than three participants and most of the fishing is occurring in nearshore waters managed by the State of Hawaii. Fishing for gold coral is prohibited throughout the western Pacific through June 30, 2013 (73 FR 47098, August 13, 2008).

As an AM, the Council would determine as soon as possible after the fishing year whether an ACL for any stock or stock complex had been exceeded. If landings of a stock or stock complex exceed the specified ACL in a fishing year and adversely affected the sustainability of the stock or stock complex, the Council would take action in accordance with 50 CFR 600.310(g) to correct the operational issue that caused the ACL overage. NMFS would implement the Council's recommended action, which could include a downward adjustment to the ACL for that stock complex in the subsequent fishing year, or other measures, as appropriate. The introduction to section 2 describes the AM in more detail.

For all crustacean fisheries, the ACLs and AMs would be applicable in fishing years 2012 and 2013, which run from January 1 to December 31 of each year. For all precious coral fisheries, the ACLs and AMs would be applicable in fishing years 2011-12 and 2012-13, which run from July 1 to June 30, the following year.

Coordination and Public Involvement

The Council considered and discussed the ACL and AM specifications and alternatives at public meetings held in June and October 2011. The attached EA includes a discussion of public involvement in sections 1.4 and 4.1. NMFS will publish the proposed 2012-13 ACL and AM specifications for public review and comment in December 2011 and expects to publish final ACL specifications for the fisheries in early 2012.

Significance Analysis

NAO 216-6 contains criteria for determining the significance of the environmental impacts of a proposed action. In addition, the Council on Environmental Quality's (CEQ) regulations at 40 CFR 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant in making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

1) Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

No. NMFS doesn't expect the proposed action will jeopardize the sustainability of any target species. The ACL specifications and AMs were developed by fishery scientists and managers to prevent overfishing from occurring and, together with other fishery management under the FEPs,

are intended to provide for long-term sustainability of western Pacific crustacean and precious coral resources, while allowing fishery participants to continue to benefit from their utilization.

As explained in the EA, many of the stocks for which ACLs are proposed to be specified are not currently harvested or have never been harvested in American Samoa, Guam or the CNMI. These include the crustacean resources of deepwater shrimp and Kona crab and all species of precious corals. Therefore, establishing a catch limit is not expected to result in increased fishing for these resources. As previously mentioned, only the black coral fishery in Hawaii is active with fewer than three participants, and most of the fishing is occurring in nearshore waters managed by the State of Hawaii. Therefore, establishing a catch limit in federal waters where fishing seldom occurs is not expected to result in increased fishing for this species. For all other pink and bamboo corals, the ACL is set equal to the current harvest quota; however, fishing for these species has not occurred in over a decade and is not expected to increase as a result of this action.

For Kona crab in Hawaii and spiny and slipper lobster throughout the Pacific Islands fishing is currently occurring. The results of the SSCs and Council's thorough review of these fisheries indicated that establishing the ACLs as the 75th percentile of historic catch for each fishery is considered sustainable given that there are no clear trends indicating that stock biomass has been declining or that these species are being subject to overfishing. For these fisheries, the impacts of an ACL specification are expected to be beneficial because it would establish a limit on the amount that could be harvested annually where none previously existed.

Without an in-season accountability measure (such as a fishery closure), the AMs will not result in a change to the conduct of the fishery; however, there will be a new post-season review of the fishery performance in relation to the ACLs. This new AM requirement is expected to result in improved timeliness of catch data processing and provides additional evaluation of the fisheries. Additional Council review and evaluation of the reason for overages, if they occur, will take place and this is expected to have a beneficial effect by providing the opportunity for the Council to correct any operational issues that cause ACLs to be exceeded.

For all these reasons, NMFS doesn't expect that the ACL specifications and AMs will jeopardize the sustainability of any target species. Potential impacts to target stocks are described in sections 3.1, 3.2, 3.3, and 3.4 of the EA.

2) *Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?*

No. NMFS doesn't expect the proposed action will jeopardize the sustainability of any non-target species. Crustacean and precious coral fisheries in the western Pacific are target specific and result in low levels of bycatch. No non-target species are currently in a state of overfishing or have been found to be overfished. Potential impacts to non-target stocks are described in sections 3.1, 3.2, 3.3, and 3.4 of the EA.

3) *Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in Fishery Management Plans?*

No. The proposed action will not have a direct effect on essential fish habitat (EFH), habitat areas of particular concern (HAPC) or other ocean or coastal habitats in any of these fisheries because the specifications will not result in substantial changes to the way the crustacean and precious coral fisheries are conducted. These fisheries are not known to affect or harm EFH, HAPC, or other habitat for any MUS.

4) *Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?*

No. NMFS doesn't expect any significant effects on public health or safety at sea because there are no known impacts on public health or safety that are attributed to any of the subject fisheries and NMFS doesn't anticipate large changes to these fisheries as a result of the proposed action. The proposed action will not force any vessels to operate farther from shore, in adverse weather conditions, or in any other way that could be detrimental to public health or safety at sea.

5) *Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?*

No. The proposed ACL specifications and AMs will not have a direct effect on protected marine resources because the ACLs and AMs will not result in substantial changes to the way the fisheries are conducted. There have been no known or observed interactions between these fisheries and protected species and the specification of ACLs and post-season review will not change this. Managing the crustacean and precious coral fisheries using ACLs and AMs will be in addition to the current fishery management regime and it is expected to promote long-term sustainability of the fishery resources. Because these fisheries are currently sustainably managed and subject to conservation measures in accordance with various resource conservation and management laws, the ACLs and AMs would not result in a change to distribution, abundance, reproduction, or survival of ESA-listed species or increase interactions with protected resources.

The crustacean and precious coral fisheries of the western Pacific region have been evaluated for impacts on protected resources and are managed in compliance with the requirements of the MSA, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Migratory Bird Treaty Act, and other relevant laws and policies. Pursuant to Section 7 of the ESA, NMFS has evaluated the current authorized crustacean and precious coral fisheries managed under the western Pacific Fishery Ecosystem Plans and determined that these fisheries are not likely to jeopardize the continued existence of any listed species or adversely affect any of their critical habitats. The proposed action is not expected to modify vessel operations or any other aspects of any these fisheries, and therefore, the existing consultation results remain valid.

Recently, NMFS changed the status of the loggerhead sea turtle and listed the North Pacific Ocean stock and the South Pacific Ocean stock as endangered distinct population segments (DPS). These status changes require NMFS to reinitiate a review of the western Pacific fisheries

to evaluate the effects of the fishery on loggerhead sea turtles given their new population status. The EA considered whether the ACL specifications and AMs would have an adverse effect on loggerhead sea turtles. Because the ACL specifications and AMs are not associated with in-season closures and changes to fishery operations, the specifications will not affect the conclusions of the consultations or have the potential to result in jeopardizing the survival and recovery of these listed species. The currently authorized crustacean and precious coral fisheries have no documented interactions with loggerhead sea turtles, and this is not likely to change.

If, at any time, the fishery, environment, or status of a listed species or marine mammal species changes substantially, or if a fishery is found to be occurring in or near new critical habitat, NMFS will undertake additional consultation, as required, to comply with requirements of the ESA and the MMPA.

6) *Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?*

No. There are no known large or adverse impacts on biodiversity and ecosystem function occurring as a result of the crustacean and precious coral fisheries in the Pacific islands. Since NMFS doesn't anticipate substantial changes in the operation of these fisheries, NMFS expects no impacts on biodiversity or ecosystem function to occur. The proposed action was developed to prevent overfishing and promote the long-term sustainability of crustacean and precious coral fishery resources.

7) *Are significant social or economic impacts interrelated with natural or physical environmental effects?*

No. NMFS doesn't expect any significant social or economic impacts interrelated with environmental effects because the proposed action is not expected to change fishing operations, nor create or significantly change environmental effects of the fisheries' operations. The ACL specifications are intended to provide for long-term sustainability of CREMUS while allowing fishermen to continue to utilize the resources. For these reasons, as well, no Environmental Justice concerns arose in the course of preparing the EA (EA, section 4.8).

8) *Are the effects on the quality of the human environment likely to be highly controversial?*

No. The Council developed the recommended ACLs and AMs in a public process in accordance with the required process and in coordination with fishery scientists, managers, other resource managers, and other interested parties. This public coordination revealed no controversy regarding effects on the quality of the human environment. By providing for additional post-season fishery performance review, the specifications will help ensure long-term sustainability of the crustacean and precious coral resources, while allowing for optimal yield.

9) *Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?*

No. NMFS expects no impacts to unique or protected areas to result from the proposed action because it will not result in large changes to fishing operations. The current crustacean and precious coral fisheries do not have large adverse impacts to such unique resources or areas. Specifying ACLs and conducting post-season fishery reviews of fishery performance in comparison to ACLs and adjusting ACLs would not have an environmental outcome in the short term because there are no in-season fishery management measures. Therefore, NMFS expects the fishery to continue in the same manner it currently is being conducted. For this reason, the NMFS doesn't anticipate the proposed action will have any substantial impacts on sensitive areas, including marine national monuments, national parks, marine sanctuaries and other marine protected areas, or on areas being considered for critical habitat for the endangered Hawaiian monk seal.

10) *Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?*

No. NMFS doesn't expect any uncertain or unknown risks to occur as a result of the proposed action. Potential environmental impacts are predictable and not likely to involve any unique or unknown risks because the proposed action will not substantially change fishing operations. The ACLs and AMs will establish catch limits that are intended, in the long term, to provide for the sustainability of the target stocks. The ACLs were developed using the best available scientific information, and the process included consideration of scientific uncertainty.

11) *Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?*

No. For all four island areas, the Council is developing ACL and AM recommendations for bottomfish, groundfish, and coral reef MUS. NMFS recently specified ACLs for the main Hawaiian Islands Deep 7 bottomfish fishery. In the agency's preliminary findings, none of the ongoing proposals to specify ACLs and implement AMs is likely to result in large adverse effects to the environment. Also, the EA includes the agency's consideration of the potential for interaction among these initiatives and none was found that would result in a significant cumulative effect. The proposed ACL specifications for crustacean and precious coral fisheries would also not conflict with future ACL and AM specifications in any of the three archipelagic areas because the ACLs apply to fishery-specific MUS resources and do not overlap. Further, the ACLs and AMs are not anticipated to result in a large change to the fisheries in any of the areas (EA, section 3.9.2).

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?

No. NMFS doesn't expect the proposed action will adversely affect such areas because no such areas exist where these fisheries operate in federal waters. The proposed action will not change the location of these fisheries, which will continue to operate with no destructive impact on the environment.

13) Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

No. The proposed action will not change the way or locations in which the fisheries are conducted, so it is not expected to result in the spread of any non-indigenous species.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

No. Although the proposed is a novel regulatory regime for the Pacific islands crustaceans and precious coral fisheries, the specifications comply with the individual archipelagic FEPs and national requirements for all MUS to be managed under ACLs. The ACLs were developed in accordance with an approved method and process found in each FEP, so NMFS' specification of ACLs and AMs for the 2012-13 fishing years will not result in automatic approval for future actions or affect future decisions about appropriate ACLs or AMs. Catch data will continue to be collected by local resource management agencies through their respective fishery monitoring programs and by NMFS through federal logbook reporting. If an ACL for any stock or stock complex is exceeded and results in biological consequences to that stock or stock complex, NMFS will take action to correct the operational issue that caused the ACL overage, as recommended by the Council, which could include a downward adjustment to the ACL for that stock or stock complex.

15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

No. The proposed action will be consistent with all applicable federal laws and other requirements for the protection of the environment. NMFS evaluated it for compliance with the Magnuson-Stevens Act, the Endangered Species Act, and the Marine Mammal Protection Act.

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target or non-target species?

No. Please see the response to question #11 above.

Determination

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the Proposed Annual Catch Limit Specifications and Accountability Measures for Pacific Islands Crustacean and Precious Coral Fisheries in 2012 and 2013, dated December 13, 2011, I have determined that the proposed action will not significantly impact the quality of the human environment as described above and in the supporting EA. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.

Michael D. Tosatto
Regional Administrator

DEC 13 2011
Date