Amendment 7

Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region

Regarding the Use and Assignment of Catch and Effort Limits of Pelagic Management Unit Species by the U.S. Pacific Island Territories
And
Specification of Annual Bigeye Tuna Catch Limits for the U.S. Pacific Island Territories

Including an Environmental Assessment
And
Regulatory Impact Review

RIN 0648-BD46

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Regulatory Identification Number (RIN) 0648-BD46

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Abstract

The Western and Central Pacific Fisheries Commission (WCPFC), of which the United States is a member, develops and agrees on management measures for highly migratory species caught by WCPFC members and Participating Territories in the Western and Central Pacific Ocean. The U.S. Participating Territories include American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. The WCPFC may agree on conservation and management measures, such as catch and effort limits, that are applicable to U.S. pelagic fisheries operating in the western and central Pacific Ocean. This amendment to the Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region (Pelagics FEP) establishes:

1) A management framework to establish catch or effort limits applicable to the U.S. Participating Territories that includes the authorization for the U.S. Participating Territories to use, assign, allocate, and manage the pelagic management species catch and effort limits agreed to by the WCPFC through agreements with U.S. vessels permitted under the Pelagics FEP for the purposes of responsible fisheries development. The Western Pacific Fishery Management Council (Council) could also recommend and the National Marine Fisheries Service (NMFS) could specify catch or effort limits in the absence of such limits or additional or more restrictive limits than the WCPFC for conservation and management purposes. The framework also provides for consistency

review of Territory agreements with the Pelagics FEP and other applicable laws by the Council and NMFS, as well as annual review and specification recommendations by the Council.

2) This action also includes the specification of catch limits for bigeye tuna caught by longline of 2,000 metric tons (mt) per year for each of the U.S. Participating Territories, of which 1,000 mt may be transferred annually under agreements consistent with the Pelagics FEP and other applicable laws to eligible U.S. vessels permitted under the Pelagics FEP.

The Council and NMFS prepared this FEP amendment, which includes an environmental assessment (EA) and Regulatory Impact Review. This document serves as the basis for NMFS to determine whether to prepare an environmental impact statement. If approved by the Secretary of Commerce, the document also informs NMFS in its development of regulations that implement the selected action. NMFS solicited public comments on the draft FEP amendment and EA, and proposed rule. See sections 1.2 and 1.3 for how NMFS solicited comments, the public review process, and a document overview.

List of Acronyms/Abbreviations

ASG	American Samoa government
BiOp	Biological Opinion
CCM	Cooperating members, non-members, and participating territories of the WCPFC
CFCAA	Consolidated and Further Continuing Appropriation Act
CMM	Conservation and management measure
CPUE	Catch per unit of effort
Convention	Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean
Council	Western Pacific Fishery Management Council
DPS	Distinct Population Segment
EA	Environmental assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPO	Eastern Pacific Ocean
ESA	Endangered Species Act
FAD	Fish aggregation device
FEP	Fishery ecosystem plan
FMP	Fishery management plan
FR	Federal Register
HAPC	Habitat Areas of Particular Concern
HLA	Hawaii Longline Association
HMS	Highly migratory species
ITS	Incidental Take Statement
IATTC	Inter-American Tropical Tuna Commission
lb	Pound(s)
MBTA	Migratory Bird Treaty Act
MCP	Marine Conservation Plan
MMPA	Marine Mammal Protection Act
MSY	Maximum sustainable yield
mt	Metric ton(s)
MUS	Management unit species
nm	Nautical mile(s)
NMFS	National Marine Fisheries Service
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
Pelagics FEP	Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region
PIFSC	Pacific Islands Fisheries Science Center
PIRO	Pacific Islands Regional Office
PMUS	Pelagic management unit species
PRIA	Pacific Remote Island Areas
PT	Participating Territory
RFMO	Regional fisheries management organization
Section 113	Section 113 of the Consolidated and Further Continuing Appropriation Act of 2012
SIDS	Small Island Developing States
SPC-OFP	Secretariat of the Pacific Community – Oceanic Fisheries Program

UNCLOS	United Nations Law of the Sea Convention, 1982
USFWS	U.S. Fish and Wildlife Service
VMS	Vessel monitoring system
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WPRFMC	Western Pacific Fishery Management Council

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Summary

In November 2011, the U.S. Congress passed Section 113 of the Consolidated and Further Continuing Appropriation Act of 2012 (hereafter, Section 113; Public Law No. 112-55, 125 Stat. 552 *et seq*.; see Appendix A).[1] Section 113(a) provides American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI) (hereafter, Territories) authority to enter into agreements with vessels permitted under the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region (Pelagics FEP). It further describes that vessels under such agreements are to be considered integral to the domestic fisheries of the Territories provided that such agreements impose no requirements regarding where such vessels must fish or land their catch and shall be funded by deposits to the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in a Territory's Marine Conservation Plan (MCP).[2] Section 113 also requires the Secretary of Commerce (through NMFS) to attribute longline catch under a qualifying agreement to the applicable Territory for the purposes of annual reporting to the Western and Central Pacific Fisheries Commission (WCPFC). These agreements must meet specific criteria for NMFS to attribute the catch to the Territory.

The American Samoa government made an agreement with the Hawaii Longline Association (HLA) in 2011 that continued through 2012. HLA represents nearly all participants in the Hawaii longline fisheries. In 2013, the CNMI government made an agreement pursuant to Section 113 with HLA vessels permitted under the Pelagics FEP.

Section 113(b) directed the Western Pacific Regional Fishery Management Council (Council) to recommend an amendment to the Pelagics FEP and associated regulations that incorporate the provisions of Section 113. Specifically, it instructed the Council to authorize the Territories to use, assign, allocate, and manage catch limits of highly migratory fish stocks (which include western Pacific pelagic management unit species (pelagic MUS)), or fishing effort limits, agreed to by the WCPFC and applicable to the Territories. The authority provided to the Territories in Section 113 does not specify any limit on the amount of pelagic MUS (including bigeye tuna) the Territories can assign or use, and current WCPFC conservation and management measures (CMMs) do not place any catch limits on the Territories. The Council, however, recognizes that measures implementing the requirements of Section 113 must satisfy the conservation and management objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) in order to ensure the continued sustainability of the target stocks.

Consistent with the provisions of Section 113 and international and domestic conservation and management requirements, the Council has recommended a Pelagics FEP amendment to establish a management framework and uniform region-wide process to administer the U.S. Participating Territories' use, assignment, allocation, and management of catch limits of pelagic MUS, or fishing effort limits, through agreements with U.S. vessels permitted under the Pelagics FEP in support of responsible development of Territory fisheries. The need for the action is to ensure that Section 113 agreements are implemented and managed consistent with the

[1] In 2013, Congress extended Section 113 through December 31, 2013 in Section 110 Commerce, Justice, Science and Related Agencies Appropriations Act, 2013.

[2] The Marine Conservation Plans of the Territories are developed and approved pursuant to Section 204(e)(4) of the Magnuson-Stevens Fishery Conservation and Management Act.

conservation requirements of the Convention, WCPFC conservation and management measures (CMM) and consistent with the Magnuson-Stevens Act, to prevent overfishing, to ensure the sustainability of affected fish stocks, and, to the extent possible, given stock status, to provide for achieving optimum yield (OY) on a continuing basis. Under the preferred Alternative 4, the Council could also recommend and NMFS could specify additional or more restrictive catch or effort limits than the WCPFC for conservation and management purposes. Action is also needed to assist the Territories to improve opportunities for responsible fishing through supporting projects identified in approved MCPs.

The Council has also recommended the specification of catch limits for bigeye tuna caught by longline of 2,000 metric tons (mt) per year for each of the Territories, of which 1,000 mt may be transferred annually under agreements approved by NMFS to eligible U.S. vessels permitted under the Pelagics FEP.

As explained in section 3.1.1.1, bigeye tuna is considered a Pacific-wide stock that is managed and assessed separately by the WCPFC and Inter-American Tropical Tuna Commission (IATTC). In the western and central Pacific Ocean (WCPO; generally west of 150° W), bigeye tuna is subject to overfishing, but in the eastern Pacific Ocean (EPO; generally east of 150° W), bigeye tuna is not in an overfishing condition. Bigeye tuna in both the WCPO and EPO is not overfished. In the WCPO, bigeye tuna is harvested using a range of fishing gears, with primary impacts from longline and purse seine fisheries. Bigeye tuna has been experiencing overfishing since the 1990s in the WCPO.

The United States cannot end overfishing on bigeye tuna through unilateral actions. International cooperation within the WCPFC is required to end and prevent overfishing on bigeye tuna. The WCPFC adopted a comprehensive measure in 2008 (CMM 2008-01) with the objective of reducing bigeye tuna fishing mortality by 30 percent. CMM 2008-01 required WCPFC members to implement the following measures for their purse seine fisheries: fishing effort limits for the high seas and EEZ at 2001-2004 levels, seasonal closure period for fish aggregating devices (FADs) (2 months in 2009, 3 months in 2010, 2011), closure of western Pacific high seas pockets in 2010 and 2011, full catch retention in 2010 and 2011, and 100 percent observer coverage if fishing during the FAD closure period in 2009 as well as 100 percent for entire year in 2010 and 2011.

CMM 2008-01 also established annual longline catch limits that would reduce bigeye tuna catches over a three-year period by 30 percent of the 2001-2004 baseline. Fresh fish longline fisheries that caught less than 5,000 mt per year were required to reduce longline landings of bigeye tuna by 10 percent in 2009, but were not subject to additional 10 and 20 percent reductions in 2010 and 2011. This provision effectively only applied to the USA (Hawaii longline fishery). The Small Island Developing States (SIDS) and PTs were each provided 2,000-mt annual longline limits; however, if conducting responsible fisheries development, then the 2,000-mt limits did not apply.[3] The WCPFC extended several provisions of CMM 2008-01 in March 2012 as an interim measure for 2012, with a notable exemption allowing only the Philippines purse seine fishery to fish in the western high seas pocket (CMM 2011-01).

[3] WCPFC CMM 2008-01, paragraph 34. The term “responsible fisheries development” is undefined in CMM 2008-01.

The WCPFC evaluated the effectiveness of CMM 2008-01 in 2011 and CMM 2011-01 in 2012 based on analysis using the WCPO catch of bigeye tuna in recent years and has projected the status of bigeye tuna out to 2021. For example, maintenance of observed 2009 bigeye tuna catch and fishery effort levels results in F/F_{MSY} remaining high, with a projected level of $F/F_{MSY} = 1.40$ (overfishing occurring) in 2021 (Pilling et al. 2013; Figure 3). Under a scenario best approximating reported fishery catch and effort in 2010, the last data year in the WCPO bigeye tuna stock assessment, F/F_{MSY} declines and would be at a projected level of 0.96 (within sustainable limits) by 2021. This is driven by several factors: the lower than usual FAD use in 2010, the lower longline catches, and a large (30%) reduction in reported catches from the domestic fisheries of Indonesia and the Philippines. For a scenario approximating 2011 fishery conditions, F/F_{MSY} is projected at a level of 1.29. The difference between 2010 and 2011 fishery outcomes is mainly due to the return to higher levels of FAD-based purse seine effort in 2011 (Pilling et al. 2013).

In 2012, the WCPFC agreed on a conservation and management measure (CMM 2012-01), which establishes a goal of reducing bigeye tuna mortality to a level no greater than $F/F_{MSY} \leq 1$, thus ending overfishing, through a systematic approach through 2017. CMM 2012-01 maintained bigeye tuna limits for distant water fleets, including the U.S. limit of 3,763 mt, but did not provide annual longline catch limits of bigeye tuna for any of the PTs or SIDS (Table 4). CMM 2012-01, among other things, also increased the FAD closure by a month, requiring a 4-month purse seine FAD closure or equivalent reduction in purse seine FAD sets (see WCPFC 2012).

In December 2013, the WCPFC agreed on a conservation and management measure (CMM 2013-01) that builds off CMM 2012-01. The measure applies to purse seine, longline, and other fisheries taking skipjack, yellowfin, and bigeye tunas. To address impacts to bigeye tuna, the purse seine fishery, in 2014, is subject to a 4-month FAD closure or 3-month FAD closure plus a flag based FAD set limits shown in Attachment A of the measure. For years 2015 and 2016, CCMs with purse seine fisheries can either choose to restrict their vessels to a 5-month FAD closure plus limiting their vessels to their 2010-2012 FAD set average or restrict their vessels to a 3 month FAD closure plus restrict their vessels to FAD set limits shown in Attachment A of the measure. For 2017, CCMs shall follow the purse seine options available for 2015 and 2016 in addition to prohibiting their vessels from FAD sets on the high seas for the entire calendar year.

For the longline fishery, CMM 2013-01 provides flag-based bigeye tuna catch limits through 2017 representing a 15 percent reduction from the limits established in 2012-01. Overall, the WCPO longline catch limits for bigeye tuna established under CMM 2013-01 represent a 41 percent reduction from the limits established under CMM 2008-01. Under CMM 2013-01, the U.S. WCPO longline limit for bigeye tuna in 2014 is maintained at 3,763 mt, but will be reduced 5.5 percent to 3,554 mt in 2015 and 2016. For 2017, the U.S. longline limit will be 3,345 mt, which represents an 11 percent reduction from the 3,763-mt level. If the reductions to the U.S. limit are taken collectively, the U.S. longline bigeye tuna limit of 3,345 mt represents a 20 percent reduction from the 2004 baseline level used in CMM 2008-01. The measure also limits members that harvested less than 2,000 mt of bigeye tuna in 2004 with longline gear to no more than 2,000 mt for each of the years 2014 through 2017. However, paragraph 7 of CMM 2013-01 does not establish an individual limit on the amount of bigeye tuna that may be harvested

annually in the Convention Area by SIDS and PTs, including American Samoa, Guam, and the CNMI.

NMFS implemented the annual U.S. longline catch limit of 3,763 mt for bigeye tuna in the WCPO through rulemaking for each of the calendar years 2009 through 2014 (see 50 CFR § 300.224; 78 FR 58240, Sept. 23, 2013). The U.S. bigeye tuna catch limit generally applies to Hawaii-based shallow-set and deep-set longline fisheries (hereafter Hawaii longline fishery) that land their catch in Hawaii. Because catches of the U.S. Participating Territories do not count against the U.S. limit, catches from the WCPO by Territory longline fisheries that land in Hawaii or the Territories do not count towards the U.S. bigeye tuna catch limit. This is applicable as long as the catch is not harvested from the U.S. EEZ surrounding Hawaii (see 50 CFR § 300.224).

In 2009 and 2010, the Hawaii longline fishery reached the limit prior to the end of the calendar year and NMFS prohibited retention of bigeye tuna in the WCPO. In 2011, NMFS forecasted that the limit would be reached in late-November. At that time, and under the authority provided in Section 113(a), the American Samoa government entered into a two-year fishing agreement with U.S. vessels in the Hawaii Longline Association (HLA), which include nearly all vessels operating in the Hawaii longline fishery. Consistent with Section 113(a), NMFS attributed 628 mt of bigeye tuna caught by HLA vessels under the agreement in 2011 to American Samoa.

A similar situation occurred in 2012, whereby NMFS predicted that the Hawaii longline fishery was going to reach the U.S. bigeye tuna limit in late November. Under the agreement between American Samoa government and HLA, NMFS attributed 771 mt of bigeye tuna to American Samoa. In 2011 and 2012, consistent with the provisions of Section 113, the agreement included payments to the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in the American Samoa MCP.[4] A similar agreement was made in 2013 between Hawaii longline vessels permitted under the FEP and the CNMI government.

To meet the purpose and need of the action, the Council and NMFS developed a range of Alternatives that would that satisfy the Congressional direction to implement Section 113, consistent with the Magnuson-Stevens Act. See Chapter 2 for a description of the Alternatives. This document describes and analyzes the potential environmental, social, and economic impacts of four Alternatives:

1) No-action / Status quo. No FEP amendment, but manage Territory limits consistent with existing provisions of Section 113;
2) Section 113 ends leaving no authorization for Territory agreements;
3) Amend the Pelagics FEP to establish a process identical to Section 113; and
4) Amend the Pelagics FEP to establish a process consistent with Section 113 and include additional conservation and management measures pertaining to catch or effort limits and transfer limits (Council preferred).

Under Alternative 4, two sub-alternatives are considered whether to specify annual longline catch limits in the Territories for bigeye tuna and limits on the annual amount a Territory may transfer under an agreement with eligible FEP-permitted vessels:

[4] See Magnuson-Stevens Act section 204(e) for more on the authorization and approval process of Territory MCPs and the authorization of the Western Pacific Sustainable Fisheries Fund.

4(a) No-action - no total annual longline limits for bigeye tuna would be established or limits on the amount a Territory could transfer under an approved agreement; and
4(b) Specify 2,000-mt total annual longline catch limits and 1,000-mt transferable catch limits for bigeye tuna per Territory, to be reviewed and recommended by the Council annually, as appropriate (Council preferred).

The potential impacts of the Alternatives to the affected human environment are summarized in Table 1.

Table 1: Summary of impacts from the alternatives considered in detail.

Alternative 1. No Action / Status quo. Manage Territory Limits Consistent with Existing Provisions of Section 113	**Alternative 2. Section 113 Authority Ends.**	**Alternative 3. Amend Pelagics FEP to Establish a Process Identical to Provisions of Section 113**	**Alternative 4. Amend Pelagics FEP to Include Provisions of Section 113, and Provide for Specification of Territory Catch/Effort and Transfer Limits (Council Preferred)**
Summary of Potential Fishery Outcomes			
U.S. Territories could make fishing agreements with U.S. vessels permitted under the Pelagics FEP through 2013. Agreements require funds to be deposited into the Western Pacific Sustainable Fisheries Fund (WP SFF). No U.S. or Territory fishery is expected to expand substantially in the near future. Over time, it is expected that projects in Territory Marine Conservation Plans (MCPs) funded from agreements would enhance Territory fisheries, but these fisheries would be managed sustainably under the Pelagics FEP whether or not international limits apply. Fishing agreements are expected to allow the FEP-permitted longline fishery to fish for highly migratory species (HMS), like tuna, throughout the fishing year, while allowing some catch or effort to be attributed to Territories under approved agreements.	U.S. Territories could not make fishing agreements with U.S. vessels permitted under the Pelagics FEP starting in 2014. U.S. and Territory fisheries are expected to continue to be sustainable whether or not international limits apply. No U.S. or Territory fishery is expected to expand substantially in the near future. No funds would be deposited into the WP SFF from agreements; so there could be less financial support for projects NMFS approves in Territory MCPs. Fisheries would remain sustainably managed, but Territory fisheries may continue to be underdeveloped. U.S. longline fisheries managed under the Pelagics FEP would continue to fish sustainably for all HMS; but once limits are reached, could face restrictions. For bigeye tuna, once the U.S. longline limit for bigeye tuna in the western and central Pacific Ocean (WCPO) is reached, Hawaii longline fishermen would have to stop fishing in the WCPO	Fishery outcomes would be similar to Alternative 1 but continuing after 2013.	U.S. Territories could make fishing agreements with U.S. vessels permitted under the Pelagics FEP. Agreements would be subject to review by the Council and NMFS. Agreements require funds to be deposited into the WP SFF or that vessels under an agreement make landings into the applicable Territory. U.S. and Territory fisheries are expected to continue to be sustainable whether or not international limits apply. No U.S. or Territory fishery is expected to expand substantially in the near future. Over time, it is expected that MCP projects funded from agreements would enhance Territory fisheries, but fisheries would remain sustainably managed. Fishing agreements are expected to allow the FEP-permitted longline fishery to fish throughout the fishing year, while allowing some catch or effort to be attributed to Territories under approved agreements for purposes of responsible

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	or fish in the eastern Pacific Ocean (EPO), which is managed by the Inter-American Tropical Tuna Commission (IATTC) under different fishery management conditions.		fisheries development and conservation and management of HMS stocks. <u>Sub-Alternative 4(a) No-action:</u> Same impacts as under Alternative 1. <u>Sub-Alternative 4(b) (Council preferred):</u> Territories would be subject to Council-recommended and NMFS-implemented catch or effort limits and transfer limits. Council annually reviews and recommends these limits.
Impacts to Target and Non-target Stocks			
Territory fisheries would be managed to be sustainable. However, because Territory agreements are not subject to maximum catch or effort limits and transferable limits, over time, large amounts of HMS catch or effort limits could be caught or expended, and transferred under agreements and this has the potential to exceed Pelagics FEP conservation objectives. With Territory agreements, U.S. vessels are expected to continue to be able to fish throughout the year. Under the current level of participation of FEP-permitted vessels, impacts of fishing year-round on target and non-target species are predicted to be sustainable.	Without possibility of Territory agreements, there could be no catches of any HMS or non-target species attributed under Territory agreements, although, similar to all Alternatives fishing would be managed sustainably. With regard to bigeye tuna, this would reduce U.S. WCPO longline catches by approximately 700 mt, because the prohibition on the harvest and landing of bigeye tuna in the WCPO by the U.S. longline fishery would occur at 3,763 mt. Although more conservative than Alternative 1, the difference between 700 mt of bigeye tuna caught or not caught by U.S. longline vessels in the WCPO is negligible (less than 1 percent) to stock status of bigeye tuna,	Impacts expected to be the same as Alternative 1 but continuing after 2013. The impacts of FEP-permitted longline fisheries fishing year-round on target and non-target species would continue to be managed to be sustainable.	Under this Alternative, with the ability to enter into agreements, FEP-permitted longline fisheries are expected to be able to fish year-round and the impacts to target and non-target stocks would be sustainable. If a Territory catch or effort limit and transfer limit is specified, this would help to ensure that the amount of HMS catch or effort limit is not excessive and would help to ensure that catches of HMS in the western Pacific do not exceed conservation objectives of the Pelagics FEP. <u>Sub-Alternative 4(a) No-action:</u> Council could not recommend and NMFS could not specify Territory catch or effort limits and transfer limits. Same impacts as described under Alternative 1.

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For example, the amount of WCPO-caught bigeye tuna transferred under an agreement between American Samoa and Hawaii Longline Assn. (2011-2012) was approximately 700 mt per year. Other catches of non-target species were from a couple of hundred mt to less than 50 mt and the amount of non-target species caught in 2011 and 2012 and attributed to American Samoa is believed to be sustainable. The reallocation of catch or effort limits among U.S. PTs and U.S. fisheries does not interfere with the accomplishment of CMM 2013-01 objectives, and the implementation of WCPFC measures to achieve further reductions in bigeye tuna mortality. However, Section 113 does lack a management framework for additional Council and NMFS conservation measures, or terms and conditions, to ensure that future levels of catch or effort assigned under Territory agreements are sustainable.	and would confer only a slight conservation benefit over Alternative 1. Similar to the impacts to bigeye tuna described above, catches of non-target stocks by FEP-permitted longline vessels fishing in the WCPO would be reduced by a couple hundred mt to tens of mt per year. When the U.S. longline WCPO bigeye tuna catch limit is reached, Hawaii longline fishing effort would likely move to the EPO, where a similar amount of fish that could have been caught under a Territory agreement would likely be caught in the EPO, albeit under more variable conditions. IATTC manages many of these HMS stocks, including bigeye tuna, separately in the EPO.		<u>Sub-Alternative 4(b) (Council preferred):</u> Territory annual longline catch limit of 2,000 mt for bigeye tuna and an annual transfer limit of 1,000 mt of bigeye tuna for each Territory would be established. This would result in a more conservative regime than what is currently provided to the Territories under WCPFC and under Alternative 1, and thus would help prevent overfishing of bigeye tuna. Sub-Alternative 4(b) could limit each Territory to transfer up to 1,000 mt of bigeye tuna under agreements. Catches by Hawaii and Territory longline fisheries, when combined with U.S. longline limit for WCPO bigeye tuna (3,763 mt) would have negligible impacts on bigeye tuna stocks in terms of overfishing and overfished reference points, and thus not expected to impede the ability of U.S. longline vessels to harvest optimal yield on a continuing basis. U.S. longline fisheries managed under Pelagics FEP are not expected to expand substantially in near term (Hawaii and American Samoa longline fisheries are subject to limited entry). However, if all

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			of the potential 9,763 mt of bigeye tuna were caught by U.S. longline fisheries in the WCPO, projections indicate marginal impacts on WCPO bigeye tuna in terms of overfishing and overfished reference points. This is because bigeye tuna in the WCPO is harvested across a range of fishing gears and the U.S. contribution to bigeye tuna fishing mortality is only a small percentage of total bigeye tuna catches. Sub-Alternative 4(b) could demonstrate improved conservation for WCPO bigeye tuna by implementing catch limits for the Territories, which under WCPFC measures, do not apply. Harvests of other target and non-target species are expected to remain sustainable.
Impacts to Protected Species			
All Pelagics FEP managed fisheries would continue to operate within existing ESA and MMPA authorizations. Guam and CNMI longline fisheries are unlikely to develop substantially in near term, thus continuing minor baseline impacts anticipated for Marianas pelagic troll, handline, and	All Pelagics FEP managed fisheries would continue to operate within existing ESA and MMPA authorizations. Fisheries development opportunities curtailed, resulting in Guam and CNMI longline fisheries unlikely to develop and American Samoa longline fishery with reduced potential to diversify.	All Pelagics FEP managed fisheries would continue to operate within existing ESA and MMPA authorizations. Impacts expected to be same as Alternative 1 but continuing after	All Pelagics FEP managed fisheries would continue to operate within existing ESA and MMPA authorizations. <u>Sub-Alternative 4(a):</u> Potential impacts would be the same as in Alternative 1. <u>Sub-Alternative 4(b):</u> Potential impacts to protected species may be lower than Alternative 1 as Territory 2,000-mt

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longline fisheries. Fisheries development in American Samoa may lead to diversification of longline fishery, but fishing operations (required deep-set) and protected species mitigation requirements would be maintained under existing regulations. Protected species mitigation measures for Hawaii longline fishery unchanged, and baseline levels of protected species interactions maintained.	Impacts to protected species from Pelagics FEP managed fisheries expected to be unchanged from baseline levels. Since Hawaii is a significant seafood market, potential indirect impacts to protected species may occur if foreign fisheries with higher protected species interaction levels or that lack similar protected species mitigation measures fill market gaps left by a constrained Hawaii longline fishery.	2013.	longline catch limits per year and 1,000-mt transferable limits could restrict fishing effort. No FEP-permitted fishery is expected to expand substantially. Impacts to protected resources are not expected to exceed authorized levels.
Impacts to Essential Fish Habitats or Habitat Areas of Particular Concern			
Longline fishing does not materially affect benthic marine habitat under typical operations. Derelict longline gear may impact marine benthic habitats, especially substrate such as corals if carried by currents to shallow depths. Loss of longline gear during normal fishing operations is not believed to be at levels that result in significant or adverse impacts to EFH, HAPC, or the marine habitat. Adverse impacts from other FEP-permitted fisheries are not expected.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1. <u>Sub-Alternative 4(a) No-action:</u> Same as Alternative 1. <u>Sub-Alternative 4(b) (Council preferred):</u> Same as Alternative 1.
Impacts to Fishing Communities and Fishery Participants			
Territory agreements could provide funding for MCP projects, including fisheries development opportunities	No potential Territory agreements would mean the loss of a mechanism for Territories to obtain additional fisheries	Outcomes anticipated to be same as Alternative 1 but	Potential benefits from Territory agreements for fisheries development would be the same as Alternative 1.

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like infrastructure development, vessel capacity improvements, and fisheries training. Territory agreements could help build catch history for the U.S. Participating Territories in the WCPFC, supporting future recognition of the Territories in potential allocation decisions. Hawaii longline fishery participants expected to benefit from entering into Territory agreements, allowing them greater flexibility in fishing operations and locations, versus a closed fishery once the U.S. WCPO bigeye tuna longline limit is reached or fishing farther from the homeport in the EPO.	development funding. FEP-permitted fisheries would likely operate similar to 2009 and 2010. Hawaii deep-set longline fishery would likely be subject to restrictions for WCPO bigeye tuna during the year. This could result in potential negative impacts to fishery participants (longer trips to EPO) and Hawaii seafood community (poorer quality fish during winter holiday season), and potential safety at sea considerations when available fishing grounds in EPO are greater distances and during winter months when weather in North Pacific Ocean is frequently poor.	continuing after 2013.	Territories could develop catch history within WCPFC if catch or effort agreements are authorized. Hawaii longline fishery participants likely to benefit as under Alternative 1 from greater operational flexibility when fishing under a Territory agreement, i.e., being able to fish in the WCPO after U.S. longline limit for WCPO bigeye tuna is reached.
Impacts to Administration and Enforcement			
The status quo involves administrative costs associated with review of agreements, in-season monitoring and attribution of the U.S. WCPO longline catch limit for bigeye tuna by NMFS, and potential costs associated with notifying when the WCPO bigeye tuna limit is reached. Enforcement of any catch prohibition or Territory agreement has not typically been substantial and changes to monitoring or increased costs is not	Administrative costs would be reduced if Territory agreements were not authorized.	Same as Alternative 1 but continuing after 2013.	Administrative costs would be similar to Alternative 1 because there would be a need to monitor catches, review agreements, attribute catches, etc. This Alternative would have additional administrative costs to process annual specifications, for the Council annually review, and recommend catch or effort limits. <u>Sub-Alternative 4(a) No-action:</u> same as Alternative 1.

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expected.			Sub-Alternative 4(b) (Council preferred): A Territory catch limit of 2,000 mt and a transfer limit of 1,000 mt for bigeye tuna would include additional administrative costs over Sub-Alternative 4(a) that would be due to reviewing agreements to make sure they comply with the limits, and for the Council to annually review and recommend catch or effort limits.

Chapter 1: Introduction

1.1 Responsible Council and Agency

The Western Pacific Fishery Management Council (Council) was established by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Among its other fishery management responsibilities, the Council is to develop fishery management plans (FMPs)[5] for U.S. fisheries operating in offshore waters in the Exclusive Economic Zones (EEZs) of American Samoa, Guam, Hawaii, Commonwealth of the Northern Mariana Islands (CNMI), and the U.S. Pacific Remote Island Areas (PRIA).[6] Once a plan is approved by the Secretary of Commerce (Secretary), the National Marine Fisheries Service (NMFS), which acts on behalf of the Secretary, implements the plan through federal regulations, which are enforced by the NOAA Office of Law Enforcement and the U.S. Coast Guard, in cooperation with State, Territorial, and Commonwealth agencies. For further information about this management action, contact:

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1.2 Public Review Process

On December 30, 2013, NMFS published in the *Federal Register* a notice of availability for public review and comment of the proposed Pelagics FEP[7] amendment, which includes a draft Environmental Assessment (EA) and Regulatory Impact Review. On January 8, 2014, NMFS published the proposed rule that would implement the Council's preferred Alternatives in the *Federal Register* for public review and comment. Both documents were available at www.regulations.gov or by contacting the Council or Agency official at one of the above addresses. NMFS received several comment letters and two petitions from non-governmental organizations, a comment letter from a group representing most of the Hawaii longline fleet, and comments from individuals on draft Amendment 7 and EA, and the proposed rule. NMFS considered the information provided in all of the comments and references received. NMFS has taken into account the information, views, and comments received from interested persons, and

[5] In 2009, the Council developed and NMFS implemented five new archipelagic-based fishery ecosystem plans (FEPs). The FEPs incorporated and reorganized elements of the Councils' species-based FMPs into spatially-oriented ecosystem plans (75 FR 2198; January 14, 2010). All applicable regulations were retained through the development and implementation of the five FEPs, and no substantive changes to the fisheries occurred, including around Hawaii.
[6] The PRIA include Howland, Baker, Jarvis, and Wake Islands, Palmyra, Midway, and Johnston Atolls, and Kingman Reef.
[7] Pelagics FEP means the Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region.

detailed responses will be prepared in conjunction with the final rule. NMFS has incorporated information from public comments but did not substantively change the action. In response to comments that provided information about potential cumulative impacts from the action given a background of potential ecosystem effects of longline fishing, NMFS added an analysis of potential impacts to target and non-target species, and cumulative impacts. In response to a public comment, NMFS made a minor technical correction to the final regulation to reflect that both signatory owners and representatives of U.S. vessels may administratively appeal agency decisions regarding specified fishing agreements. NMFS also made technical clarifications in the final rule. The public can view the final rule, including public comments and NMFS' responses at www.regulations.gov with a search using the regulatory identifier number (RIN) "0648-BD46" or the docket number "NOAA-NMFS-2012-0178". The final rule is effective 30 days after the rule publishes in the *Federal Register*.

1.3 Document Overview and Preparers

This is a combined Pelagics FEP amendment and EA, including a Regulatory Impact Review. The contents of this document comply with Magnuson-Stevens Act requirements for amendments to fishery management plans and with National Environmental Policy Act (NEPA) requirements. This document describes the Council's recommended fishery management measures, Alternatives, and potential environmental effects. It will serve as the basis for a determination by NMFS on whether or not to prepare an Environmental Impact Statement. It will also inform NMFS in its development of regulations that would implement the selected action, if approved by NMFS on behalf of the Secretary.

The combined FEP amendment and EA was prepared and reviewed by Council staff and staff of the Sustainable Fisheries Division in the NMFS Pacific Islands Regional Office (PIRO). An interdisciplinary approach was used in the preparation of this document. This action was coordinated with the Coastal Zone Management Program offices in American Samoa, CNMI, Guam, and Hawaii (for CZM compliance); NMFS' PIRO Protected Resources Division (to coordinate on potential impacts to marine mammals under the Marine Mammal Protection Act (MMPA) and species listed under the Endangered Species Act (ESA), and other protected resources; and the NMFS PIRO Habitat Conservation Division (to coordinate on potential impacts to Essential Fish Habitat and Habitat Areas of Particular Concern).

This document was prepared by (in alphabetical order, by organization):

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1.4 Background Information

Management of Highly Migratory Species in the Pacific Ocean

The United States is a signatory to the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Convention). The United States and 42 other members, cooperating non-members, and participating territories comprise the Western and Central Pacific Fisheries Commission (WCPFC), which governs international management of highly migratory fish stocks (e.g., tuna, marlin) in the western and central Pacific Ocean (WCPO) based on the provisions of the Convention. Conservation and management measures (CMMs) are developed by the WCPFC and, when applicable, implemented for fisheries of the U.S. and its Participating Territories by NMFS under the Western and Central Pacific Fisheries Convention Implementation Act (16 U.S.C. § 6901, *et seq*.) ("WCPFCIA") and under procedures established under the Magnuson-Stevens Act (16 U.S.C. § 1801 *et seq.*). The U.S. Participating Territories are American Samoa, Guam, and CNMI. The Convention Area comprises the majority of the WCPO (Figure 1).

The Inter-American Tropical Tuna Commission (IATTC), another international regional fishery management organization (RFMO), manages highly migratory species (HMS) in the eastern Pacific Ocean (EPO). The U.S. is a member of the IATTC (Figure 1). There are no U.S. Participating Territories within the IATTC. See Figure 1 for the areas of competency for the WCPFC and IATTC in the Pacific Ocean.

The current action affects only western Pacific pelagic fisheries in the WCPO areas managed in accordance with the WCPFC. The Convention provides the framework for the international management of HMS in the WCPO. Article 1 defines terms used in the Convention, including HMS. HMS are all fish stocks listed in Annex I of the 1982 United Nations Law of the Sea Convention (UNCLOS) as well as other such species the WCPFC may determine. Article 3 of the Convention states that the Convention applies to all HMS within the WCPFC Convention Area, and further, that CMMs shall be applied throughout the range of the stocks; in other words, applied to both the high seas and the exclusive economic zones (EEZs) of cooperating members and cooperating non-members.

Article 30 of the Convention recognizes the special needs of Small Island Developing States (SIDS) and Participating Territories (PTs). Among other provisions, Article 30 provides that WCPFC CMMs should take into account that SIDS and PTs are economically vulnerable and heavily dependent on their fisheries and should not be placed at a disadvantage in developing their fisheries as a result of measures intended to reduce the impact on tuna and other fish stocks by more developed nations. In recognition of these circumstances, CMMs adopted by the WCPFC recognize that SIDS and PTs have unique challenges in participating in some fisheries, and are often provided exceptions or special consideration with regards to allocations of fishing

privileges. In addition, the WCPFC recently agreed to CMM 2013-07 which identifies several issues associated with the special requirements of SIDS and PTs including supporting domestic fisheries, tuna related businesses, and market access. Under the Convention, American Samoa, Guam, and CNMI (collectively, the Territories) are recognized as Participating Territories.[8]

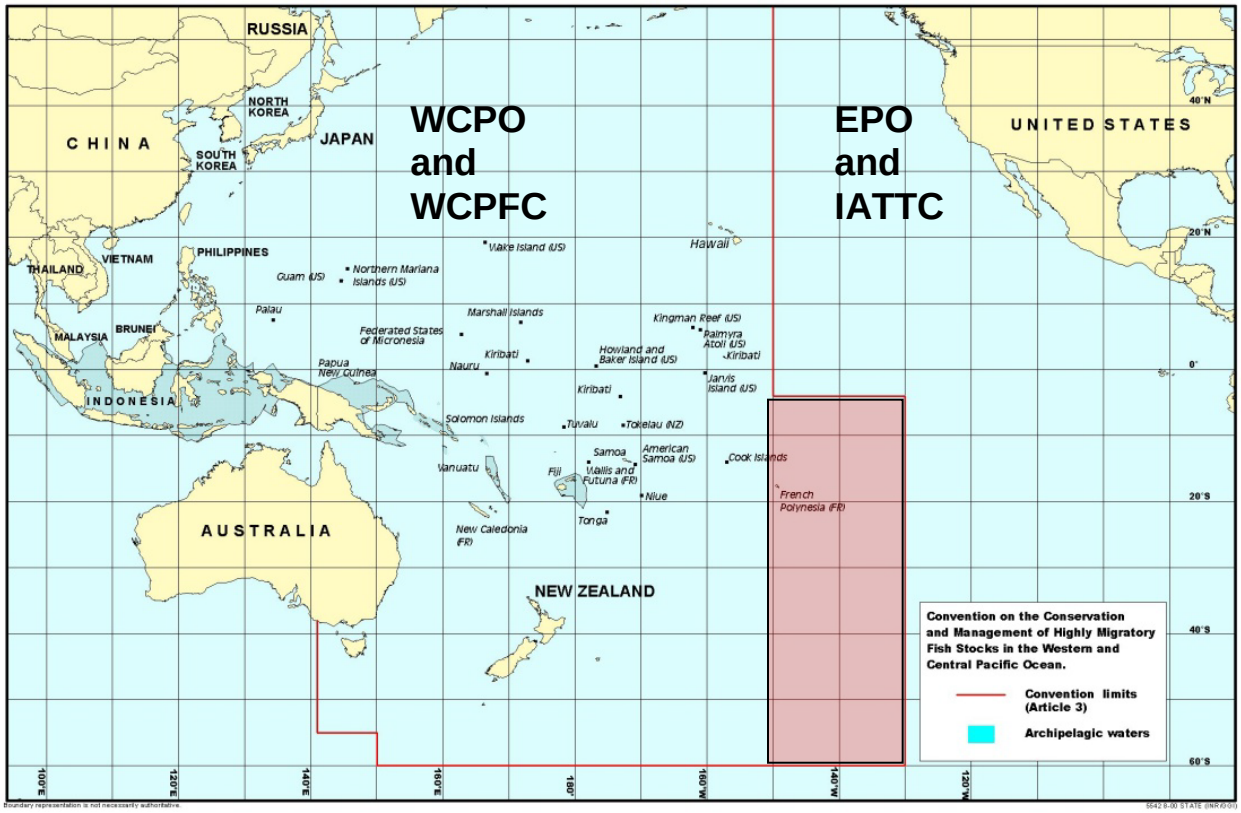

Figure 1: WCPFC and IATTC areas of competency in the Pacific Ocean.
Note: Shaded area represents an area of overlap of the Convention Areas of the WCPFC and IATTC.

The WCPFC has agreed on several CMMs for WCPO HMS stocks since its First Regular Meeting in 2004 (see Table 2). These CMMs include a mix of catch and effort limits applicable to WCPFC members, cooperating non-members, and PTs. To date, the WCPFC has only agreed on catch limits for bigeye and yellowfin tunas and striped marlin.[9] Generally, when WCPFC members endorse a fishery management measure, the individual members are responsible for implementing the requirements under domestic regulations for their fisheries and vessels flying their flag.

[8] The Territories are allowed to participate in all WCPFC meetings and subsidiary bodies; however, they are unable to vote on procedural and substantive matters before the WCPFC.
[9] The WCPFC agreed to catch limits for yellowfin tuna in CMMs 2008-01 and 2011-01, but CMM 2012-01 does not contain catch limits for the species in the Convention Area.

Table 2: Recent WCPFC conservation and management measures (CMM) for HMS stocks.

Fish stock and WCPFC CMM number	Measure	Exemption for SIDS/PTs
S. Pac. Albacore (2010-05)	Limit vessels fishing for S. Pac. albacore S. of 20° S at 2005 levels	Yes
S. Pac. Swordfish (2009-03)	Limit vessels fishing for swordfish S. of 20° S between 2000-2005 and limit catch any amount between 2000-2006	Yes
SW Pac. Striped Marlin (2006-04)	Limit vessels fishing for SW Pacific striped marlin S. of 15° S to 2000-2004 levels	Yes
N. Pac. Striped Marlin (2010-01)	Limit catch for NP striped marlin from highest years between 2000-2003 and reductions of 10% in 2011, 15% in 2012, and 20% in 2013	Yes
N. Pac. Albacore (2005-03)	Limit fishing effort for N. Pac. albacore to 2005 levels	Yes
Pacific Bluefin Tuna (2010-04)	Limit fishing effort for Pac. bluefin tuna N. of 20° N to 2002-2004 levels for 2011 and 2012	Yes
Bigeye Tuna (2008-01) (2011-01) (2012-01) (2013-01)	Limits on purse seine fishing effort in EEZ and high seas ; Purse seasonal FAD closures; Longline bigeye tuna catch limits	Yes (exempt for longline limits)

Note: In addition to the CMMs listed in Table 2, WCPFC has agreed to measures that include requirements for vessel monitoring systems, observer coverage, high seas boarding and inspection, and at-sea transshipment. For more information on these measures, see www.wcpfc.int. For U.S. implementation of WCPFC measures see: http://www.fpir.noaa.gov/IFD/ifd_index.html.
Source: Review of the Performance of the WCPFC. WCPFC8-2011/12

WCPFC Management of Bigeye Tuna

Bigeye tuna is considered a Pacific-wide stock, but is separately managed and assessed in the WCPO and EPO. In the WCPO, bigeye tuna is experiencing overfishing, but not considered overfished (Davies et al. 2011). Bigeye tuna is not experiencing overfishing and is not overfished in the EPO (Aires-da-Silva and Maunder 2013). The area in the WCPO with the highest fishing mortality is along the tropical zone between 20 degrees North and 10 degrees South latitudes. Bigeye tuna are generally caught as adults in the WCPO longline fisheries and as juveniles in the WCPO purse seine fisheries. The WCPO purse seine fisheries and surface fisheries of Indonesia and the Philippines have an equal to or greater impact on the stock status of bigeye tuna in the WCPO as the longline fisheries in the same region. The 2011 stock assessment for bigeye tuna in

the WCPO concludes that the level of maximum sustainable yield (MSY) for bigeye tuna would rise if the mortality of small fish were reduced, allowing for greater overall yields to be sustainably attained (Davies et al. 2011).

In 2008, in order to address overfishing of bigeye tuna in the WCPO, the WCPFC adopted CMM 2008-01, with the objective of reducing bigeye tuna fishing mortality by 30 percent from 2001-2004 levels. CMM 2008-01 required WCPFC members to implement the following measures for their purse seine fisheries: fishing effort limits for the high seas and EEZ at 2001-2004 levels, seasonal FAD closure period (2 months in 2009, 3 months in 2010 and 2011), closure of Western Pacific high seas pockets in 2010 and 2011, full catch retention in 2010 and 2011, and 100 percent observer coverage if fishing during the FAD closure period in 2009, as well as 100 percent observer coverage for the entire years in 2010 and 2011. CMM 2008-01 also established annual longline catch limits that would reduce bigeye tuna catches over a three-year period by 30 percent of the 2001-2004 baseline. Fresh fish longline fisheries that caught less than 5,000 mt per year were required to reduce longline landings of bigeye tuna by 10 percent in 2009. This provision effectively only applied to the USA (Hawaii longline fishery). The SIDS and PTs were provided 2,000-mt annual longline limits; however, if conducting responsible fisheries development, then the 2,000-mt limits did not apply.[10] The WCPFC rolled-over several provisions of CMM 2008-01 in March 2012 as an interim measure for 2012.

Accordingly, in both 2009 and 2012, NMFS implemented annual longline bigeye tuna catch limits of 3,763 metric tons (mt) for calendar years 2009-2012 applicable to the Hawaii longline fishery.[11] Under the NMFS regulations, if the limit is reached, the retention on board, transshipment or landing of bigeye tuna by federally permitted vessels of the Hawaii longline fishery in the WCPO is prohibited through the remainder of the year, with certain exceptions.

The WCPO longline fishery reduced landings of bigeye tuna by approximately 20 percent from baseline levels (2001-2004 average or 2004 catch levels), the WCPO purse seine fishery's catch of bigeye tuna increased to record levels in 2011 (Williams and Terawasi 2013). At its 9th Regular Session, in December 2012, the WCPFC agreed on CMM 2012-01, which establishes a goal of reducing bigeye tuna mortality to a level $F/F_{MSY} \leq 1$[12], through a step-by-step approach through 2017. CMM 2012-01 maintained bigeye tuna limits for distant water fleets, including the U.S. limit of 3,763 mt, but did not provide annual longline bigeye tuna catch limits for any of the PTs or SIDS (Table 5). CMM 2012-01, among other things, also increased the FAD closure by a month, requiring a four-month purse seine FAD closure or equivalent reduction in purse seine FAD sets. CMM 2012-01 does not include an overall limit on bigeye tuna mortality.

[10] WCPFC CMM 2008-01, paragraph 34. The term "responsible fisheries development" is undefined in CMM 2008-01.

[11] See 74 FR 63999, published on December 7, 2009; and 77 FR 51709, published on August 27, 2012. The current limit is codified in Federal fishing regulations at Title 50 Code of Federal Regulations Part 300, Section 224 (50 CFR § 300.224).

[12] F/F_{MSY} is defined as the ratio of the fishing mortality rate (F; catch relative to the size of the stock) to the fishing mortality when the stock is being fished at maximum sustainable yield (F_{MSY}; the largest catch that can be taken from a specific fish stock over an indefinite period under constant environmental conditions). If the ratio is less than 1, fishing mortality (F) on the stock is sustainable.

In December 2013, the WCPFC agreed on a conservation and management measure (CMM 2013-01) that builds off CMM 2012-01. The measure applies to purse seine, longline, and other fisheries taking skipjack, yellowfin, and bigeye. To address impacts to bigeye tuna, the purse seine fishery, in 2014, is subject to a 4-month FAD closure or 3-month FAD closure plus a flag based FAD set limits shown in Attachment A of the measure. For years 2015 and 2016, CCMs with purse seine fisheries can either choose to restrict their vessels to a 5-month FAD closure plus limiting their vessels to their 2010-2012 FAD set average or restrict their vessels to a 3 month FAD closure plus restrict their vessels to FAD set limits shown in Attachment A of the measure. For 2017, CCMs shall follow the purse seine options available for 2015 and 2016 in addition to prohibiting their vessels from FAD sets on the high seas for the entire calendar year.

For the longline fishery, CMM 2013-01 provides flag-based bigeye tuna catch limits through 2017 representing a 15 percent reduction from the limits established in 2012-01 (the limits represent an approximate 40 percent reduction from overall limits established under CMM 2008-01). Under CMM 2013-01, the U.S. WCPO longline bigeye limit for 2014 is maintained at 3,763 mt, but will be reduced 5.5 percent to 3,554 mt in 2015 and 2016. For 2017, the U.S. longline limit will be 3,345 mt, which represents an 11 percent reduction from the 3,763-mt level. If the reductions to the U.S. limit are taken collectively, the U.S. longline bigeye tuna limit of 3,345 mt represents a 20 percent reduction from the 2004 baseline level used in CMM 2008-01. The measure also limits members that harvested less than 2,000 mt of bigeye tuna in 2004 with longline gear to no more than 2,000 mt for each of the years 2014 through 2017. However, paragraph 7 of CMM 2013-01 does not establish an individual limit on the amount of bigeye tuna that may be harvested annually in the Convention Area by SIDS and PTs, including American Samoa, Guam, and the CNMI (see Table 6 and WCPFC CMM 2013-01).

Consistent with CMM 2013-01 and those CMM's it replaced, the U.S. bigeye tuna catch limit does not apply to any permit holders of American Samoa longline limited access or western Pacific general longline permits and land in American Samoa, Guam, or the CNMI. In addition, the U.S. bigeye tuna catch limit does not apply to American Samoa limited access permit holders that possess a Hawaii limited access permit and land in Hawaii (dual permits or dual-permitted), provided the fish are caught outside the U.S. EEZ around Hawaii.

In 2012, the WCPFC also agreed to a charter notification measure that applies to Commission Members and Participating Territories that charter, lease or enter into other mechanisms with eligible vessels[13] flagged to a another State or Fishing Entity for the purpose of conducting fishing operations in the Convention Area as an integral part of the domestic fleet of that chartering Member or Participating Territory (CMM 2012-05).[14] This measure directs WCPFC members and cooperating non-members to cooperate further on issues of attribution of catch and effort by chartered vessels.

[13] Only vessels listed on the WCPFC Record of Fishing Vessels or the WCPFC Interim Register of Non-CCM Carriers and Bunkers, and not on the WCPFC IUU vessel list, or IUU List of another RFMO, are eligible for charter (CMM 2012-05 para. 4).

[14] Vessel chartering agreements are a common tool for fisheries development in the WCPO whereby one party has vessels to offer and the other party has available resources or an allocation of such resources that it needs assistance in harvesting. Vessel chartering often involves foreign vessels being chartered by a chartering entity (government or business) whereby the vessel can fish on behalf of the chartering entity without having to reflag.

U.S. implementation of WCPFC Bigeye Tuna Conservation and Management Measures
The U.S. pelagic longline fisheries target highly migratory species (hereafter, western Pacific pelagic management unit species, or "pelagic MUS") in the U.S. EEZ (from 3-200 nm offshore) around American Samoa, Guam, and Hawaii, from 0-200 nm around the CNMI and PRIA, and on the high seas. These fisheries are federally managed by regulations under the authority of the Magnuson-Stevens Act through the Council's Pelagics FEP, which was approved by the Secretary in 2009. The Council develops and recommends management measures for longline fisheries in American Samoa, CNMI, Guam, and Hawaii, which, upon approval by the Secretary, NMFS implements through regulations.

As with measures for longline fishing, NMFS implements WCPFC measures for the U.S. purse seine fishery operating in WCPO through the WCPFCIA.

As documented in recent years, the Hawaii longline fleet has the capacity to harvest the entire U.S. bigeye tuna catch limit agreed to by the WCPFC before the end of the year. In 2009 and 2010, the limit was reached and harvest was prohibited until December 31 (see 74 FR 68190, December 23, 2009; and 75 FR 68725, November 9, 2010). Once the catch limit was reached, only bigeye tuna caught in the EPO or by vessels fishing under dual permits could land bigeye tuna in Hawaii. Due to the proximity of the EPO to the main Hawaiian Islands (approximately 120 east of Hilo, Hawaii), Hawaii longline vessels do fish in the EPO on a regular basis throughout the year, but the majority of their EPO effort is in the summer months.

NMFS also reports harvest of bigeye tuna by vessels under an American Samoa longline limited access permit or Western Pacific general longline permits to the WCPFC. Under 50 CFR § 300.224, harvest of bigeye tuna by vessels with an American Samoa longline limited access permit are attributed to American Samoa so long as the bigeye tuna were not caught in the U.S. EEZ around Hawaii and landed by a U.S. fishing vessel operated in compliance with a permit issued under the western Pacific fishing regulations at 50 CFR §§ 660.707 or 665.801. This provision recognized that vessels operating under American Samoa longline permits have established a sufficiently close connection with American Samoa such that catch on the high seas may be attributed to the Territory, regardless of where they are landed. Therefore, for example, fish caught outside of the EEZ around Hawaii may be landed in Hawaii and attributed to American Samoa so long as they have a Hawaii limited access permit and an American Samoa limited access permit. Combined annual bigeye tuna catches made by these dual-permitted vessels has been less than 400 mt since 2004. Catches of bigeye tuna made by longline vessels with only an American Samoa permit to fish and land in American Samoa or Western Pacific general longline permit that is used to fish and land in Guam and the CNMI are attributed to the respective Territory or Commonwealth.

Through a separate action, NMFS established a catch limit of 3,763 mt of bigeye tuna for U.S. vessels with only Hawaii longline permits and/or Western Pacific general longline permits not landing in the Territories operating in the WCPO for calendar years 2013 and 2014 (78 FR 58240, September 23, 2013).

Territory Interest in Responsibly Developing Their Fisheries

The Territories are interested in responsibly developing their fisheries (see the respective MCPs).[15] Pelagic fishing fleets of American Samoa, CNMI, and Guam currently do not target bigeye tuna and do not locally harvest more than 1,000 mt of bigeye tuna collectively on an annual basis. For example, the longline fleet based in American Samoa, which targets albacore, catches approximately 250-400 mt of bigeye tuna each year and its small-vessel troll fleet catches very few bigeye tuna (WPFMC 2012). From 2009 to 2012 up to four longline vessels fished around Guam and CNMI; however, fishing effort was low and sporadic and, therefore, catches of bigeye tuna were less than 100 mt per year. These vessels are no longer operating in Guam and CNMI (WPFMC 2012). High operating costs associated with vessel docking in Saipan along with poor market access are believed to be contributing factors to the recent halt of longline fishing in the Marianas. For example, the company that was conducting the Marianas longline operations was unsuccessful in securing contracts to provide fish to the U.S. military on Guam, which was an objective in their business model.

While the U.S. Participating Territories do not currently have significant longline fisheries for bigeye tuna, responsibly developing their fisheries, as aspired to by other SIDS and PTs, would promote economic growth and food security. The ex-vessel value of all longline caught bigeye tuna from the WCPO in 2012 was over $800 million, yet bigeye tuna catches from all of the SIDS and PTs represent less than 10 percent total WCPO bigeye tuna longline catches (Williams and Terawasi 2013). This suggests that the revenues derived by longline fishing for bigeye tuna in the WCPO are skewed towards distant water fishing nations. Longline catches of bigeye tuna in the WCPO are dominated by Japan, Korea, China, and Chinese Taipei (see Tables 5, 6, and 7). For example, under CMM 2013-01 the 2014 U.S. longline limit for WCPO bigeye tuna is 3,763 mt per year, whereas Japan's 2014 longline limit for bigeye tuna is 19,670 mt, even though Japan harvested approximately 12,000 mt of bigeye in 2012.

In regards to fisheries development in the Territories, the Council acknowledges that one of the Findings of the Magnuson-Stevens Act is that:

"Pacific Insular Areas contain unique historical, cultural, legal, political, and geographical circumstances which make fisheries resources important in sustaining their economic growth (Magnuson-Stevens Act section 2 "Findings" para. 10)."

The Council further acknowledges that one of the policies of the Magnuson-Stevens Act is:

" to ensure that the fishery resources adjacent to a Pacific Insular Area, including resident or migratory stocks within the exclusive economic zone adjacent to such areas, be explored, developed, conserved, and managed for the benefit of the people of such area and of the United States (Magnuson-Stevens Act section 2 "Policy" para. 7)."

Legislative Background: Consolidated and Further Continuing Appropriation Act (CFCAA) of 2012

In November 2011, the U.S. Congress passed the CFCAA (Pub. Law 112-55, 125 Stat. 552 *et seq*.; see Appendix A), which was effective through 2012. In 2013, Section 113 was extended through the end of 2013 in the Commerce, Justice, Science and Related Agencies Appropriations Act, 2013 (Pub. Law 113-6, 125 Stat. 603, Section 110, the Department of Commerce

[15] See www.wpcouncil.org

Appropriations Act, 2013). Section 113 reflects Congress' intent that the WCPFC catch limits provided to the U.S. Participating Territories should be made available for transfer to qualifying U.S. longline vessels, and it provides a mechanism for such transfers provided that contractual agreements include support for the development of fishery infrastructure in the Territories. Specifically, under Section 113(a) of the CFCAA, U.S. Participating Territories to the Commission are allowed to use, assign, allocate, and manage catch limits of pelagic MUS, or fishing effort limits, agreed to by the WCPFC through agreements with U.S. vessels permitted under the Pelagics FEP. Additionally, Section 113(a) requires the Secretary (through NMFS) to attribute catches made by vessels operating under agreements to the U.S. Participating Territories for the purposes of annual reporting to the WCPFC.

The agreements must meet specific criteria in Section 113 for NMFS to attribute the catch to a Territory. Section 113(a) also provides that vessels under such agreements are integral to the domestic fisheries of the U.S. Participating Territories, provided that agreements do not impose requirements regarding where the vessels must fish or land their catch, and provided further that agreements are funded by deposits to the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in a Territory's Marine Conservation Plan (MCP).[16]

Section 113(b) also directs the Council to recommend an amendment to the Pelagics FEP and associated regulations to implement Section 113 (i.e., to enable the use, assignment, allocation, and management of catch limits of the pelagic species, or fishing effort limits, agreed to by the WCPFC and applicable to the Territories).

Territory Agreements in 2011, 2012, and 2013

Under the authority of Section 113(a), and for the purposes of responsible fisheries development, the American Samoa Government entered into a two-year (2011 and 2012) fishing agreement with the Hawaii Longline Association (HLA) that included payments to the Western Pacific Sustainable Fisheries Fund. Per Section 113, the Secretary (NMFS) attributed catches made by vessels operating under the agreement to the U.S. Territory that made the agreement. In 2011, NMFS forecasted that the U.S. bigeye tuna catch limit of 3,763 mt would be reached on November 17, 2011. In accordance with Section 113, between November 18 and December 31, 2011, NMFS attributed 628 mt of bigeye tuna caught by Hawaii longline vessels under the agreement to American Samoa. Hawaii longline vessels that were not part of the agreement were able to continue catching bigeye tuna in the WCPO under the remaining amount of the U.S. bigeye tuna catch limit.

In 2012, NMFS forecasted that the U.S. bigeye tuna catch limit of 3,763 mt would likely be reached on November 27, 2012. On November 20, 2012, NMFS began to attribute bigeye tuna catch by the vessels under the agreement to American Samoa for the remainder of 2012. Between November 20 and December 31, 2011, NMFS attributed 771 mt of bigeye tuna to American Samoa. Four active Hawaii longline vessels were not part of the American Samoa/HLA agreement. In both 2011 and 2012, the amount of bigeye tuna catch transferred under the American Samoa/HLA agreement was below the 2,000-mt WCPFC limit provided for American Samoa under WCFPC CMM 2008-01 and CMM 2011-01.

[16] Pursuant to Section 204(e)(4) of the Magnuson-Stevens Act, Marine Conservation Plans are developed by the Territories and approved by the Council and Secretary of Commerce.

It is anticipated that American Samoa will use the funds derived from the agreement on projects identified in its MCP, such as supporting infrastructure improvements in Pago Pago Harbor relating to upgrading vessel docking space and on other associated fisheries development projects. HLA completed payments into the Sustainable Fisheries Fund in late 2012; however, NMFS has yet to make the total amount available due to fiscal cycles. Total funding from the American Samoa/HLA agreement will become available in early 2014. Specific projects that are implemented under any Territory's MCP are not part of this action. Environmental reviews and coordination with other agencies for MCP projects would be done separately once a detailed proposal is available.

In 2013, the CNMI government entered into an agreement with Hawaii longline vessels permitted under the Pelagics FEP. In accordance with 50 CFR 300.224(g)(2), the start date for attribution of catches to CNMI was December 5, 2013. As of late March 2014, landings data for catch attributed to the CNMI under the 2013 agreement are unavailable. However, the preliminary estimate of the amount of bigeye tuna attributed to the CNMI in 2013 is less than amounts attributed to American Samoa in 2011 or 2012 (K. Bigelow, PIFSC, pers. comm., March 21, 2014).

1.5 Council Actions

At its 145th meeting (July 2009), the Council directed its staff to prepare an amendment to the Pelagics FEP to establish annual longline limits for the Territories and to establish criteria for assigning bigeye tuna longline catches against Territorial annual limits under CMM 2008-01. The Council made this recommendation recognizing the need to implement annual longline limits to support bigeye tuna conservation, while understanding the impacts of the U.S. limits on the fishing communities of the Western Pacific Region, and the inability of the U.S. Participating Territories to utilize their bigeye tuna limits because of their underdeveloped pelagic fisheries and infrastructure. The Council further recommended providing the Territories the authority to enter into agreements with U.S. fishing vessels to support responsible fisheries development.

At its 146th meeting (October 2009), the Council took final action and recommended amending the Pelagics FEP. After staff further developed a draft amendment, at its 148th meeting (June 2010), the Council refined its recommendation by recommending limiting the total annual amount of catch or effort each of the Territories could assign under domestic chartering agreements. The Council also recommended NMFS require that fishermen hold federal longline permits in order to enter into domestic chartering agreements. This requirement sought to provide the Council and NMFS with regulatory oversight.

Prior opportunities for public comment on these issues were offered at Council meetings identified above and at public meetings of Council's advisory bodies (e.g., Science and Statistical Committee, Pelagics FEP Plan Team, and Pelagics FEP Advisory Panel).

Prior to the establishment of Section 113, which came into effect in November 2011, the Council was working in coordination with NMFS to finalize the 2010 Pelagics FEP amendment for transmittal for Secretarial review. However, as described earlier, Section 113 directed the

Council to recommend an amendment to the FEP to implement Section 113 provisions, which differed from the Council's 2010 recommendations to amend the Pelagics FEP.

At its 154th meeting (June 2012), the Council revised its 2010 amendment recommendations and recommended a new Pelagics FEP amendment to conform to Congress's directive in Section 113. At its 157th meeting (June 2013), the Council recommended establishing a 2,000-mt longline bigeye tuna limit for each of the Territories, which is included in the preferred Sub-Alternative 4(b) analyzed in this document. Although CMM 2012-01 did not provide annual longline limits for bigeye tuna caught by the PTs and SIDS, previous WCPFC CMMs (2008-01; 2011-01) provided for annual longline catch limits of 2,000 mt for bigeye tuna or an unlimited amount if undergoing responsible fisheries development. The current WCPFC Conservation and Management Measure for tropical tuna stocks (CMM 2013-01), adopted in December 2013, limits members that harvested less than 2,000 mt of bigeye tuna in 2004 to no more than 2,000 mt for each of the years 2014 through 2017. However, paragraph 7 of CMM 2013-01 does not establish an individual limit on the amount of bigeye tuna that may be harvested annually in the Convention Area by Small Island Developing States and Participating Territories, including American Samoa, Guam, and the CNMI. Establishing a 2,000-mt limit addresses concerns relating to the overfishing stock status of bigeye tuna, and when combined with the U.S. WCPO bigeye tuna limit, provides for a single upper limit for U.S. longline fisheries managed under the Pelagics FEP.

Council's June 2013 Recommendation as Amended

The Council recommends amending the Pelagics FEP to establish the following management framework:

1. Provide the Territories the authority to use, assign, allocate, and manage catch limits of pelagic MUS, or fishing effort limits that are established by the WCPFC, through agreements with U.S. vessels permitted under the Pelagics FEP. Further, the authority provided in this Pelagics FEP amendment may be subject to maximum annual limits, and any other terms or conditions, as recommended by the Council and approved by the Secretary of Commerce.
2. Establish annual longline bigeye tuna catch limits for each of the Territories based on the SIDS/PTs provisions in the WCPFC CMMs for tropical tunas, and further that the Council review this limit on an annual basis.
3. Establish that the Territories may assign all or a portion of their annual catch or effort limits through agreements with U.S. vessels permitted under the FEP, and further that the Council may make recommendations to NMFS for this limit and will review this limit on an annual basis.
4. Establish that vessels fishing under such an agreement be considered integral to the domestic fishery of the U.S. Territory with which an agreement has been made, provided that such agreement satisfy either of the following:

    i) It contains no requirements regarding where such vessels must fish or land their catch, and shall be funded by deposits to the Western Pacific Sustainable Fisheries Fund in material support of fisheries development projects identified in a territory's MCP, and further that the funding of such agreements authorized under this Pelagics FEP amendment shall be of a sufficient amount to substantially contribute to MCP fisheries development objectives; or

ii) It provides a landing requirement to offload catch in the ports of the Territory for which the agreement exists.

5. Establish that agreements authorized under this Pelagics FEP amendment shall become effective 30 days after submission to the Council and NMFS, unless the Regional Administrator, with the advice and recommendation of the Council's Executive Director, determines that the agreement does not comply with the Pelagics FEP or applicable law. Further, establish that catch or effort under qualifying agreements shall be subject to attribution to the applicable Territory for purposes of annual reporting to WCPFC.

Using the framework described above, the Council also recommends the following specifications:

6. An annual bigeye tuna longline catch limit of 2,000 mt per year for each Territory.
7. An annual transferable limit of 1,000 mt of bigeye tuna for each Territory that may be transferred under agreements with eligible U.S. longline vessels permitted under the Pelagics FEP.

Opportunities for public comment on these issues were offered at Council meetings identified above as well as at public meetings of Council's advisory groups.

1.6 Purpose and Need

The purpose of this action is to enable the responsible development of Territory fisheries by establishing a management framework and uniform region-wide process to administer the U.S. Participating Territories' use, assignment, allocation, and management of catch limits of pelagic MUS, or fishing effort limits, through agreements with U.S. vessels permitted under the Pelagics FEP. This action intends to make ongoing management of western Pacific pelagic fisheries consistent with the provisions of Section 113, and international and domestic conservation and management requirements.

The need for this action is to ensure that Section 113 agreements are implemented and managed consistent with the conservation requirements of the Convention, WCPFC conservation and management measures (e.g., CMM 2012-01, CMM 2013-01, CMM 2012-05), and consistent with the Magnuson-Stevens Act, to prevent overfishing, to ensure the sustainability of affected fish stocks, and to provide for achieving optimum yield (OY) on a continuing basis. This action is also needed to assist the Territories to improve opportunities for responsible fishing and fishery development through supporting projects identified in approved MCPs.

1.7 Federal Action

This action would amend the Pelagics FEP to establish the following management framework:

1. Provide the Territories the authority to use, assign, allocate, and manage catch limits of pelagic MUS, or fishing effort limits that are established by the WCPFC, or, in the event the WCPFC does not agree on catch or effort limits, recommended by the Council and specified by NMFS, through agreements with U.S. vessels permitted under the Pelagics FEP. Further, the authority provided in this Pelagics FEP amendment may be subject to maximum annual

limits, and any other terms or conditions, as recommended by the Council and approved by the Secretary of Commerce.

2. Establish annual longline bigeye tuna catch limits for each of the Territories based on the SIDS/PTs provisions in the WCPFC CMMs for tropical tunas, and further that the Council review this limit on an annual basis.
3. Establish that the Territories may assign all or a portion of their annual catch or effort limits through agreements with U.S. vessels permitted under the FEP, and further that the Council may make recommendations to NMFS for this limit and will review this limit on an annual basis.
4. Establish that vessels fishing under such an agreement be considered integral to the domestic fishery of the U.S. Territory with which an agreement has been made, provided that such agreement satisfy either of the following:
   i) It contains no requirements regarding where such vessels must fish or land their catch, and shall be funded by deposits to the Western Pacific Sustainable Fisheries Fund in material support of fisheries development projects identified in a territory's MCP, and further that the funding of such agreements authorized under this Pelagics FEP amendment shall be of a sufficient amount to substantially contribute to MCP fisheries development objectives; or
   ii) It provides a landing requirement to offload catch in the ports of the Territory for which the agreement exists.
5. Establish that agreements authorized under this Pelagics FEP amendment shall become effective 30 days after submission to the Council and NMFS, unless the Regional Administrator, with the advice and recommendation of the Council's Executive Director, determines that the agreement does not comply with the Pelagics FEP or applicable law. Further, establish that catch or effort under qualifying agreements shall be subject to attribution to the applicable Territory for purposes of annual reporting to WCPFC.

Using the framework described above, this action would also make the following specifications:

6. An annual bigeye tuna longline catch limit of 2,000 mt per year for each Territory.
7. An annual transferable limit of 1,000 mt of bigeye tuna for each Territory that may be transferred under agreements with eligible U.S. longline vessels permitted under the Pelagics FEP.

1.8 Action Area

The action area is the area of operation for U.S. vessels permitted under the Pelagics FEP and other federal regulations. This generally includes the U.S. EEZ (3-200 nm offshore, except around CNMI and the PRIA where the EEZ is 0-200 nm) around the U.S. Territories and State of Hawaii and the high seas within the WCPFC Convention Area.

Chapter 2: Description of Alternatives

A main feature common to all alternatives is that the longline fisheries of the western Pacific region would continue to be managed in accordance with the Pelagics FEP and its associated regulations, and other applicable laws. Regardless of which alternative is selected, the existing American Samoa and Hawaii longline fisheries will continue to be limited entry fisheries that are subject to a suite of management measures to ensure they are sustainable. Longline fisheries that develop in Guam and CNMI would also be managed under the Pelagics FEP and include management provisions to ensure sustainability. Management measures applicable to western Pacific longline fisheries include requirements for permits, pre-trip notification of American Samoa- and Hawaii-based fishing trips, logbooks, placement of a government-furnished observer, vessel monitoring system, use of circle hooks and other specific gear requirements, prohibited fishing areas, and requirements related to the safe handling of protected species to reduce the severity of interactions.

2.1 Alternative 1 - No action / Status quo - Manage Territory Limits Consistent with Existing Provisions of Section 113

Under this Alternative, the Council would not amend the Pelagics FEP and Section 113 agreements would continue to apply to the U.S. and Territories as currently authorized in 2013 under the CFCAA.

Under Alternative 1, the Territories could harvest the amount of pelagic MUS that is agreed to by the WCPFC. At present, under the existing regulatory regime and Section 113, the Territories can harvest an unlimited amount of bigeye tuna and transfer an unlimited amount to eligible U.S. vessels permitted under the Pelagics FEP. Any qualifying Territory fishing agreement would be managed as NMFS did in 2011 and 2012 under the current regulatory mechanism at 77 FR 51709 and 50 CFR § 300.224. Specifically, the existing regulations require the following:

1) NMFS determines whether an agreement satisfies the requirements of Section 113(a) of the 2012 CFCAA, for the attribution of pelagic MUS (including bigeye tuna) to the longline fishery of American Samoa, Guam, or the CNMI according to the following criteria:
    (a) Vessels included under the agreement must be registered for use with valid permits issued under the Pelagics FEP;
    (b) The agreement must not impose any requirements regarding where the vessels included in the agreement fish or land their catch;
    (c) The agreement must be signed by the owners of all the vessels included in the agreement or their designated representative(s);
    (d) The agreement must be signed by an authorized official of American Samoa, Guam, or the Commonwealth of the Northern Mariana Islands or his or her designated representative(s); and
    (e) The agreement must be funded by deposits to the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in the MCP of American Samoa, Guam, or the CNMI adopted pursuant to Magnuson-Stevens Act section 204.

2) NMFS notifies the parties to the agreement or their designated representative(s) within 14 days of receiving a copy of the agreement, if the agreement does not meet the criteria specified in paragraph above.

3) Catch attribution: For the purposes of annual reporting to the WCPFC, NMFS will assign catches made under a Territory agreement to an applicable Territory starting seven days before the date[17] the U.S. catch limit is forecasted to be reached or 14 days after receiving a copy of the agreement, whichever date is later.

Under the No-action Alternative, there would be no mechanism for the Council to recommend or for NMFS to specify an annual catch or effort limit for the Territories and Territory agreements would not be subject to specified limits.

Table 3 shows the general steps for entering into agreements under Alternative 1.

The expected fishery outcome is that Territory agreements would allow NMFS to attribute longline catch of pelagic MUS or effort limits to a Territory shortly before the Hawaii longline fishery achieves a catch or effort limit. Agreements under Alternative 1 would support responsible fisheries development in the Territories by providing funds for approved MCPs. Territory fisheries would not be limited in the amount of catch or effort limit that they could transfer to other permitted fisheries. The Council and NMFS have not identified specific projects, and development of those projects is not part of the action under Alternative 1 and would be evaluated separately when projects are identified.

2.2 Alternative 2 - Section 113 Authority Ends

Under Alternative 2, Section 113 authority would end on December 31, 2013, and it is projected that Congress would not extend the Section 113 authorizations in 2014 and beyond, and that the Council's recommendation to amend the Pelagics FEP to implement Section 113 would not be approved or implemented by NMFS. This scenario was last observed in 2009 and 2010, when the Territories did not have the authority to assign or use their WCPFC-provided catch and effort limits through agreements with FEP-permitted vessels. This Alternative would not allow for Territory agreements to transfer catch limits to U.S. vessels, thereby eliminating a mechanism for the Territories to obtain substantial fisheries development funding.

The expected fishery outcome is that without the authority to enter into agreements, there could be no transfer of catch or effort limits from a Territory to FEP-permitted fishing vessels. It is expected that fewer funds would be available for approved MCPs in the Territories and, therefore, there could be fewer opportunities for fisheries development including improvements to Territory fishery infrastructure. The Hawaii longline fishery is expected to reach the U.S. WCPO catch limit for bigeye tuna before the year ends. Local markets and consumers would be

[17] NMFS tracks catch logs and uses the information to forecast the date the catch limit (or effort limit) is expected to be reached. If the limit will be reached within 28 days, NMFS will begin to attribute catch to a Territory agreement seven days prior to reaching that forecast date if a qualifying agreement has been received.

limited in the fresh pelagic fish from the Hawaii longline fishery. It is expected that fish caught by foreign fleets would be a significant source of pelagic fish.

Regardless of this Alternative, or the continuity of the U.S. longline fisheries in the WCPO for that matter, unless the WCPFC agrees on more effective conservation and management measures for bigeye tuna, the overfishing status of bigeye tuna in the WCPO is expected to continue. In other words, under this Alternative the potential conservation benefit of not harvesting bigeye tuna under agreements between the Territories and FEP-permitted vessels, approximately 700 mt annually under recent agreements, will not have a significantly beneficial effect on the overfishing status of bigeye tuna in the WCPO without additional international measures. It is unknown how long overfishing on bigeye tuna can continue before catch rates are economically unviable for U.S. longline fisheries or before the spawning stock is reduced to levels not capable of producing MSY on a long-term basis (overfished).

2.3 Alternative 3 - Amend the FEP to Establish a Process that is Identical to the Provisions of Section 113

Alternative 3 would implement the provisions of Section 113 through an amendment to the Pelagics FEP. If approved, NMFS could implement this Alternative whether or not Congress reauthorizes Section 113 after 2013. Under this Alternative, the Federal action would establish a process in the Pelagics FEP that would be identical to Alternative 1, except that the process would extend beyond December 31, 2013, and would not require Congressional action in order to remain in force.

Under Alternative 3, the following management framework and process would be established:

1) NMFS determines whether an agreement satisfies the requirements of Section 113(a) of the 2012 CFCAA, for the attribution of pelagic MUS (including bigeye tuna) to the longline fishery of American Samoa, Guam, or CNMI according to the following criteria:
   (a) Vessels included under the agreement must be registered for use with valid permits issued under the Pelagics FEP;
   (b) The agreement must not impose any requirements regarding where the vessels included in the agreement fish or land their catch;
   (c) The agreement must be signed by the owners of all the vessels included in the agreement or their designated representative(s);
   (d) The agreement must be signed by an authorized official of American Samoa, Guam, or the Commonwealth of the Northern Mariana Islands or his or her designated representative(s); and
   (e) The agreement must be funded by deposits to the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in the MCP of American Samoa, Guam, or CNMI adopted pursuant to Magnuson-Stevens Act section 204.

2) NMFS notifies the parties to the agreement or their designated representative(s) within 14 days of receiving a copy of the agreement, if the agreement does not meet the criteria specified in paragraph above.

3) Catch attribution: For the purposes of annual reporting to the WCPFC, NMFS will assign catches made under a Territory agreement to an applicable Territory starting seven days before the date[18] the U.S. catch limit is forecasted to be reached or 14 days after receiving a copy of the agreement, whichever date is later.

As with Alternative 1, and unlike Alternative 4 (see below), the Council would not recommend, and NMFS would not specify either Territory catch or effort limits or limits to the amount of catch or effort limits that Territories could transfer to other FEP-permitted longline vessels through agreements.

The expected fishery outcome for Alternative 3 is that Territory agreements would allow NMFS to attribute longline catch of pelagic MUS or effort limits to a Territory shortly before the Hawaii longline fishery achieves a catch or effort limit. Agreements under this Alternative would support responsible fisheries development in the Territories by providing funds for approved MCPs. Territory fisheries would not be limited in the amount of catch or effort limit that they could transfer to other FEP-permitted fisheries. The Council and NMFS have not identified specific projects, and development of those projects is not part of the action under this Alternative and would be evaluated separately when projects are identified.

2.4 Alternative 4 - Amend the FEP to Establish a Management Framework Consistent with Section 113, and Establish a Process for NMFS to Specify Territory Catch or Effort Limits and Assignable Limits under Qualifying Agreements (Council Preferred Alternative)

Under this Alternative, the Pelagics FEP would be amended to establish a process that is similar to Section 113 and would include a process to specify annual Territory catch or effort limits and transferable catch or effort limits for pelagic MUS. If approved, NMFS could implement this Alternative whether or not Congress reauthorizes Section 113 after 2013 and would not require Congressional action in order to remain in force. As with Alternatives 1 and 3, the Territories would be allowed to enter into agreements with FEP-permitted vessel for the use, assignment, allocation, and management of catch and effort limits agreed to by WCPFC that are applicable to FEP pelagic MUS; or other limits as recommended by the Council and specified by NMFS. The Council could use the established process to recommend annual Territory catch or effort limits as well as Territory agreement limits, and NMFS could use the process in making annual specifications. Catch or effort limits could be established even if the WCPFC does not agree to Territory/SIDS limits.

As with Alternatives 1 and 3, NMFS would begin attributing catch of pelagic species by U.S. vessels to the Participating Territory for which there is an agreement seven days before the date the U.S. catch limit is projected to be reached or 14 days after receiving a copy of the agreement, whichever date is later. This would allow fishing vessels that are not part of agreements to continue fishing as is currently occurring. The process to monitor the catch limit and to inform the date after which catch would be assigned in accordance with agreements to a Territory is

[18] NMFS tracks catch logs and uses the information to forecast the date the catch limit or effort limit is expected to be reached. If the limit will be reached within 28 days, NMFS will begin to attribute catch to a Territory agreement seven days prior to reaching that forecast date if a qualifying agreement has been received.

already established in existing regulations (77 FR 51719; 50 CFR § 300.224). However, if Alternative 4 is selected, the Council's amendment would replace the existing process described 50 CFR § 300.224 with regard to Territory fishing agreements. As with the other Alternatives, monitoring and attributing catch under Territory agreements would continue under the Council's amendment.

Unlike Alternatives 1 and 3, this Alternative would also prescribe that agreements must include either: 1) the requirement that payments in support of an agreement be deposited in the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in a Territory's MCP pursuant to Magnuson-Stevens Act section 204; or 2) that agreements include landing requirements into the Territory under the agreement. Alternatives 1 and 3 do not include option 2), which would provide more flexibility to the Territories and fishery participants when developing agreements and examining benefits to the parties involved in the agreement without increasing impacts to the stocks involved.

Under Alternative 4, the following management framework and process would be established:

(1) Annual Catch or Effort Limit Specification: At least annually, the Council would review the catch limits agreed to by the Commission, and after considering the status of HMS stocks, the needs of fishing communities dependent upon the particular fishery resource, and any other relevant conservation and management factors, would recommend to the Regional Administrator, as appropriate, total catch or effort limits for each Territory, including the amount of pelagic species catch or effort each U.S. participating territory may transfer to vessels in specified fishing agreements for the subsequent calendar year.

(2) Authority to transfer: The Territories would be authorized by NMFS to transfer a portion of a specified catch limit of pelagic MUS to vessels permitted under the Pelagics FEP through a Territory agreement approved by the Council and NMFS.

(3) Maximum transferable catch limits: After considering the catch or effort limits of Pelagic MUS provided to the Territories by the WCPFC, the conservation status of the fishery resource, and the needs of fishing communities dependent on the particular fishery resource, the Council would recommend an annual level of transferable catch or effort limit for each Territory, and any other terms and conditions applicable to a Territory agreement. NMFS would review the Council's recommendation, and if found consistent with the Pelagics FEP and other applicable law, NMFS would specify and announce the annual pelagic MUS transfer limits applicable to each of the Territories in the *Federal Register*.

(4) Territory agreement criteria: To be a valid Territory agreement, NMFS would require the agreement between the Territory and the U.S. longline vessels to satisfy either criteria (i) or criteria (ii) below:
    (i) It contain no requirements regarding where such vessels must fish or land their catch, and deposits under the agreement are made to the Western Pacific Sustainable Fisheries Fund in material support of fisheries development projects identified in a Territory's MCP adopted pursuant to Magnuson-Stevens Act section

204. The funding of such agreements authorized under this Pelagics FEP amendment shall be of a sufficient amount to substantially contribute to MCP fisheries development objectives; or

(ii) It provide a landing requirement to offload catch in the ports of the Territory for which the agreement exists.[19]

The decision on whether to utilize i) or ii) would be left to the Territories in negotiation with the interested U.S. longline vessels.

(5) Approval of Territory agreements: Territory agreements would be submitted to the Council and NMFS for review. If the Council, through the Executive Director, finds the specified fishing agreements are complete and consistent with the Pelagics FEP, implementing regulations, and other applicable law, it would transmit the agreements with a written recommendation to the Regional Administrator. The NMFS Regional Administrator would determine if the agreement complies with the Pelagics FEP and applicable laws. The agreement would be effective for purposes of catch attribution within 30 days of submission unless the Regional Administrator provides written notice to each party that an agreement fails to comply with the FEP, implementing regulations, or applicable law. The Regional Administrator may provide the parties to the agreement, or their designated representatives, an opportunity to modify the fishing agreement.

(6) Catch attribution: For the purposes of annual reporting to the WCPFC, NMFS would attribute catches made under an effective Territory agreement to the applicable Territory. NMFS would continue to monitor the U.S. catch limit and attribute catch consistent with 50 CFR § 300.224 and WCPFC reporting requirements.

Table 3 presents a summary of the process that would be used under Alternative 4 and briefly describes the expected fishery outcome. The expected fishery outcome for Alternative 4 is that the Territorial catch and effort limits, and limits to the amount of catch or effort limit that could be transferred by Territories to FEP-permitted vessels through agreements, could be established through recommendation by the Council and, if approved, specification by NMFS. These limits are expected to ensure that Territory fisheries continue to be managed sustainably, consistent with WCPFC CMMs and Magnuson-Stevens Act. The process includes an annual review and recommendations of these limits by the Council.

Agreements under this Alternative would support responsible fisheries development in the Territories by providing funds for approved MCPs. The Council and NMFS have not identified specific projects, and development of those projects is not part of the action under this Alternative and would be evaluated separately when projects are identified.

[19] Section 113(a) states that "agreements shall impose no requirements regarding where such vessels must fish or land their catch and shall be funded by deposits to the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in a Territory's Marine Conservation Plan and adopted pursuant to section 204 of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1824)." The Council recommended that as an Alternative to contributing funding in support of MCP fisheries development projects, an agreement may provide a landing requirement to offload catch in the ports of the Territory for which the agreement exists. It is expected that these agreements may provide direct benefits to the local economy in lieu of payment to the Western Pacific Sustainable Fisheries Fund.

2.4.1 Sub-Alternatives for the Specification of Total Annual Limits for Bigeye Tuna Caught by Longline and Transferable Bigeye Tuna Limits for the Territories

The following Sub-Alternatives to Alternative 4 relate to the Council's recommendation to specify annual longline bigeye tuna catch limits for the Territories and to specify limits on the annual amount a Territory may transfer under an agreement with eligible FEP-permitted vessels.

2.4.1.1 Sub-Alternative 4(a) - No-action / Status Quo

Under this No-action Sub-Alternative, no total annual longline bigeye tuna limits would be established or limits on the amount a Territory could transfer under an approved agreement. This Sub-Alternative would have similar effects to Alternative 1 (No-Action), as there are currently no limits under WCPFC CMM 2013-01 on the amount of bigeye tuna that can be caught or transferred for the Territories. Under Sub-Alternative 4(a), however, the Territories could enter into agreements with eligible FEP-permitted longline vessels for the purposes of fisheries development as described in the management framework in Alternative 4 (Council's preferred Alternative) above.

The expected fishery outcome of this sub-alternative is that the Territory longline fisheries would not be subject to Council-recommended catch limits for bigeye tuna in 2014 and beyond; however, future catch or effort limits that the WCPFC may agree to would still apply. Under this sub-alternative, Territories would also not be subject to limits on the amount of bigeye tuna they could transfer to FEP-permitted vessels.

2.4.1.2 Sub-Alternative 4(b) - Specify 2,000-mt total Annual Longline Catch Limits and 1,000-mt Transferable Catch Limits for Bigeye Tuna per Territory (Council Preferred Sub-Alternative)

Under this Sub-Alternative, the first specifications established under the framework provided in the Council's preferred Alternative 4 would be an annual longline catch limit for bigeye tuna of 2,000 mt for each Territory. This Alternative would also limit the annual amount of bigeye tuna that may be transferred under a Territory agreement to 1,000 mt per Territory, which would be part of, and not in addition to, each Territory's 2,000-mt limit. This action does not implement other catch or fishing effort limit specifications.

The expected fishery outcome of this Sub-Alternative is that the Territory longline fisheries would be subject to 2,000-mt catch limits for bigeye tuna for each Territory, until the limit is changed pursuant to the process described in Alternative 4, which includes annual review and specification recommendations by the Council. The catch limit is currently more restrictive than those agreed to by the WCPFC for PTs and SIDS, and is intended to restrain overall bigeye tuna mortality by U.S. fisheries operating under agreements.

Under this Sub-Alternative, the Territories would also be subject to limits on the amount of bigeye tuna they may transfer to FEP-permitted longline vessels. The limit would be 1,000 mt for each Territory. The WCPFC has not agreed to any limits on the attribution of catch under charter agreements or similar mechanisms.

The 1,000-mt transfer limit for bigeye tuna would provide a buffer between catches by Territory longline fisheries and catch that may be transferred under Territory agreements with FEP-permitted longline vessels, to ensure the availability of quota for Territory fishery participants.

Table 3: Comparison of Alternatives for a process to establish and manage highly migratory species (HMS) catch or effort limits for U.S. Participating Territories agreed to by the Western and Central Pacific Fisheries Commission (WCPFC).[20]

Alternative 1. No Action/ Status Quo. Manage Territory Limits Consistent with Existing Provisions of Section 113	**Alternative 2. Section 113 Authority Ends.**	**Alternative 3. Amend Pelagics FEP to Establish a Process Identical to Provisions of Section 113**	**Alternative 4. Amend Pelagics FEP to Include Provisions of Section 113, and Provide for Specification of Territory Catch or Effort and Transfer Limits (Council Preferred)**
Step 1. WCPFC agrees or does not agree to an HMS catch or effort limit for Territories.	Step 1. WCPFC agrees or does not agree to an HMS catch or effort limit for Territories.	Step 1. WCPFC agrees or does not agree to an HMS catch or effort limit for Territories.	Step 1. WCPFC agrees or does not agree to an HMS catch or effort limit for Territories.
Step 2. Territories are authorized to use, assign, and manage limits through agreements with FEP-permitted vessels.	Step 2. Council and NMFS manage fisheries under any WCPFC limits. No agreements are possible.	Step 2. Territories are authorized to use, assign, and manage limits through agreements with FEP-permitted vessels.	Step 2. Council may recommend further Territory catch or effort limits, and transfer limits. If approved, NMFS specifies the recommended limits. Council annually reviews and recommends Territory catch or effort limits and transfer limits.
Step 3. Territory governments may enter into fishing agreement with FEP-permitted vessels and sends agreement to NMFS.		Step 3. Territory governments may enter into fishing agreement with FEP-permitted vessels and sends agreement to NMFS.	Step 3. Territories are authorized to use, assign, and manage limits through agreements with FEP-permitted vessels.
Step 4. NMFS notes the agreement and attributes catch or effort accordingly.		Step 4. NMFS notes the agreement and attributes catch or effort accordingly.	Step 4. Territory governments may enter into fishing agreement with FEP-permitted vessels and sends draft to Council and NMFS.
			Step 5. Council reviews the agreement, and, if consistent with Pelagics FEP, sends agreement to NMFS.

[20] Note: An agreement would be between a Territory and one or more FEP-permitted vessels fishing for pelagic management unit species.

Alternative 1. No Action/ Status Quo. Manage Territory Limits Consistent with Existing Provisions of Section 113	Alternative 2. Section 113 Authority Ends.	Alternative 3. Amend Pelagics FEP to Establish a Process Identical to Provisions of Section 113	Alternative 4. Amend Pelagics FEP to Include Provisions of Section 113, and Provide for Specification of Territory Catch or Effort and Transfer Limits (Council Preferred)
			Step 6. NMFS reviews the agreement for consistency with applicable laws. If consistent, NMFS notes the agreement and attributes catch or effort accordingly. If not consistent, NMFS provides parties opportunity for revision.
Fishery Outcomes for Each Alternative			
Territory fisheries operate consistent with WCPFC catch or effort limits. Council could not specify additional or more restrictive catch or effort limits or transfer limits under agreements.	Territory fisheries operate consistent with WCPFC catch or effort limits. No agreements are possible.	Territory fisheries operate consistent with WCPFC catch or effort limits. Council could not specify additional or more restrictive catch or effort limits or transfer limits under agreements.	Territory fisheries operate consistent with WCPFC catch or effort limits. Council could recommend and NMFS could specify additional or more restrictive Territory catch or effort limits and transfer limits under agreements than WCPFC catch or effort limits.
Agreements would support responsible fisheries development by providing funds for NMFS approved Territory marine conservation plans (MCPs).	Fewer funds would be available for fisheries development projects under NMFS approved Territory MCPs.	Agreements would support responsible fisheries development by providing funds for fisheries development projects under NMFS approved Territory MCPs.	Agreements would support responsible fisheries development by providing funds for NMFS approved Territory MCPs. Alternatively, agreements could also require vessels land catch in the applicable territory.
Transfer agreements are expected to allow Hawaii-based longline vessels to continue fishing in the WCPO throughout the year, while providing the applicable Territories vessel capacity and catch history.	Without agreements, Hawaii-based longline vessels could reach WCPO catch or effort limits before the end of the year. Territories would acquire vessel capacity and catch history more slowly.	Transfer agreements are expected to allow Hawaii-based longline vessels to continue fishing in the WCPO throughout the year, while providing the applicable Territories vessel capacity and catch history.	Transfer agreements are expected to allow Hawaii-based longline vessels to continue fishing in the WCPO throughout the year, while providing the applicable Territories vessel capacity and catch history. Territories could be limited by additional catch or effort limits, and transfer limits.

Table 3: Comparison of features of two Sub-Alternatives to Alternative 4 related to the specification of Territory catch limits and transfer limits for bigeye tuna.

Sub-Alternative 4(a). No Action. The Council would not recommend and NMFS would not specify a Territory catch limit for bigeye tuna, and a limit on the amount of bigeye tuna that could be transferred to FEP-permitted vessels under agreements.	**Sub-Alternative 4(b). The Council would recommend and NMFS would specify a Territory catch limit for bigeye tuna, and a limit on the amount of bigeye tuna that could be transferred to FEP-permitted vessels under agreements.**
Council would not recommend an annual Territory catch limit for longline-caught bigeye tuna or a transfer limit for bigeye tuna.	Council would recommend an annual longline catch limit of 2,000 mt for bigeye tuna for each Territory, and would recommend, for each Territory, a transfer limit for bigeye tuna of 1,000 mt; each are additional and more restrictive conservation measures than what WCPFC CMM 2013-01 provides the Territories.
Common to both Sub-Alternatives, this assumes the FEP has been amended to establish a management framework and process described in Alternative 4. Also common to both Sub-Alternatives, U.S. longline fisheries would continue to fish consistent with provisions of the Pelagics FEP, domestic regulations, and any limits agreed to by the WCPFC.	
Under both Sub-Alternatives, in accordance with the process for Alternative 4, Territories are expected to enter into agreements with FEP-permitted vessels. NMFS would assign catches of bigeye tuna to Territories in accordance with regulations.	
Expected Fishery Outcomes for the Sub-Alternative	
Territory fisheries expected to continue to operate and be supported with funding from agreements for fisheries development.	Territory fisheries expected to continue to operate within 2,000-mt bigeye tuna longline catch limit and 1,000-mt transferable limit and be supported with funding from agreements for fisheries development.
With agreements in place, Hawaii deep-set longline fishery) is expected to be able to fish through the year but with no limit on the amount of bigeye tuna that could be transferred under agreements.	With agreements in place, the Hawaii deep-set longline fishery is expected to be able to fish through the year in the WCPO, but would be limited in the amount of bigeye that can be caught and transferred under agreements.

2.5 Alternatives Initially Considered but Rejected from Further Consideration

Establish Bigeye Tuna Catch Limits and a Domestic Charter Permit and Criteria

At its 148th meeting (Honolulu, June 2010), the Council recommended amending the Pelagics FEP to do the following:

1) Establish annual longline bigeye tuna catch limits of 2,000 mt for each of the Territories.

2) Provide limited authority to the Territories to assign up to 750 mt per year of their proposed 2,000-mt annual longline bigeye tuna catch limits through domestic charter agreements or similar mechanisms with only U.S. longline vessels permitted under the Pelagics FEP; and

3) Establish domestic charter permit requirements and criteria for U.S. vessels operating under agreements or similar mechanisms to be further integrated with the Territory's domestic fleet by supporting fisheries development within the Territory.

This FEP amendment and EA does not consider this alternative in detail, because NMFS determined that this alternative is sufficiently similar to the Council's preferred Alternative 4 for the following two reasons. First, the potential impacts to the human environment of this alternative's smaller transfer limit (i.e., up to 750 mt per year of the Territories' 2,000-mt annual longline catch limits for bigeye tuna) are sufficiently similar to those of the preferred Alternative 4. Second, this alternative's establishment of domestic charter permit requirements and criteria is sufficiently similar to requirements and criteria established by the Council's preferred Alternative 4, Section 113, and existing regulations.

Chapter 3: Description of the Affected Environment

For further detail about the physical, biological, and social environment in which the pelagic fisheries managed under the Pelagics FEP operate, please refer to Chapter 3 of the Pelagics FEP.[21]

3.1 Status of Pelagic Management Unit Species

For a comprehensive discussion of the biology and life history of pelagic MUS, see the Pelagics FEP. Table 4 provides a summary of the stock status of pelagic MUS under the Pelagics FEP.

Table 4: Stock status of pelagic management unit species under the Pelagics FEP.

Species	Stock	Overfishing?	Overfished?
Albacore (*Thunnus alalunga)*	North Pacific	Unknown	Unknown
	South Pacific	No	No
Bigeye tuna (*Thunnus obesus)*	Pacific	Yes in WCPO	No in WCPO
		Yes in EPO*	No in EPO
Pacific bluefin tuna (*Thunnus orientalis*)	Pacific	Yes	Yes
Yellowfin tuna (*Thunnus albacares)*	Central Western Pacific	No	No
	Eastern Tropical Pacific	No	No
Skipjack tuna (*Katsuwonus pelamis*)	Central Western Pacific	No	No
Striped marlin (*Kajikia audax*)	Western Central North Pacific	Yes	Yes
Blue marlin (*Makaira nigricans*)	Pacific	No	No
Swordfish *(Xiphias gladius)*	Western Central North Pacific	No	No
	Eastern Tropical Pacific	No	No
Oceanic whitetip shark (*Carcharhinus longimanus*)	Pacific	Unknown	Unknown
Blue shark (*Prionace glauca*)	Pacific	No	No
Shorfin mako shark (*Isurus oxyrinchus*)	North Pacific	Unknown	Unknown
Longfin mako shark (*Isurus paucus*)	North Pacific	Unknown	Unknown
Mahimahi (*Coryphaena* spp.)	Pacific	Unknown	Unknown
Wahoo (*Acanthocybium solandri*)	Pacific	Unknown	Unknown
Opah (*Lampris* spp.)	Pacific	Unknown	Unknown
Pomfret (family Bramidae)	Western Pacific	Unknown	Unknown

Note: This table omits some non-target and incidentally caught pelagic MUS in 50 CFR § 665.800, which have unknown status determinations. Statuses are based on NMFS' determinations through August 2013, or other best scientific information available.

[21] To view the Pelagics FEP online, visit http://www.wpcouncil.org/fishery-plans-policies-reports/pelagics_fe/

* 2013 IATTC stock assessment for bigeye tuna in the EPO concludes overfishing is not occurring; however, at the time of writing, NMFS has not revised its status determination of subject to overfishing.
Source: http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm; NMFS unpublished.

3.1.1 Status of Tuna Stocks

3.1.1.1 Bigeye Tuna

Bigeye tuna is considered a Pacific-wide stock, but recently has been assessed separately in the WCPO and EPO. The IATTC and Secretariat of the Pacific Community, Oceanic Fisheries Program (SPC-OFP) are considering conducting a Pacific-wide stock assessment in 2014.

WCPO Stock Status

The most recent stock assessment for bigeye tuna in the WCPO by Davies et al. (2011) estimated the ratio of current fishing mortality (F) to fishing mortality at MSY (F_{MSY} ($F_{current}/F_{MSY}$) is 1.46, indicating that overfishing is occurring. In order to reduce fishing mortality to F_{MSY}, the base case indicates that a 32 percent reduction in fishing mortality is required from the 2006-2009 level. The base case assessment indicates that the current total biomass (B) and spawning biomass (SB) are higher than the associated MSY levels ($B_{current}/B_{MSY}$ = 1.25 and $SB_{current}/SB_{MSY}$ = 1.19), so the assessment and NMFS' status determination concluded that the stock is not overfished. An analysis of historical patterns in the mix of fishing gears indicates that MSY has been reduced to less than half its levels prior to 1970 through increased harvest of juveniles. Recent overfishing could result in losses in potential yields in the future if spawning biomass is reduced to levels that cannot support MSY.

Figure 2 shows the base case model run used by Davies et al. (2011) to represent the temporal trend in annual bigeye tuna stock status, relative to biomass at MSY and fishing mortality at MSY reference points. Figure 2 shows the bigeye tuna stock to be experiencing overfishing in the WCPO, but it is not overfished and not approaching overfished, as defined by the Council and NMFS under the Pelagics FEP. However, other model runs indicate that stock is overfished if using B/B_{MSY} reference point of 1 (Davies et al. 2011). The most recent estimate of MSY for bigeye tuna in WCPO is 74,993 mt (Ibid.).

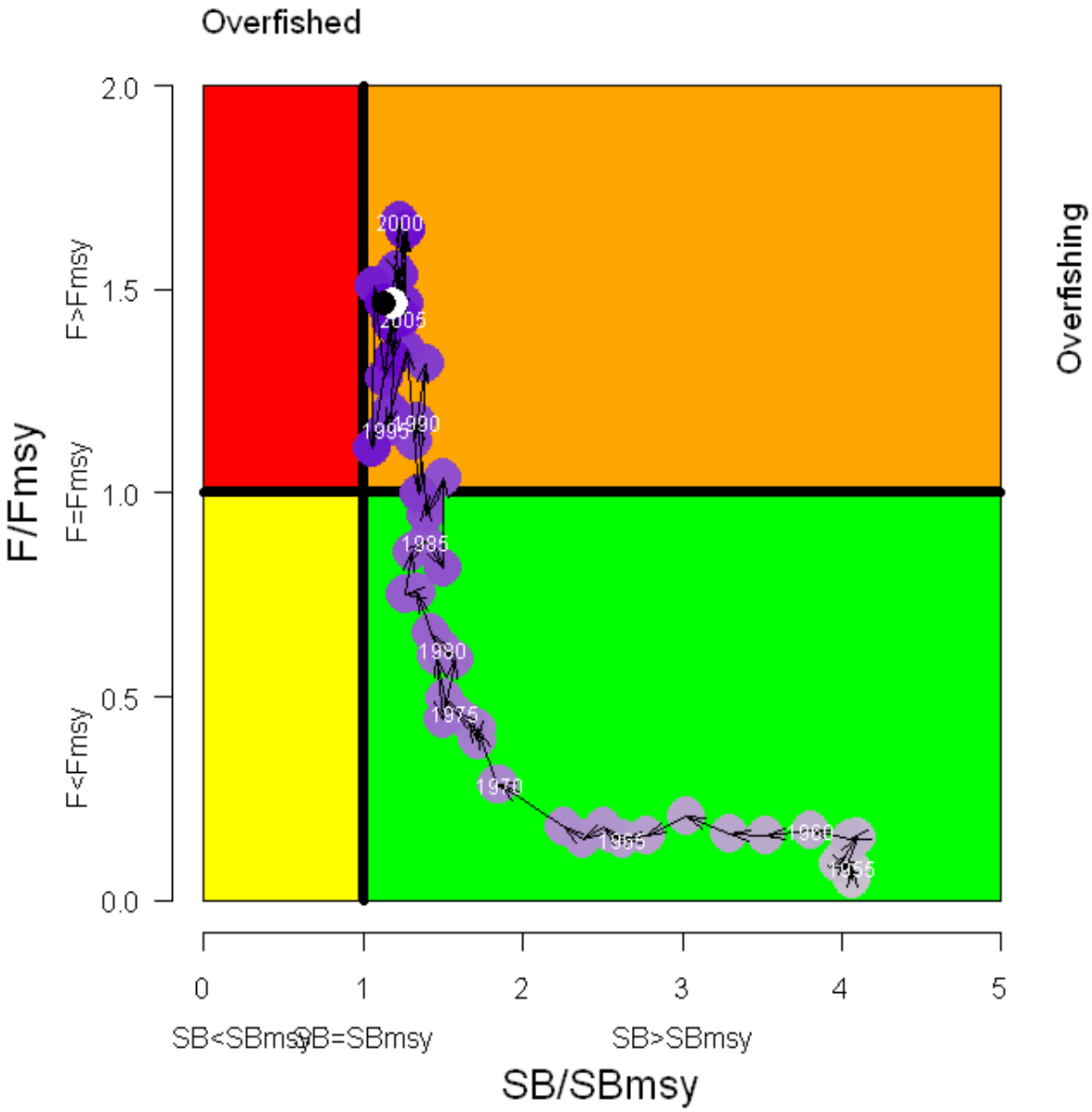

Figure 2: Kobe plot showing the trend in annual stock status for bigeye tuna using spawning biomass for the model period of 1952-2009 from Davies et al. 2011.
Note: Estimated SB/SB_{MSY} is shown on the x-axis, while the estimated F/F_{MSY} is shown on the y-axis. The location of this ratio in the orange box means that overfishing is occurring.
The white circle represents the average for the period 2006-2009 and the black dot represents the 2009 value. MSY is used as the *de facto* limit reference points by the WCPFC, whereas the Pelagics FEP uses a different reference point as its overfished control rule.
Source: Davis et al. 2011.

EPO Stock Status
Aires-da-Silva and Maunder (2013) conducted the most recent stock assessment for bigeye tuna in the EPO. The results indicate a recent recovery trend for bigeye tuna (2005-2010), subsequent to IATTC tuna conservation resolutions initiated in 2004. Recruitment estimates have been variable since 1975. There were very high peaks in recruitment indices corresponding with the

major El Niño events in 1983 and 1998. Recent recruitment indices are predominantly below average. Aires-da-Silva and Maunder (2013) conclude that bigeye tuna in the EPO is not overfished (B/B_{MSY} = 1.02), and overfishing is not occurring (F/F_{MSY} = 0.97). The 2013 IATTC stock assessment for bigeye tuna in the EPO concludes overfishing is not occurring; however, at the time of writing, NMFS has not changed its status determination, based on the previous stock assessment, of subject to overfishing. The current status in the EPO is considerably more pessimistic if a stock recruitment relationship is assumed, if a higher value is assumed for the average size of the older fish, and if lower rates of natural mortality are assumed for adults (WCPFC 2013a). The most recent estimate of MSY for bigeye tuna in the EPO is 106,706 mt (Aires-da-Silva and Maunder 2013).

3.1.1.2 Yellowfin Tuna

The most recent stock assessment of yellowfin in the WCPO by Langley et al. (2011) using data up to 2010 concluded that for the most plausible range of models, the fishing mortality based reference point **(**$F_{current}/F_{MSY}$) is estimated to be 0.56-0.90, and on that basis, it is concluded that overfishing is not occurring. The corresponding biomass based reference points, current biomass to biomass at MSY ($B_{current}/ B_{MSY}$) and current spawning biomass to spawning biomass at MSY ($SB_{current}/SB_{MSY}$) were estimated to be above 1.0 (1.25-1.60 and 1.34-1.83, respectively) and, therefore, the stock is not in an overfished state. Langley et al. (2011) estimate MSY at 538,800.

3.1.1.3 Skipjack Tuna

The most recent assessment of skipjack tuna in the WCPO was conducted in 2011 (Hoyle et al. 2011) using data up to 2010. The estimates of current fishing mortality to fishing mortality at MSY ($F_{current}/F_{MSY)}$ indicate that overfishing of skipjack is not occurring in the WCPO, nor is the stock in an overfished state. Fishing pressure and recruitment variability (which is influenced by environmental conditions) will continue to be the primary influences on stock size and fishery performance. Hoyle et al. (2011) estimate MSY at 1,503,600 mt.

3.1.1.4 North Pacific Albacore

The most recent (2011) stock assessment of North Pacific albacore concluded that overfishing is not occurring and that the stock likely is not in an overfished condition, although biomass-based reference points have not been established for this stock (ISC 2011). The stock is considered to be healthy at average historical recruitment levels and fishing mortality ($F_{2006-2008}$). Sustainability is not threatened and the stock is expected to fluctuate around the long-term median spawning stock biomass of 400,000 mt in the short- and long-term future (WCPFC 2011a). The 2011 stock assessment estimated MSY at 119,094 mt.

3.1.1.5 South Pacific Albacore

The most recent stock assessment of South Pacific albacore was conducted by Hoyle et al. (2012) using data up through 2010. Current catches (the average of July 2007- June 2010) are estimated to be 79,000 mt, but the catch estimate for the most recent year (July 2010 to June-2011) is 90,000 mt. Most of the longline albacore catch is taken in a latitudinal band between 10°

and 40° S. The South Pacific albacore stock is currently not overfished and overfishing is not occurring. Current biomass is sufficient to support current levels of catch. However, any increases in catch or effort are likely to lead to declines in catch rates in some regions, especially for longline catches of adult albacore, with associated impacts on vessel profitability. The WCPFC Science Committee recommended that longline fishing mortality be reduced to maintain economically viable catch rates (WCPFC 2012a). The 2011 stock assessment estimated MSY at 99,085 mt.

3.1.1.6 Pacific Bluefin Tuna

Pacific bluefin tuna is considered a single North Pacific-wide stock. In December 2012, the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean (ISC) completed their assessment of the status of Pacific bluefin tuna using data through 2011, and concluded that the stock is still experiencing overfishing and is now overfished. In April 2013, NMFS determined the same status due to the very low biomass and very high fishing mortality determined by the ISC stock assessment. The ISC assessment estimated the current SB of 22,606 mt to be about 3.6 percent of the unfished SB of 633,468 mt. Current SB is far below that associated with MSY (124,498 mt) and is near historic low levels. NMFS will work with the Western Pacific and Pacific Councils to develop domestic regulations to address relative domestic fishery impacts. NMFS will work with both Councils and the State Department to determine if more effective management measures should be proposed to the WCPFC and IATTC for 2014 and beyond.

3.1.2 Status of Billfish Stocks

3.1.2.1 North Pacific Swordfish

The 9th meeting of the WCPFC Science Committee reviewed the stock status of swordfish in the WCPO using updated catch information through 2012 and found that the stock is not overfished or experiencing overfishing in 2012 relative to MSY-based reference points (WCPFC 2013a). Revised estimates of biological reference points were virtually identical to those from the 2009 stock assessment. The latest estimate of MSY is 14,400 mt.

3.1.2.2 North Pacific Striped Marlin

A 2012 stock assessment for Western Central North Pacific striped marlin indicates that it is likely overfished and experiencing overfishing (ISC 2012). In August 2013, NMFS determined the stock is subject to overfishing and overfished relative to Pelagics FEP reference points. NMFS will inform and work with the Western Pacific and Pacific Councils under their obligations for international and domestic management under Magnuson-Stevens Act sections 304(i) and 304(i)(2). From 2013 and beyond, the current WCPFC striped marlin measure applies to CCMs with vessels fishing in the Convention Area north of the equator. Each CCM is subject to a 20 percent reduction of the highest catch of north Pacific striped marlin between 2000 and 2003. U.S. catch is below levels agreed to by the WCPFC. NMFS will work with the Councils and the State Department to determine if more effective management measures should be

proposed to the WCPFC for 2014 and beyond. The 2012 stock assessment estimated MSY at 5,378 mt.

3.1.2.3 Blue Marlin

A 2013 stock assessment by the ISC Billfish Working Group concluded Pacific blue marlin is not experiencing overfishing and is not overfished relative to MSY-based reference points. However, the stock is nearly fully exploited. Stock biomass has declined since the 1970s and has been stable since the mid-2000s with a slight recent increase. Female spawning biomass was estimated to be 24,990 mt in 2011 (WCPFC 2013a).

3.1.3 Status of Shark Stocks

Clarke (2011) provided a snapshot of shark stocks in the western and central Pacific, which is summarized below.

3.1.3.1 North Pacific Blue Shark

The blue shark is probably the most common, but not the most vulnerable, of pelagic sharks. NMFS has concluded north Pacific blue sharks are not subject to overfishing and are not overfished, based on a 2009 stock assessment. The conclusion of Kleiber et al. (2009), using data through 2002, assumes that the population is at least close to MSY level and fishing mortality may be approaching the MSY level in the future. However, in recent WCPO analyses, substantial recent catch rate declines found in four different datasets for the North Pacific, in combination with demonstrated targeting of blue shark by a large commercial fleet operating in this area, are scientific grounds for concern and suggest further declines in abundance since 2002.

3.1.3.2 Shortfin Mako Shark

Recent abundance indices and median size analyses for shortfin mako in the WCPO have shown no clear trends; therefore, there is no apparent evidence of the impact of fishing on this species in the WCPO. Most previously published stock status studies are also inconclusive. Ongoing issues of concern for the WCPO are: 1) a previously published study suggesting stock reduction in the northwest Pacific using virtual population analysis; 2) the high vulnerability of shortfin mako to longline fishing; and 3) the potential for collateral targeting in directed fishing for blue sharks in the North Pacific.

3.1.3.3 Oceanic Whitetip Shark

A recent stock assessment for oceanic whitetip shark indicates that it is likely overfished and experiencing overfishing (Rice and Harley 2012a). Recent analysis of four different datasets for the WCPO oceanic whitetip sharks show clear, steep and declining trends in abundance indices for this species. Analysis of two of these datasets for median lengths confirmed that oceanic whitetip sizes decreased significantly until samples became too scarce for meaningful analysis. Given the strong evidence for the depleted state of the oceanic whitetip population in the WCPO,

stock assessment studies may clarify but will not alter the case for further conservation and management action. The assessment by Rice and Harley (2012a) conclude that current catches are lower than the MSY (2,001 mt versus 2,700 mt), but this is not surprising given the estimated stock status and fishing mortality. The greatest impact on the stock is attributed to bycatch from the WCPO longline fishery, with lesser impacts from the target longline activities and purse seining in the WCPO. Given the bycatch nature of fishery impacts, mitigation measures provide the best opportunity to improve the status of the oceanic whitetip population.

Despite the data limitations, model runs indicate that the WCPO oceanic whitetip shark stock is currently overfished and overfishing is occurring relative to commonly used MSY-based reference points and depletion-based reference points. Management measures to reduce fishing mortality and to rebuild spawning biomass through non-retention have been agreed to under CMM 2011-04, but mitigation to avoid capture was not recommended.

3.1.3.4 Silky sharks

Silky sharks have a restricted habitat range compared to the other WCPFC key species but within this range, they dominate both longline and purse seine catches. The assessment by Rice and Harley (2012b) conclude that current catches are higher than the MSY (5,950 mt versus 1,885 mt), further catch at current levels of fishing mortality would continue to deplete the stock below MSY. The greatest impact on the stock is attributed to bycatch from the longline fishery, but there are also significant impacts from the associated purse seine fishery, which catches predominantly juvenile individuals, the fishing mortality from the associated purse seine fishery is above F_{MSY}. Given the bycatch nature of fishery impacts, mitigation measures provides the best opportunity to improve the status of the silky shark population. The stock assessment of silky shark in the WCPO (Rice et al 2012b) was presented to the 8th WCPFC Science Committee. Due to concerns over the data conflict and potential biases in the silky shark assessment, it was not possible to provide management advice based on the assessment. However, noting that some basic fishery indicators (e.g., mean lengths and some CPUE series) are showing declines in recent years, the Science Committee recommended no increase in fishing mortality on silky sharks.

3.2 International Management of Pelagic Fish Stocks in the Pacific

As described in section 1.4, HMS stocks are internationally managed in the Pacific by the WCPFC and IATTC. The United States is a member of both RFMOs. The following provides an overview of species-specific conservation and management measures established by the WCPFC and IATTC.

3.2.1 Western and Central Pacific Fisheries Commission

The following description of conservation management measures is freely adapted from the 2011 Performance Review of the WCPFC (WCPFC 2011b).

3.2.1.1 Measures for Bigeye, Yellowfin, and Skipjack Tunas

The WCPFC adopted CMMs for bigeye and yellowfin tunas in 2005, 2006, 2008, 2011, and 2012. The 2008 measure (CMM 2008-01) set the foundation for further WCPFC tropical tuna management by establishing effort levels for the WCPO purse seine fisheries and catch limits for the longline fisheries to reduce catches of bigeye and yellowfin tunas. CMM 2008-01 was implemented over the period from 2009-2011, and its principle objective was to reduce bigeye tuna fishing mortality by at least 30 percent from the annual average during 2001-2004. In order to achieve this, the CMM provided different measures for purse seine and longline fisheries.

For purse seine fisheries in the area bounded by 20˚ N and 20˚ S, in 2009, there was a two-month closure of fishing on FADs in the EEZs and on the high seas, and in 2010-2011 there was a three-month FAD closure. The two western high seas pockets were also closed to purse seine fishing in 2010 and 2011. Other measures for purse seine fisheries included a requirement for all CCMs fishing on the high seas to submit FAD management plans to WCPFC by July 2009, 100 percent observer coverage from January 2010, catch retention rules to create a disincentive to capture small bigeye and yellowfin tunas, and undertakings for the WCPFC and CCMs to explore methods to reduce juvenile catches.

For longline fisheries, members and cooperating non-members were to reduce their catch of bigeye tuna by 10 percent in 2009, 20 percent in 2010, and 30 percent in 2011, relative to average 2001-2004 levels. Exceptions and variations were provided to several CMMs as follows:

- SIDS and PTs were provided 2,000 mt limits, but no limits if conducting responsible fisheries development;
- Non-SIDS CCMs with a base catch of less than 2,000 mt of bigeye tuna are limited to 2,000 mt;
- China, Indonesia and USA use 2004 as the base level to reduce their bigeye tuna catch, rather than 2001-2004;
- The limits for China will remain at 2004 levels pending agreement regarding the attribution of Chinese catch taken as part of domestic fisheries in the EEZs of coastal states; and
- The reductions specified for 2010 and 2011 shall not apply to fleets with a total longline catch of less than 5,000 mt and landing exclusively fresh fish. This exemption effectively applied to the United States' Hawaii-based longline fleet only. Accordingly, the Hawaii-based longline fishery was subject to one 10 percent reduction resulting in the current annual limit of 3,763 mt.

CMM 2008-01 included the requirement that CMMs not increase the yellowfin catch in their longline fisheries from 2001-2004 levels.

CMM 2008-01 was extended for a year by CMM 2011-01. The WCPFC evaluated the effectiveness of CMM 2008-01 in 2011 and 2012 based on analysis using the WCPO catch of bigeye tuna in recent years and has projected the status of bigeye tuna through 2020. For example, maintenance of observed 2009 bigeye tuna catch and fishery effort levels results in F/F_{MSY} remaining high, with a projected level of $F/F_{MSY} = 1.40$ in 2021 (Pilling et al. 2013; Figure 3). Under a scenario best approximating reported fishery catch and effort in 2010, F/F_{MSY} declines and is at a projected level of 0.96 by 2021. This is driven by several factors: the lower than usual FAD use in 2010, the lower longline catches, and a large (30%) reduction in reported

catches from the domestic fisheries of Indonesia and the Philippines. For a scenario approximating 2011 fishery conditions, F/F_{MSY} stabilizes at a projected level of 1.29. The difference between 2010 and 2011 fishery outcomes is mainly due to the return to higher levels of FAD-based purse seine effort in 2011 (Pilling et al. 2013).

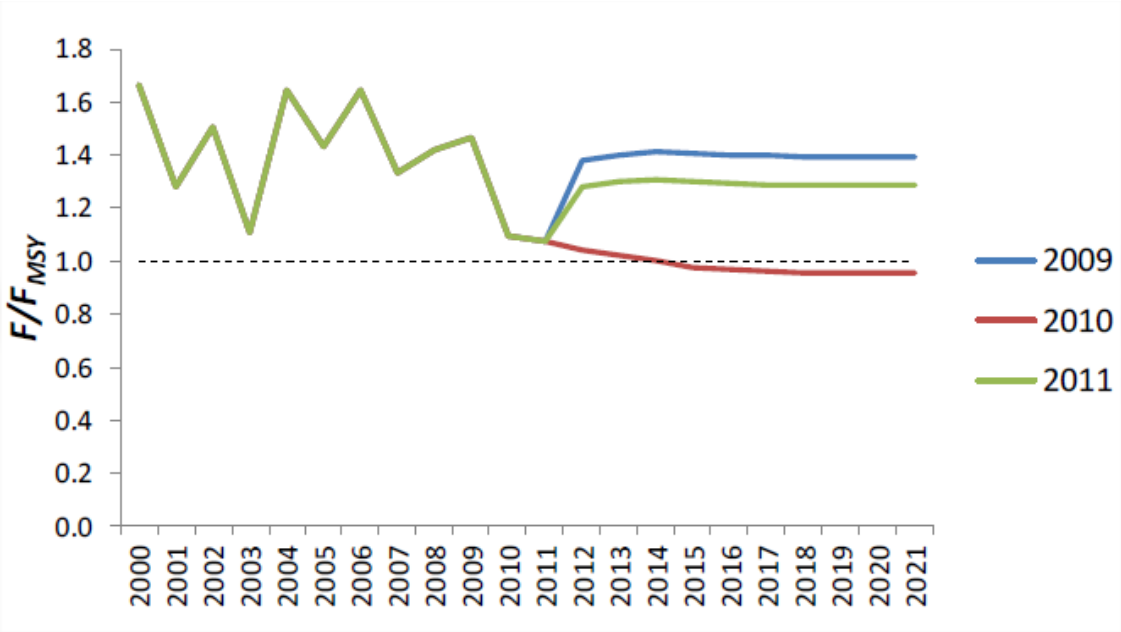

Figure 3: Recent historical and projected F/F_{MSY}, for bigeye tuna under 2009, 2010, and 2011 fishing patterns, assuming that future recruitment is constant at its average 2000-2009 level.
Source: Pilling et al. 2013.

Based on available catch data, Pilling et al. (2013) describe that if catch and effort levels for the WCPO purse seine and longline fisheries were held at 2010 levels, bigeye tuna overfishing would be eliminated in the WCPO by 2021 (Pilling et al. 2013). The expected reduction was based on several factors: the lower than usual purse seine FAD use in 2010, lower longline catches, and a large (30%) reduction in reported catches from the domestic fisheries of Indonesia and the Philippines. Reductions in purse seine FAD effort in 2010 had the greatest effect in terms of removing overfishing (67.4% of overfishing removed) followed by the reduction in longline catch in 2010 (34.7% of the overfishing removed; Pilling et al. 2013).

However, the low FAD usage in 2010 was followed in 2011 by the highest recorded number of FAD sets in the purse seine fishery, resulting in the highest catch of bigeye tuna by the purse seine fishery on record (Williams and Terawasi 2012). Total effort in the purse seine fishery has also increased from 2004 levels to 21 percent higher levels in 2012, and related to an increasing number of purse seine vessels operating in the WCPO (Pilling et al. 2013). The catch of bigeye tuna by the WCPO longline fishery is reported to have increased slightly from 66,441 mt in 2010 through 67,557 mt in 2011 to 71,148 mt in 2012 (79%, 81%, and 85% of the average catch for 2001-2004; Pilling et al. 2013). For yellowfin tuna, the longline catch in 2001-2004 averaged 75,712 mt. In 2010 and 2011, the catches of yellowfin were 75,582 mt and 75,393 mt respectively, and fell below the 2001-2004 average level in 2012 to 65,582 (Pilling et al. 2013).

Recognizing that the CMM 2008-01 was not effective in eliminating bigeye tuna overfishing, the WCPFC agreed at its 9th Regular Session on CMM 2012-01, which among other provisions, establishes a goal of reducing bigeye tuna mortality to a level no greater than $F/F_{MSY} \leq 1$, through a step-by-step approach through 2017. CMM 2012-01 maintained bigeye tuna limits for distant water fleets, including the U.S. longline catch limit of 3,763 mt, but did not provide annual longline bigeye tuna catches for any of the PTs or SIDS (Table 5). CMM 2012-01, among other things, also increased the FAD closure by a month, requiring a four-month purse seine FAD closure or equivalent reduction in purse seine FAD sets (see WCPFC 2012). CMM 2012-01 did not include longline catch limits for yellowfin tuna.

Table 5: Bigeye tuna longline limits in metric tons under CMM 2012-01.

CCMs	CMM 2012-01 limits (mt)	CCMs	CMM 2012-01 limits (mt)
American Samoa	unrestricted	Niue	unrestricted
Australia	2,000	Northern Mariana Is.	unrestricted
Belize	805	Palau	unrestricted
China	10,673	Papua New Guinea	unrestricted
European Union	2,000	Philippines	2,000
Fiji	unrestricted	Republic of Korea	15,014
French Polynesia	unrestricted	Samoa	unrestricted
New Caledonia	unrestricted	Solomon Islands	unrestricted
Fed. States of Micronesia	unrestricted	Chinese Taipei	15,014
Guam	unrestricted	Tokelau	unrestricted
Indonesia	5,889	Tonga	unrestricted
Japan	19,670	Tuvalu	unrestricted
Kiribati	unrestricted	USA	3,763
Marshall Islands	unrestricted	Vanuatu	unrestricted
Nauru	unrestricted	Wallis and Fortuna	unrestricted
New Zealand	2,000		

Source: WCPFC CMM 2012-01.

In December 2013, the WCPFC agreed on a conservation and management measure (CMM 2013-01) that builds off CMM 2012-01. The measure applies to purse seine, longline, and other fisheries taking skipjack, yellowfin, and bigeye tunas. To address impacts to bigeye tuna, the purse seine fishery, in 2014, is subject to a 4-month FAD closure or 3-month FAD closure plus a flag based FAD set limits shown in Attachment A of the measure. For years 2015 and 2016, CCMs with purse seine fisheries can either choose to restrict their vessels to a 5 month FAD closure plus limiting their vessels to their 2010-2012 FAD set average or restrict their vessels to a 3 month FAD closure plus restrict their vessels to FAD set limits shown in Attachment A of the measure. For 2017, CCMs shall follow the purse seine options available for 2015 and 2016 in addition to prohibiting their vessels from FAD sets on the high seas for the entire calendar year.

For the longline fishery, CMM 2013-01 provides flag-based bigeye tuna catch limits through 2017 representing a 15 percent reduction from the limits established in 2012-01. Overall, the WCPO longline bigeye tuna catch limits established under CMM 2013-01 represent a 41 percent reduction from the limits established under CMM 2008-01 (see Table 6; see also Table 7).

Under CMM 2013-01, the U.S. WCPO longline catch limit for bigeye tuna in 2014 is maintained at the 3,763 mt, but will be reduced by 5.5 percent to 3,554 mt in 2015 and 2016. For 2017, the U.S. longline limit will be 3,345 mt, which represents an 11 percent reduction from the 3,763-mt level. If the reductions to the U.S. limit are taken collectively, the U.S. longline bigeye tuna limit of 3,345 mt represents a 20 percent reduction from the 2004 baseline level used in CMM 2008-01. The measure (CMM 2013-01) also limits members that harvested less than 2,000 mt of bigeye tuna in 2004 to no more than 2,000 mt for each of the years 2014 through 2017. However, paragraph 7 of CMM 2013-01 does not establish an individual limit on the amount of bigeye tuna that may be harvested annually in the Convention Area by the SIDS and PTs, including American Samoa, Guam, and the CNMI.

Table 6: Bigeye tuna longline limits in metric tons under CMM 2013-01.

CCMs	**Longline Catch Limits**			
	2014 (2012 catches)	**2015**	**2016**	**2017**
American Samoa	unrestricted (1,505)	unrestricted	unrestricted	unrestricted
Australia	2,000 (482)	2,000	2,000	2,000
Belize	2,000 (132)	2,000	2,000	2,000
China	9,938 (11,324)	8,224	8,224	7,049
European Union	2,000 (23)	2,000	2,000	2,000
Fiji	unrestricted (1,558)	unrestricted	unrestricted	unrestricted
French Polynesia	unrestricted (654)	unrestricted	unrestricted	unrestricted
New Caledonia	unrestricted (49)	unrestricted	unrestricted	unrestricted
Fed. States of Micronesia	unrestricted (948)	unrestricted	unrestricted	unrestricted
Guam	unrestricted (0)	unrestricted	unrestricted	unrestricted
Indonesia	5,889 (3,681)	5,889	5,889	5,889
Japan	19,670 (12,259)	18,265	18,265	16,860
Kiribati	unrestricted (451)	unrestricted	unrestricted	unrestricted
Marshall Islands	unrestricted (335)	unrestricted	unrestricted	unrestricted
Nauru	unrestricted (0)	unrestricted	unrestricted	unrestricted

New Zealand	2,000 (154)	2,000	2,000	2,000
Niue	unrestricted (0)	unrestricted	unrestricted	unrestricted
Northern Mariana Is.	unrestricted (0)	unrestricted	unrestricted	unrestricted
Palau	unrestricted (0)	unrestricted	unrestricted	unrestricted
Papua New Guinea	unrestricted (119)	unrestricted	unrestricted	unrestricted
Philippines	2,000 (0)	2,000	2,000	2,000
Republic of Korea	15,014 (18,823)	13,942	13,942	12,869
Samoa	unrestricted (54)	unrestricted	unrestricted	unrestricted
Solomon Islands	unrestricted (0)	unrestricted	unrestricted	unrestricted
Chinese Taipei	11,288 (10,994)	10,481	10,481	9,675
Tokelau	unrestricted (0)	unrestricted	unrestricted	unrestricted
Tonga	unrestricted (10)	unrestricted	unrestricted	unrestricted
Tuvalu	unrestricted (1,408)	unrestricted	unrestricted	unrestricted
USA	3,763 (3,654)	3,554	3,554	3,345
Vanuatu	unrestricted (2,151)	unrestricted	unrestricted	unrestricted
Wallis and Fortuna	unrestricted (0)	unrestricted	unrestricted	unrestricted

Source: WCPFC CMM 2013-01.
Note: The values in parenthesis provide 2012 reported longline bigeye tuna catches for comparison to future year limits.

3.2.1.2 Impacts to the Bigeye Tuna in the WCPO

The greatest fishery impact to the WCPO bigeye tuna stock is in the equatorial region where approximately 90 percent of fishing mortality occurs, while the temperate regions are estimated to be moderately exploited (WCPFC 2011a). The distribution of cumulative bigeye tuna catch from the period of 1990 to 2010 is provided in Figure 4. The 2011 stock assessment for WCPO bigeye tuna indicates that longline fishing is almost entirely responsible for the fisheries impacts in Regions 2, 5, and 6 (see Figure 4). In Region 1, the current impact is shared between foreign longline and Japanese coastal surface fisheries. In Region 3, the purse seine fishery has the greatest impact followed by longline and the domestic fisheries of Indonesia and the Philippines.

In Region 4, the purse seine and longline fisheries have similar impacts. Region 2 only experiences longline effort. The Hawaii deep-set longline fishery fishes in Region 2 and 4 (NMFS unpublished data).

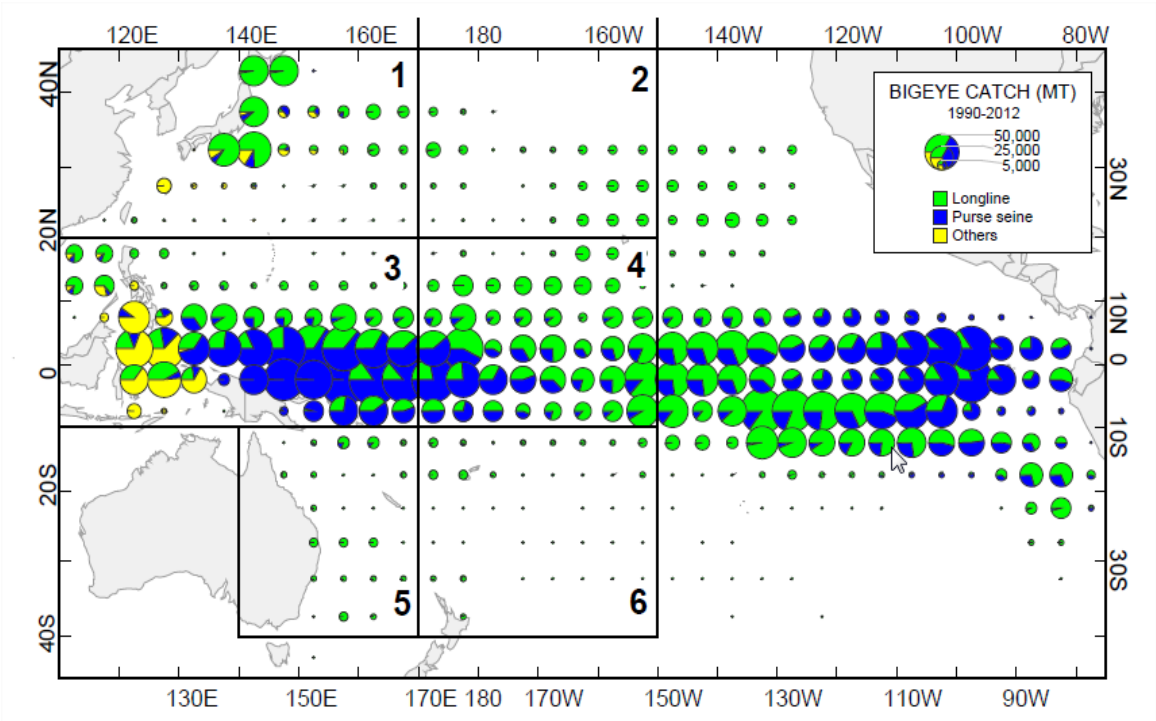

Figure 4: Distribution of cumulative bigeye tuna catch from 1990-2012 by 5-degree squares of latitude and longitude and by fishing gear.
Note: The six-region spatial stratification used in stock assessment for the Western and Central Pacific Convention Area (WCP–CA) is shown. Longline catches of bigeye tuna in the eastern Pacific may not be fully covered. The Hawaii deep-set longline fishery fishes in Regions 2 and 4.
Source: Williams and Terawasi 2013.

As the catches of bigeye tuna by the purse seine fishery are comprised of primarily of juveniles, the fishery has been reducing the MSY of the stock since the 1980s, when the purse seine fishery began fishing on FADs (Figure 5; Davies et al. 2011). As described in the 2011 stock assessment, prior to 1970, the fishery for bigeye tuna in the WCPO was almost exclusively conducted using longlines, with a low exploitation of small bigeye tuna (Davies et al. 2011). The associated age-specific selectivity (i.e., primarily adult fish harvested) resulted in a substantially higher level of MSY (~150,000 mt per annum) compared to that estimated for the fishery based on the recent age-specific fishing mortality pattern (about 77,000 mt). The decline in the MSY over time follows the increased development of those fisheries that catch younger bigeye tuna, principally purse seine fisheries. Harley et al. (2010) demonstrated using a yield-per recruit analysis, that almost 75 percent of the potential MSY from the WCPO bigeye tuna stock is not accessed by the current fishery composition due to the selectivity patterns for smaller and younger fish. Said differently, MSY levels would rise if mortality of small fish were reduced which would allow greater overall yields to be sustainably obtained (Davies et al. 2011).

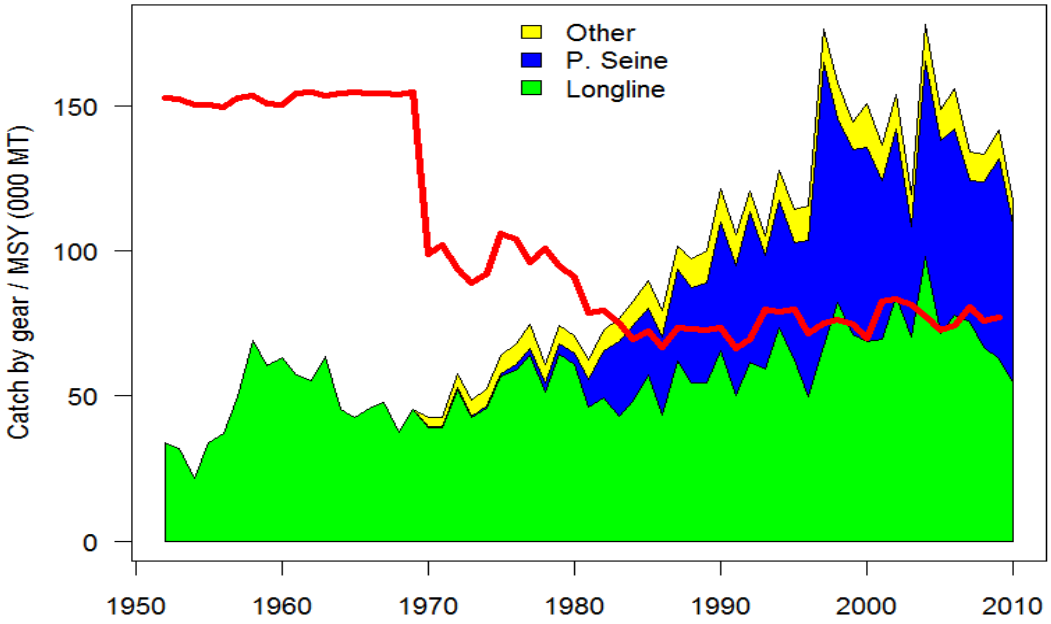

Figure 5: History of the annual estimates of bigeye tuna MSY level compared with annual catch split into three sectors.
Note: Single, solid red line indicates estimated MSY level.
Source: Davies et al. 2011

3.2.1.3 WCPO Purse Seine Fisheries

The world's largest tuna fishery is the purse seine fishery in the WCPO. The WCPO purse seine fishery, which targets skipjack and yellowfin, dominates landings, representing approximately 70 percent of the total Western and Central Pacific-Convention Area (WCP-CA) catch in 2012 and 56 percent of the value (Williams and Terawasi 2013). The WCPO purse-seine fishery is primarily a skipjack fishery, unlike purse seine fisheries in other ocean areas. Skipjack tuna generally accounts for 70-85 percent of the WCPO purse seine catch, with yellowfin tuna accounting for 15-30 percent and bigeye tuna accounting for only a small proportion of the catch (Williams and Terawasi 2013; Figure 6).

The majority of the historic WCP-CA purse seine catch has come from the four main Distant Water Fishing Nation (DWFN) fleets –Japan, Korea, Chinese-Taipei, and USA, which numbered 163 vessels in 1992, declined to a low of 111 vessels in 2006 before increasing again to 139 vessels in 2012. The Pacific Islands fleets have gradually increased in numbers over the past two decades to a level of 94 vessels in 2012 (see Figure 7). The remainder of the purse seine fishery includes several fleets, which entered the WCPFC tropical fishery in the 2000s (e.g., China, Ecuador, El Salvador, New Zealand, and Spain). The total number of purse seine vessels was relatively stable over the period 1990-2006 (in the range of around 180–220 vessels), but over the last five years, the number of vessels has increased, attaining a record level of 297 vessels in 2012 (Williams and Terawasi 2013). At the Tenth Regular Session of the WCPFC in December 2013, members agreed to place restrictions on both the number and capacity of purse seine vessels in the WCPO. Under 2013-01, members agreed that, subject to limited exceptions, any new large purse seine vessel with freezing capacity constructed or purchased to replace a

previous vessel or vessels, would have a carrying capacity or well volume no larger than the vessel(s) being replaced, or would not increase the catch or effort in the Convention Area from the level of the vessels being replaced.

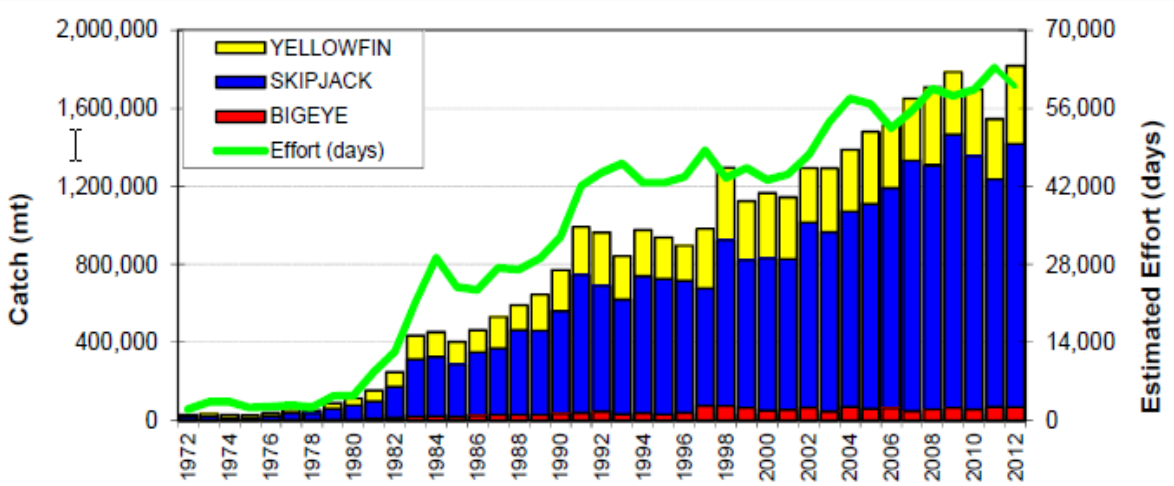

Figure 6: Purse seine catch in the WCP-CA for skipjack, yellowfin, and bigeye tunas, and estimated fishing effort (days fishing and searching).
Source: Williams and Terawasi 2013.

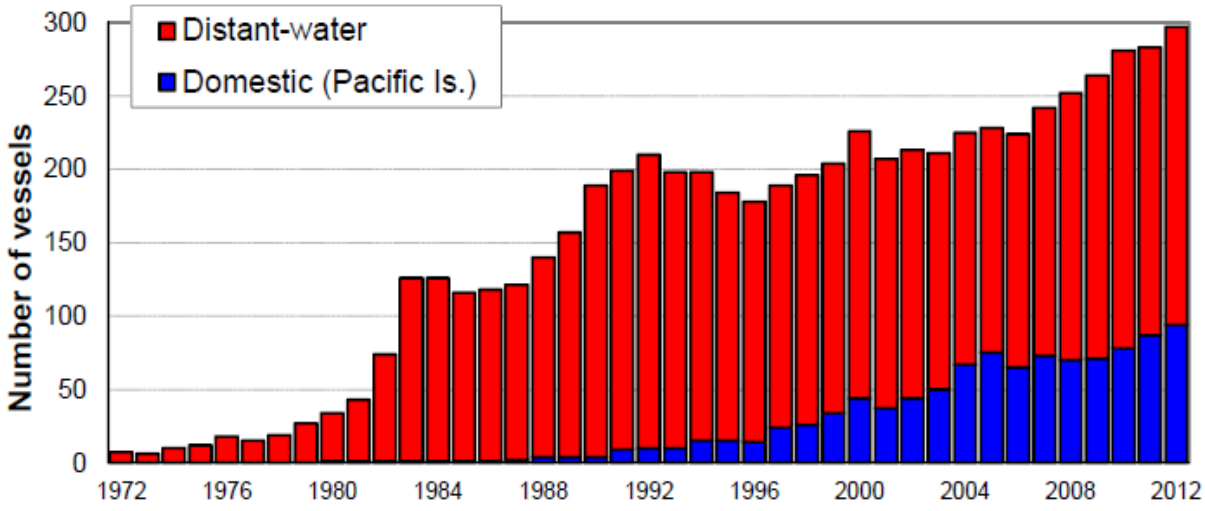

Figure 7: Number of purse seine vessels operating in WCP-CA, 1972-2012.
Source: Williams and Terawasi 2013.

The purse seine fishery incidentally catches juvenile bigeye and yellowfin tunas while fishing on FADs, although some juvenile bigeye tuna are caught in free-swimming schools of yellowfin. While the percentage of bigeye tuna in the total catch of the purse seine fishery is believed to be relatively low (approximately 5 percent in WCPO, but varies between fleets), the massive volume (~1.8 million mt) of the purse seine fishery results in substantial amount of juvenile bigeye tuna mortality. The juvenile bigeye tuna fishing mortality coupled with the longline fishery targeting adult bigeye tuna has resulted an overfishing condition in the WCPO. The

impact of the purse seine fishery on the MSY of the bigeye tuna stock is substantial because of the number of juvenile fish killed by purse seine vessels as compared to the primarily adult bigeye tuna taken by longline vessels. The total weight of fish taken by both fisheries is similar as seen in Figure 8; however, Figure 9 shows the number of fish taken by the purse seine fishery is far greater than the longline fishery.

Large-scale purse seine fishing in the WCPO commenced after the mid 1970s, when purse seine bigeye tuna catches were minor and ranged from 1,000-2,000 mt a year. Total purse seine catches averaged about 400,000 mt in the 1980s, about 1 million mt in the 1990s and 1.5 million mt in the 2000s. The combined 2012 purse seine catch (all species) was the highest on record at over 1.8 million metric tons with a delivered value of over $4 billion (Williams and Terawasi 2013). During the last 30 years, purse seine bigeye tuna catches rose steadily from less than 2,000 mt in the 1970s to an average of 50,000 mt per year by the beginning of the 2000s and over 60,000 mt by the end that decade. The 2011 purse seine fishery catch of bigeye tuna was estimated at 77,000 mt, which is the highest bigeye tuna catch on record. The 2012 purse seine catch of bigeye tuna is the second highest on record at over 69,000 mt (Williams and Terawasi 2013). Catches of bigeye tuna in the purse seine fishery may be higher than reported as it is difficult to estimate the bigeye tuna catches in the purse seine fishery due to the color and other physical similarities between juvenile bigeye and yellowfin tunas, in addition to comprehensive sampling being logistically difficult during purse seining operations.

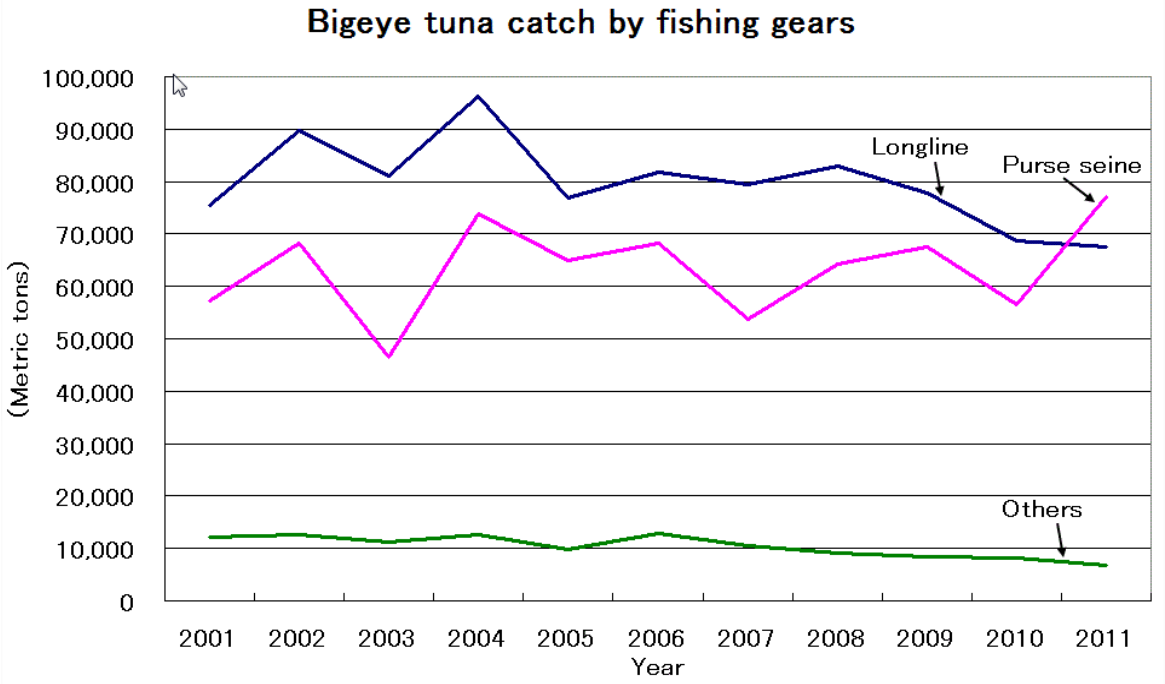

Figure 8: Volume of bigeye tuna catch by weight in the WCPO.
Source: http://oprt.or.jp/eng//wp-content/uploads/2013/02/bigeye%20catch%20by%20fishing%20gears_2.gif
Based on data from WCPFC SC8-2012/ST IP-1.

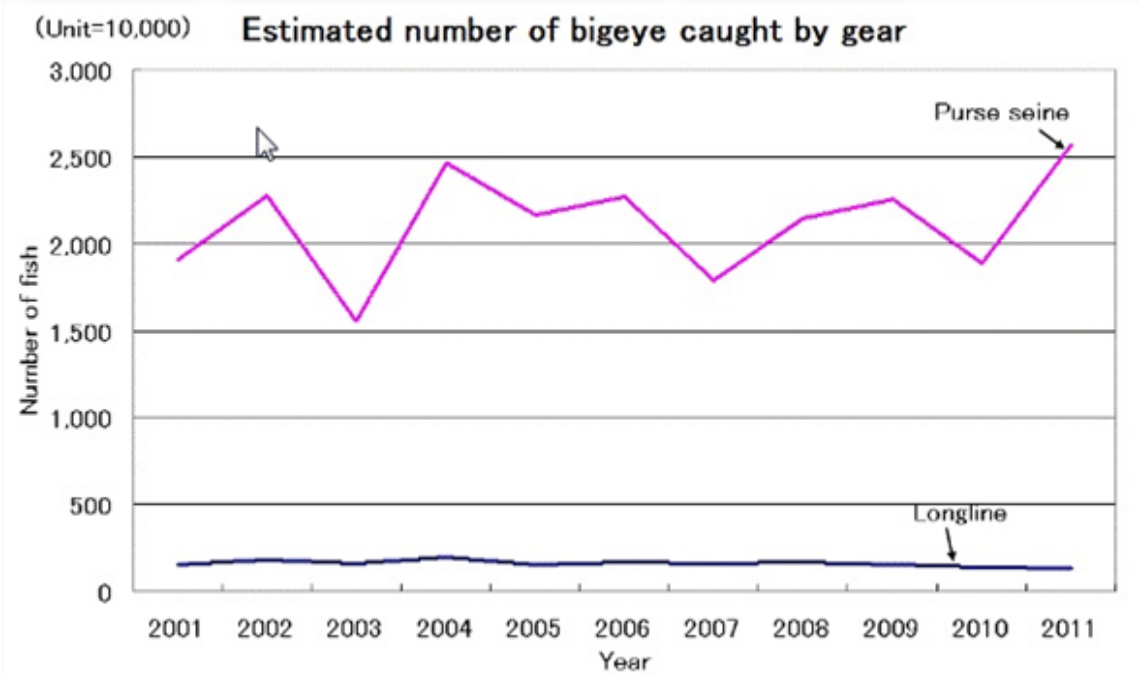

Figure 9: Estimated number of bigeye tuna caught by purse seine and longline gear in the WCPO.
Source: http://oprt.or.jp/eng//wp-content/uploads/2013/02/bigeye%20catch%20by%20fishing%20gears_2.gif
Based on data from WCPFC SC8-2012/ST IP-1.

3.2.1.4 WCPO Longline Fisheries

The following description of the longline fisheries occurring in the WCP-CA presents highlights of a report on the WCP-CA fisheries by Williams and Terawasi (2012).

Longline fishing accounts for around 10-13 percent of the total WCP-CA catch, and used to rival the much larger purse seine catch in landed value. The longline fishery provides the longest time series of catch estimates for the WCP-CA, with estimates available since the early 1950s. The total number of vessels involved in the fishery has generally fluctuated between 3,500 and 6,000 for the last 30 years (see Figure 10), although for some distant-water fleets, vessels operating in areas beyond the WCP-CA could not be separated out and more representative vessel numbers for WCP-CA have only become available in recent years.

The fishery involves two main types of operation, namely:

- Large (typically >250 gross ton (GRT)) distant-water freezer vessels which undertake long voyages (months) and operate over large areas of the region. These vessels may target either tropical (yellowfin, bigeye tuna) or subtropical (albacore tuna) species.
- Smaller (typically <100 GRT) offshore vessels, which are usually domestically-based, undertaking trips of less than one month, with ice or chill capacity, and serving fresh or air-freight sashimi markets, or albacore canneries. There are several foreign offshore fleets based in Pacific Island countries. The Hawaii and American Samoa longline fleets belong in this type of operational category

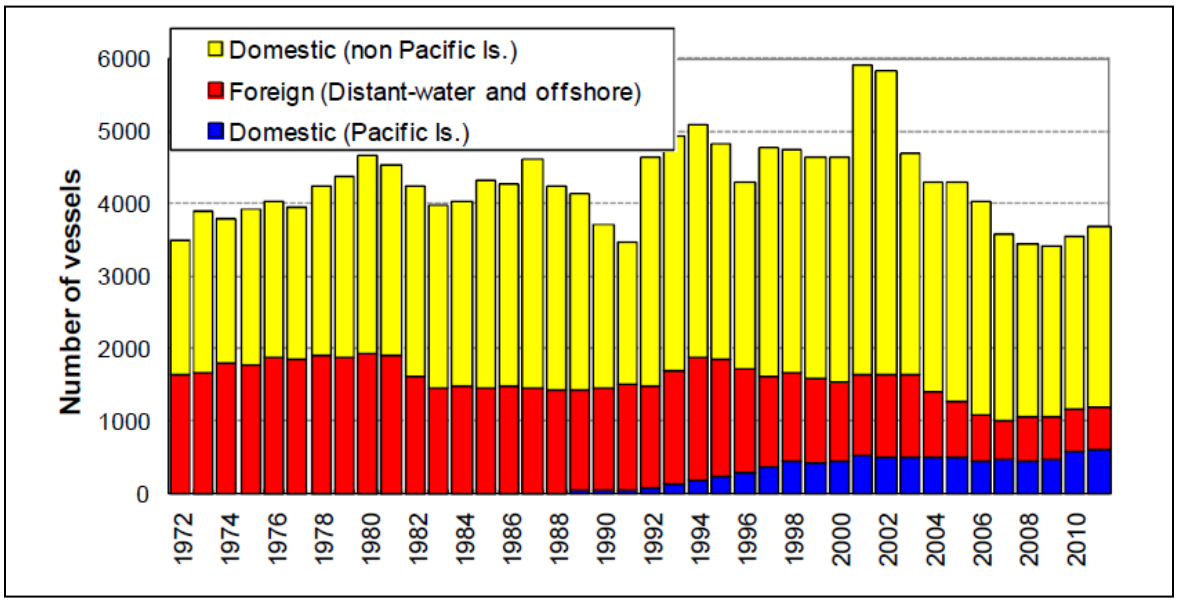

Figure 10: Longline vessels operating in the Western and Central Pacific–Convention Area. Source: Williams and Terawasi 2012.

The following broad categories of longline fishery, based on type of operation, area fished and target species, are currently active in the WCP-CA:

- **South Pacific offshore albacore fishery** comprises Pacific-Islands domestic "offshore" vessels, such as those from American Samoa, Cook Islands, Fiji, French Polynesia, New Caledonia, Samoa, Solomon Islands, Tonga and Vanuatu; these fleets mainly operate in subtropical waters, with albacore the main species taken. Two new entrants, Tuvalu and Wallis& Futuna, joined this category during 2011.
- **Tropical offshore bigeye/yellowfin-target fishery** includes "offshore" sashimi longliners from Chinese-Taipei, based in Micronesia, Guam, Philippines and Chinese-Taipei, mainland Chinese vessels based in Micronesia, and domestic fleets based in Indonesia, Micronesian countries, Philippines, PNG, the Solomon Islands and Vietnam. The term "offshore" refers to the fact that the fleet fishes relatively close to ports.
- **Tropical distant-water bigeye/yellowfin-target fishery** comprises "distant-water" vessels from Japan, Korea, Chinese-Taipei, mainland China and Vanuatu. These vessels primarily operate in the eastern tropical waters of the WCP-CA (and into the EPO), targeting bigeye and yellowfin tuna for the frozen sashimi market. The term "distant-water" refers to the long distances between the location at which the fleet fishes and their home ports.
- **South Pacific distant-water albacore fishery** comprises "distant-water" vessels from Chinese-Taipei, mainland China and Vanuatu operating in the south Pacific, generally below 20° S, targeting albacore tuna destined for canneries.
- **Domestic fisheries in the sub-tropical and temperate WCP-CA** comprises vessels targeting different species within the same fleet depending on market, season and/or area. These fleets include the domestic fisheries of Australia, Japan, New Zealand, and Hawaii.

For example, the Hawaii longline fleet has a fishery that targets swordfish in the central and North Pacific Ocean and another that targets bigeye tuna in the central Pacific Ocean.

- **South Pacific distant-water swordfish fishery** is a relatively new fishery and comprises "distant-water" vessels from Spain.
- **North Pacific distant-water albacore and swordfish fisheries** mainly comprise "distant-water" vessels from Japan (swordfish and albacore), Chinese-Taipei (albacore only) and Vanuatu (albacore only).

The WCP-CA longline tuna catch steadily increased from the early years of the fishery (i.e. the early 1950s) to 1980 (227,707 mt), but declined to 157,072 mt in 1984 (see Figure 11). Since then, catches steadily increased over the next 15 years until the late 1990s, when catch levels were again similar to 1980.

The provisional WCP-CA longline catch (262,076 mt) for 2012 was the fifth highest on record, about 15,000 mt lower than the highest on record of 279,012 m attained in 2009 (Williams and Terawasi 2013). The WCP–CA albacore longline catch (98,854 mt – 37%) for 2012 was the third highest on record, 4,000 mt lower than the record catch of 103,364 mt taken in 2010. The provisional bigeye tuna catch (76,599 mt – 29%) for 2012 was similar to the level in 2011, which is below the average for the past ten years. The yellowfin catch for 2012 (85,245 mt – 32%) was the lowest for four years but similar to the average catch level for this species over the past decade (see Figure 11; Williams and Terawasi 2013).

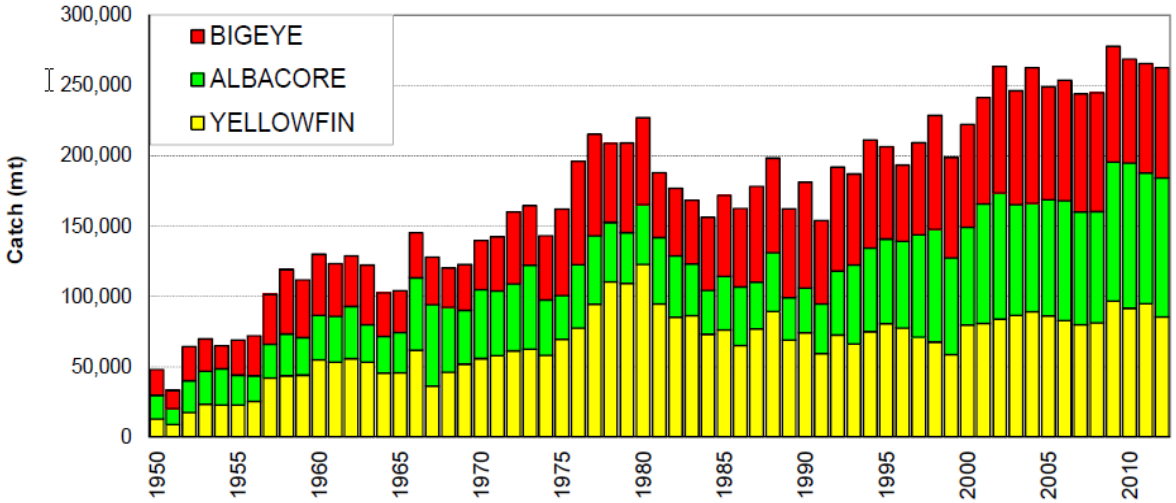

Figure 11: Longline catch (mt) of target tunas in the Western and Central Pacific–Convention Area.
Source: Williams and Terawasi 2013.

The reported longline catch of bigeye tuna by CCM from years 2001-2012 is provided in Table 7. Significant increases in bigeye tuna catch by China and Chinese Taipei in the early 2000s are observed, while Japan's longline bigeye tuna catch is showing a declining trend since the 2008. Catches by the U.S. longline fleet have been stable.

Table 7: Reported longline catches (metric tons) of bigeye tuna in the WCPFC-CA, by flag, 2001-2012.

CCM	2001	2002	2003	2004	Avg. 2001-2004	CMM 2008-01 Attch. F	CMM 2008-01 (Current)	2005	2006	2007	2008	2009	2010	2011	2012	2012 (excl. SIDs)	CMM 2012-01 limits	See notes
AMERICAN SAMOA	75	196	242	227	185	185		134	181	218	132	249	487	1,176	1,505			(4)
AUSTRALIA	1,307	1,002	1,024	892	1,056	1,056	2,000	791	499	1,008	1,027	726	458	379	482	482	2,000	(10)
BELIZE	1,322	812	782	297	803	803	803	425	254	158	89	43	89	102	132	132	803	(12)
CHINA	2,227	2,312	8,965	11,748	6,313	9,314	11,748	7,520	13,378	10,535	10,798	15,289	13,924	11,139	11,324	11,324	10,573	(6), (9), (15), (16)
CHINESE TAIPEI	12,435	16,645	14,429	20,992	16,125	15,854	16,125	15,498	14,295	14,760	15,229	13,319	11,552	11,275	10,994	11,288	11,288	(16)
COOK ISLANDS	1	56	204	394	164	164		220	166	238	292	217	192	394	333			(4)
CNMI	0	0	0	0	0	0		0	0	0	0	0	0	0	0			
EUROPEAN COMMUNITY	0	0	0	42	11	11	2,000	17	62	62	77	46	15	10	23	23	2,000	(10)
FSM (FED. STATES MICRONESIA)	651	759	656	542	652	652		182	172	1,395	970	1,395	899	1,269	948			(4)
FIJI	662	853	889	1,254	915	915		423	771	556	671	689	532	604	1,588			(4)
FRANCE (FRENCH POLYNESIA)	745	649	439	502	584	584		606	498	478	490	587	436	607	654			(4)
FRANCE (NEW CALEDONIA)	128	189	142	90	137	137		76	35	53	63	51	44	41	49			(4)
FRANCE (WALLIS AND TUTUNA)	0	0	0	0	0	137		0	0	0	0	0	0	6	0			(4)
GUAM	0	0	0	0	0	0		0	0	0	0	0	0	0	0			
INDONESIA	*942*	*1,470*	*2,168*	*2,192*	*1,693*	*8,413*	*2,192*	*2,202*	*3,011*	*1,993*	*3,579*	*4,000*	*1,221*	*1,699*	*3,681*	*3,681*	*2,000*	(6), (11), (19)
JAPAN	27,466	29,574	26,110	29,248	28,100	28,100	28,100	23,021	25,685	26,076	19,593	16,880	15,927	16,616	12, 259	12,259	19,670	
KIRIBATI	0	0	1	0	0	0		0	0	0	44	0	3	70	451			(4)
MARSHALL	0	0	0	1	0	0		0	0	3	375	381	257	259	335			(4)

CCM	2001	2002	2003	2004	Avg. 2001-2004	CMM 2008-01 Attch. F	CMM 2008-01 (Current)	2005	2006	2007	2008	2009	2010	2011	2012	2012 (excl. SIDs)	CMM 2012-01 limits	See notes
ISLANDS																		
NAURU	6	3	10	0	5	5		0	0	0	0	0	0	0	0			(4)
NEW ZEALAND	481	201	204	177	266	266	2,000	175	177	213	133	253	132	174	154	174	2,000	(10)
NIUE	0	0	0	0	0	0		10	22	18	1	10	4	0	0			(4)
PALAU	21	1	1	7	8	8		0	0	0	0	0	0	0	0			(4)
PAPUA NEW GUINEA	240	318	390	399	337	335		237	216	111	201	128	39	59	119			(4)
PHILIPPINES	59	59	59	59	59	343	2,000	59	59	59	59	59	59	0	0	0	2,000	(8), (10)
PORTUGAL	0	0	0	0	0	0	2,000	0	0	0	0	0	0	0	0	0	2,000	
REPUBLIC OF KOREA	22,172	28,533	17,151	17,941	21,449	21,499	21,449	15,622	12,489	10,054	17,001	15,231	13,914	15,282	18,823	18,823	15,014	(16)
SAMOA	185	137	110	104	134	134		64	128	101	106	117	108	71	54			(4)
SENEGAL	0	0	0	0	0	0		0	3	2	0	0	0	0	0	0		(13)
SOLOMON ISLANDS	187	401	385	294	317	476		3	0	0	0	0	481	481	0			(4, 16)
TONGA	191	215	94	40	135	135		125	117	129	81	38	24	18	10			(4)
TUVALU	0	0	0	0	0	135		0	0	0	0	0	0	105	1,408			(4)
USA	2,418	4,396	3,618	4,181	3,653	4,181	4,181	4,462	4,381	5,381	4,649	3,741	3,577	3,565	3,654	3,654	3,763	(6), (17)
VANUATU	17	396	841	1,862	779	779		1,558	1,651	2,122	860	1,300	2,060	2,060	2,141			(4)
Total	73,938	89,177	78,914	93,485	83,879	94,621	92,598	73,430	78,250	75,723	76,520	74,749	66,250	65,219	71,148	61,543	77,000	
VIETNAM	1,450	614	2,129	2,781				3,527	3,538	3,648	3,358	2,992	2,441	3,424	3761			(14)

Source: WCFPC Working Group on Tropical Tunas. CMM tropical tunas data summary (v21-08-2013). WCPFC-2013-WGTT/-08 (WCPFC 2013c). This table is adapted from the original in the report to include CNMI and Guam.

Notes:

1. 2012 data for all CCMs are provisional.
2. Catch estimates in red have been carried over from previous years.
3. Indonesia and Philippines have recently revised their estimates in recent years. (see the respective Annual Catch Estimate Workshop reports at (http://www.wcpfc.int/west-pacific-east-asia-oceanic-fisheries-management-project)

4. The limits in the column labeled “CMM 2008-01 - 2010 limits” and “CMM 2012-01 limits” do not apply to small island developing State members and participating Territories according to paragraph 34 of CMM 2008-01 and CMM 2012-01.
5. Catches and effort of vessels operating under charters and similar agreements have been attributed to host island states or territories in accordance with paragraph 2 of CMM 2008-01 using the best information available to SPC-OFP. However, in several cases, catches have not yet been attributed to the CCM responsible for the "charter or similar agreements" since the flag state CCM has yet to advise that it has excluded these catches from their data (and thereby avoid double-counting).
6. The year 2004 shall apply to China, the United States and Indonesia. (CMM 2008-01 Footnote 3).
7. Attachment F in the CMM 2008-01 (BASELINE LONGLINE BIGEYE TUNA CATCHES, BY FLAG) represents the bigeye tuna catch estimates available at the time of establishing CMM 2008-01.
8. Estimates include archipelagic water catches, which for some countries cannot be separated at this stage (e.g., Philippines).
9. For China, Para 36 overrides the reduction in catches listed in Para 33 in regards to 2009 and 2010 limits.
10. The catch limits established at 2,000t prior to 2010, remain at the level of 2,000t. (according to CMM 2008-01 Para. 32)
11. The catch limits reduced by 20% for 2010 that fall below 2,000 t. are to be set at 2,000 t. (Para. 38)
12. The catch limit set for Belize prior to 2009 is retained for 2009, according to WCFPC6 Report (Para. 27)
13. Senegal committed to limiting its fishing activities in the WCPF Convention Area to one longline vessel - WCFPC5 Report (Para. 44)
14. The Vietnam longline fleet is understood to fish outside the WCFPC Convention Area (South China Sea).
15. Catches by the Chinese longline fleet in the Kiribati EEZ are included in the estimates.
16. Catches by chartered Chinese, Korean, and Chinese-Taipei longline vessels licensed to fish in Solomon Islands waters have been attributed to the Solomon Islands for 2010 and 2011.
17. Para 35 applies to the U.S. so the limit for 2010 will be a 10% reduction of the 2004 baseline catch in Attachment F.
18. Does not yet cover development of new fisheries in the waters of small-island developing states (e.g., Tokelau)
19. Indonesia bigeye tuna catch excludes catches in Archipelagic waters.
20. Korea and Chinese Taipei will voluntarily restrict its catch level at 2% less than the catch limits specified here in 2013.

As indicated in Note 5 associated with Table 7 above, WCPFC catch estimates of bigeye tuna are also supposed to include longline vessels harvesting bigeye tuna under charter agreements. However, in several cases, catches have not yet been attributed to the CCM responsible for the "charter or similar agreements" because the flag state CCM has yet to advise that it has excluded these catches from their data (and thereby avoid double-counting; WCPFC 2013 data summaries). Although no longer in effect, paragraph 2 of CMM 2008-01 states that vessels operated under charter, lease or other similar mechanisms by SIDS and PTs, as an integral part of their domestic fleet, shall be considered vessels of the host island State or territory for purposes of attributing catch.

In 2012, the WCPFC agreed to a charter notification measure (CMM 2012-05), which replaced, but did not substantively change the existing charter notification measure CMM 2011-05. CMM 2012-05 applies to Commission Members and Participating Territories that charter, lease, or enter into other mechanisms with eligible vessels[22] flagged to another State or Fishing Entity for conducting fishing operations in the Convention Area as an integral part of the domestic fleet of that chartering Member or Participating Territory (CMM 2012-05). This measure requires CCMs to notify the WCPFC of vessels that are engaged in charter agreement on annual basis. CMM 2012-05 anticipates transfer of quota and directs WCPFC members and cooperating non-members to cooperate further on issues of attribution of catch and effort by chartered vessels.

The 2011 Performance Review of the WCPFC recommended that CCMs review the adequacy of the charter CMM to address the issue of charter vessel agreements and, if they conclude it is not, establish additional measures, including a new CMM (e.g., Charter Arrangement Scheme) to address the attribution of catch under charter agreements or similar mechanisms. As indicated above, CMM 2012-05 is a notification scheme, and does not address issues associated with catch attribution under charter agreements, for example, whether the catch is attributed to a vessel's flag state while fishing in the EEZ of chartering nation. Other scenarios include whether to attribute a chartered vessel's catch on the high seas to the flag state or to the state chartering the vessel.

3.2.1.5 Other Species-based WCPFC Conservation and Management Measures

The following section summarizes information from the 2011 WCPFC Performance Review (WCPFC 2011b). Table 2 provides a summary of applicable CMMs.

South Pacific Albacore

The WCPFC first adopted a CMM for South Pacific albacore in 2005 (CMM 2005-02), which was rescinded and replaced in 2010 by CMM 2010-05. The 2010 measure provides that CCMs shall not increase the number of fishing vessels actively fishing for South Pacific albacore in the Convention Area south of 20° S above 2005 levels. The measure also makes vague provision for cooperation between CCMs that actively fish for this species south of the equator, including cooperation and collaboration on research to reduce uncertainty with regard to the status of this stock. CCMs are required to report annually to WCPFC on the catch levels of South Pacific

[22] Only vessels listed on the WCPFC Record of Fishing Vessels or the WCPFC Interim Register of Non-CCM Carriers and Bunkers, and not on the WCPFC IUU vessel list, or IUU List of another RFMO, are eligible for charter (CMM 2012-05 para. 4).

albacore in the Convention area south of 20° S, including the catch levels of their fishing vessels that have taken South Pacific albacore as a bycatch. The measure is to be reviewed annually based on advice from the Scientific Committee. Exemptions are provided to the SIDS and PTs. The U.S. annually reports to the WCPFC the number of U.S. fishing vessels fishing for south Pacific albacore south of 20° S.

South Pacific Swordfish

The WCPFC first adopted a CMM in relation to south Pacific swordfish in 2008 (CMM 2008-05), which was superseded in 2009 by CMM 2009-03. The objective of CMM 2009-03 is to provide for the sustainable management of swordfish in the south Pacific by not increasing catch or effort beyond 2000-2005/6 levels. The 2009 measure requires CCMs to limit the number of their fishing vessels for swordfish in the Convention Area south of 20° S, to the number in any one year between the period 2000- 2005. CCMs must also limit the amount of swordfish caught by fishing vessels flagged to them in the Convention Area south of 20°S to the amount caught in any one year during the period 2000- 2006. CCMs are prohibited from shifting their fishing effort for swordfish to the area north of 20° S. CCMs are also required to submit to WCPFC comprehensive reports in relation to specified vessels, detailing the number of vessels that fished for swordfish and their total swordfish catch. CMM 2009-03 further requires CCMs to cooperate to protect the long-term sustainability and economic viability of the fisheries for swordfish in the Southwest Pacific, and in particular to cooperate on research to reduce uncertainty with regard to the status of swordfish stocks (the 'standard CCM cooperation provision'). If a CCM exceeds the total catch of swordfish specified for it under CMM 2009-03, that CCM will, in the following year, be subject to a reduction in their catch limit equal to the exceeded amount. Exemptions are provided to the SIDS and PTs.

North Pacific Striped Marlin

The objective of CMM 2010-01 is, over a three-year period, to reduce fishing mortality of North Pacific striped marlin stock to 80 percent of 2003 levels. The measure applies in the high seas and EEZs in the Convention Area north of the equator. Each flag/chartering CCM with vessels fishing in the relevant area is subject to catch limits for north Pacific striped marlin from 2011 onwards. Under the measure, reductions must be made from the highest catch between 2000 and 2003. In 2011 there must be a 10 percent reduction from the highest 2000-2003 catch; in 2012, 15 percent, and in 2013 and beyond, a reduction of 20 percent. The measure provides that each flag/chartering CCM shall decide on the management measures required to ensure that its flagged/chartered vessels operate under the specified catch limits. Exemptions are provided to the SIDS and PTs.

North Pacific Albacore

The objective of CMM 2005-03 is to restrict the total level of fishing effort for north Pacific albacore in the Convention Area north of the equator at the levels that were current in 2005. CMM 2005-03 provides that CCMs must take necessary measures to ensure that the level of fishing effort by their vessels fishing for north Pacific albacore in the Convention Area is not increased beyond current levels. CCMs are required under this measure to report to the WCPFC:

- every six months (annually for small coastal fisheries) on all catches of north Pacific albacore, no later than one year after the end of the period covered; and

- annually on all catches of albacore north of the equator and all fishing effort north of the equator in fisheries directed at albacore, including details of gear type and number of vessel-days fished.

Exemptions are provided to the SIDS and PTs.

Pacific Bluefin Tuna

The principal objective of CMM 2010-04 is to ensure, through control of fishing effort, that the level of fishing mortality for Pacific bluefin tuna in the Convention Area is not increased above the current level. The Measure provides that CCMs must 'take measures necessary to ensure that total fishing effort by their vessels fishing for Pacific bluefin tuna in the area north of the 20o north shall stay below the 2002-2004 levels for 2011 and 2012, except for artisanal fisheries.' The measure also requires CCMS (except Korea) to adopt measures to reduce the catch of juvenile bluefin. Exemptions are provided to the SIDS and PTs.

3.2.2 Inter-American Tropical Tuna Commission

3.2.2.1 Bigeye Tuna Conservation Resolution

A tuna conservation resolution primarily for the purposes of bigeye tuna conservation was adopted by the IATTC in June 2013, for the three-year period (2014-2016), extending the previous resolution which expired at the end of 2013. This includes an EPO wide closure for purse seine (>182 mt) fishing of 62 days in each of those years, along with a 30 day closure of a core offshore FAD fishing area. There is a special provision for class 4 vessels (182-272 mt) which permits 30 days of fishing during the EPO closure provided an observer is aboard. For longline vessels (>24 m) the resolution includes fixed bigeye tuna catch limits for China (2,507 mt), Japan (32,372 mt), Korea (11,947 mt), and Chinese Taipei (7,555 mt), and for other members, including the USA, to not to exceed 500 mt or their respective catches in 2001, whichever is greater.

3.2.2.2 Purse Seine Fishing in the EPO

Until about 1960, fishing for tunas in the EPO was conducted by pole-and-line vessels operating in coastal regions and near offshore islands and banks. During the late 1950s and early 1960s, most of the larger pole-and-line vessels were converted to purse seiners, which since 1961, have d the EPO fishery was dominated by these vessels. The number of purse seine vessels operating in the EPO peaked in the early 1990s at 288 vessels. Currently, there are 239 purse seine vessels registered on the IATTC's active vessel registry.[23]

Total catches of the EPO purse seine fishery are 500,000 mt, and comprised mostly of yellowfin and skipjack. Prior to 1994, the annual retained catch of bigeye tuna taken by purse-seine vessels in the EPO was about 8,000 mt. Following the development of FADs in the EPO, the annual retained catches of bigeye tuna increased from 35,000 mt in 1994 to between 44,000 mt and 95,000 mt during 1995-2011. The preliminary estimate of the retained catch in the EPO in 2012 is 69,000 mt (IATTC 2013).

[23] http://www.iattc.org/VesselRegister/VesselList.aspx?List=AcPS&Lang=ENG

3.2.2.3 Longline Fishing in the EPO

There are 1,227 large-scale longline vessels (greater than 24 m) authorized to operate in the eastern Pacific Ocean, in the waters under the jurisdiction of the IATTC. The major longline fleets are Japan (290 vessels), Korea (197), China (237) Chinese Taipei (149), and European Union, Spain, and Portugal (154). The balance is formed by fleets from the U.S. (42), and countries of Central and South America.[24]

Within the last decade, there has been a significant decline in longline catches for bigeye tuna in the EPO, most notably for Japan and Korea. For example, the 2011 bigeye tuna longline catch (25,216 mt) in the EPO was 25 percent of 1991's record high of 104,195 mt. Prior to 1994, longliners caught an average of 94 percent of the bigeye tuna in the EPO (average 80,000 mt; range 46,000 mt to 104,000 mt). During 1997-2011, this percentage dropped to an average of 40 percent, with a low of 25 percent in 2008. The preliminary estimate of the longline bigeye tuna catch in the EPO in 2012 is 19,000 mt (IATTC 2013).

3.3 Pelagic Fisheries of the Territories and State of Hawaii

The following is an overview of the pelagic fisheries of the Territories and State of Hawaii. For a more detailed description of these fisheries, including catch and effort statistics, see Appendix C.

3.3.1 American Samoa

For an in-depth description of American Samoa's fishing community see Levine and Allen (2009), incorporated herein by reference.

American Samoa commercial fisheries have changed from trolling with smaller boats targeting skipjack and yellowfin tuna, to larger boats for longline fishing primarily targeting albacore tuna for canning in Pago Pago. The rapid expansion of longline fishing effort within the EEZ waters around American Samoa in 2000 prompted the Council to develop a limited entry system for the American Samoa pelagic longline fishery (Amendment 11 to the Pelagic FMP). The objectives of the limited entry were to: avoid a boom-and-bust cycle that could disrupt community participation in the small scale pelagic fishery; adjust regulations to more rigorously monitor and manage the fishery; limit the number of vessels engaged in longline fishing and separate large and small vessels to reduce the potential for fishing gear conflicts; maintain local catch rates of albacore at economically viable levels; and provide opportunity for substantial participation by indigenous islanders in the large vessel sector. This limited program was implemented by NMFS in 2005, and limited the total number of permits at 60 (see 50 CFR § 660.816).

The limited entry permit program appears to have been successful at preventing unwanted expansion. However, most of the smaller vessels have left the fishery and the Council has recently recommended changes to the permit program that are intended to improve opportunities for local fishermen to participate in the longline fishery and to enhance the viability of medium sized vessels already in the fishery by reducing potential program impediments to encourage

[24] http://www.iattc.org/VesselRegister/VesselList.aspx?List=Longline&Lang=ENG

more participation. The proposed changes to the limited entry permit program are not yet finalized and would be the subject of additional review in a separate Pelagics FEP amendment document.

The peak catch of pelagic fish by the American Samoa longline fishery was in 2002 at approximately 16 million lb (7,600 mt). Since then catches have been variable, with a second peak in 2007 at approximately 14 million lb (6,350 mt), but declined thereafter to about half this total or about 7 million lb (3,176 mt) of pelagic MUS in 2011. Albacore tuna forms almost 80 percent of landings, followed by yellowfin tuna (10%), bigeye tuna (3.6%), wahoo (3.5%), and skipjack tuna (3.2%). Bigeye tuna landings in American Samoa between 2002 and 2011 ranged from about 275,000-535,000 lb (124-243 mt).

Based on logbooks, 24 vessels reported that they made 3,776 sets and deployed 10,767,655 hooks in 2010. Albacore catch per unit effort (CPUE) has declined from around 25 fish per 1,000 hooks in 2002, to around 12-18 fish per 1,000 hooks thereafter. Skipjack tuna CPUE show a declining trend from a 2002 high of five fish per 1,000 hooks, to about two fish per 1,000 hooks in recent years. Yellowfin tuna CPUE has been variable, with a peak in 2004 of about three fish per 1,000 hooks and a low of about one fish per 1,000 hooks in 2008. The bigeye tuna CPUE trend is similar to that of yellowfin, with a peak in 2004 of about one fish per 1,000 hooks, and a low of 0.5 fish per 1,000 hooks in 2008.

NMFS-trained observers independently observe the American Samoa longline fishery at an annual coverage rate of approximately 20 percent. Bycatch in the fishery is comprised mostly of sharks and other pelagic species (e.g., lancetfish) and are generally not retained due to a combination of limited local markets, logistical constraints for exporting fish, and unmarketable species.

The decline in troll fishing around American Samoa preceded the advent of the longline fishery, but the expansion of longlining in the mid-1990s was marked by a major decline in vessels using trolling gear to a record low of seven vessels in 2010. Troll catches were much higher prior to 2000, which is the year the longline fishery expansion began. The peak year for the troll fishery was 1995, when catches exceeded 278,000 lb. Catches of pelagic species since 2000 have been on a declining trend, reaching their lowest ever in 2010, with just under 5,000 lb landed. In 2011, 10 troll vessels landed 33,086 lb of pelagic fish. Catches are predominantly skipjack and yellowfin tunas, which comprise on average 53 percent and 23 percent of pelagic landings, respectively.

The Council is developing several new Pelagics FEP amendments for the management of the longline fishery, but these are in preliminary stages and not ready to transmit for Secretarial review pursuant to the Magnuson-Stevens Act. These include the following subjects:

- Modifications to the American Samoa longline limited entry program to support greater fishery participation by small vessels (< 50ft) in the fishery and simplify the program.
- Establishing regulations for an American Samoa shallow-set longline fishery.

As indicated in the catch statistics presented in this section and Appendix C, the American Samoa longline principally targets albacore tuna for processing at local canneries in Pago Pago.

Currently, Starkist Samoa operates a long-standing cannery in Pago Pago, employing over 1,500 people in the Territory. Chicken of Sea once operated a cannery in Pago Pago Harbor, but closed its operations in September 2009, a day before the devastating tsunami that hit American Samoa and neighboring South Pacific countries. In 2011, Tri Marine took control of the old Chicken of the Sea facility and is developing a new cannery and fresh/frozen fish processing center under the name of Samoa Tuna Processors. After extensive rebuilding of the existing property,canning operations are expected to commence in 201. Small amounts fresh and frozen fish are being accepted at Samoa Tuna Process for export to foreign markets. To date, the fresh and frozen fish for export have been delivered only by foreign vessels.

Under Section 113, the American Samoa government is authorized to enter into fishing agreements with U.S. Pelagics FEP-permitted vessels. To date, one agreement has been made by the American Samoa government with the Hawaii Longline Association that was effective for 2011 and 2012. In 2011, 628 mt of bigeye tuna were attributed to American Samoa; in 2012, 771mt of bigeye tuna were attributed to American Samoa. As there was no bigeye tuna limit established by the WCPFC for American Samoa, the agreement did not affect the amount of bigeye tuna that was available to the American Samoa longline fishery.

The American Samoa-based U.S. longline fleet has relied on the canneries as its only market, and there is a need to responsibly diversify this fishery and facilitate revival of the once active small vessel fleet. The development of a sustainable and multifaceted fishery sector is an economic priority identified by the current American Samoa Administration and could help reduce the negative economic impacts facing American Samoa.

American Samoa seafood marketing potentials were assessed by TEC, Inc. (2007). Three scenarios for new development directions identified by TEC represent points along a spectrum of possible futures for American Samoa's longline fishery. New Direction 1 emphasizes the potential for fresh export, particularly of high quality bigeye tuna, via air cargo. New Direction 2 emphasizes processing pelagic species (e.g. swordfish) into value-added products for freezing and export via ocean cargo. New Direction 3 emphasizes close cooperation through a longline fishermen's association or cooperative to process and market canned or pouched albacore products in oversea markets under an American Samoa brand. In 2009, a preliminary responsible fisheries development plan was completed for the American Samoa longline fishery, and in that plan, all three directions were found to be components of responsible fisheries development, but also dependent on several projects to overcome existing barriers (Bartram and Kaneko 2009).[25] Existing barriers include limited air freight, lack of fish processing and cold storage facilities, limited longline vessel dockage in Pago Pago Harbor, fish handling and HACCP training, and market development. Since the 2009 report, the opening of Tri Marine's Samoa Tuna Processing facility has addressed constraints related to fish processing and cold storage. However, a significant need for American Samoa is adequate docking space for U.S. longline vessels in Pago Pago and refitting of existing longline vessels to be capable of doing fresh fish operations or ultralow (-60°C) freezing operations. Many newly constructed Chinese vessels operating in the South Pacific are equipped with ice makers and ultralow freezers to provide for greater operational flexibility and ability to land diversified products for various markets (e.g., canneries and fresh/frozen export).

[25] See http://www.wpcouncil.org/pelagic-fisheriestoday.html

The funds derived from the 2011 and 2012 agreement with HLA will be used to support fisheries development projects identified in the American Samoa MCP. At the time of drafting this document, not all of the funds have been dispersed into the Sustainable Fisheries Fund by NMFS. However, the Council and the American Samoa government are coordinating on identifying the best use of those funds to support responsible fisheries development in the Territory and to address existing challenges and needs.

3.3.2 Commonwealth of the Northern Mariana Islands

For an in-depth description of CNMI's fishing community, see Allen and Amesbury (2012), which is incorporated herein by reference.

CNMI does not have substantial infrastructure dedicated to commercial fishing. The pelagic fishing fleet consists primarily of trolling vessels less than 24 ft in length that generally take one-day trips within 30 nm to primarily target skipjack tuna. The harvest of pelagic species by CNMI-based vessels has always been small, historically averaging approximately 240,000 lb annually, and caught with trolling gear.

Interest in longline fishing in CNMI has been variable with the issuance of eight, four, and five Western Pacific General Longline permits from 2007 through 2009, respectively. There were three or fewer longline vessels fishing in 2010 and 2011, and due to data confidentiality rules, their catch statistics are not described. In 2012, these longline vessels abandoned their CNMI operations base and returned to Hawaii. High operating costs and poor market access were attributed to the vessels not being profitable while based in the CNMI.

Longline fisheries in Guam and CNMI are permitted with a Western Pacific General Longline permit under the FEP and regulated with a suite of measures similar to the American Samoa and Hawaii longline fisheries. For example, the Pelagics FEP includes longline prohibited areas in the Marianas, extending from shoreline to 50 nm around Guam and 30 nm around the CNMI. An area in northern CNMI around the three northernmost islands (the Islands Unit of the Marianas Trench Marine National Monument) is closed to commercial fishing out to approximately 50 nm.

In 2011, skipjack tuna continued to dominate CNMI's pelagic troll fishery landings, comprising about 80 percent of commercial pelagic landings and revenues totaling about $134,000. Schools of skipjack tuna have historically been common in nearshore waters, providing an opportunity for trollers to catch numerous fish with a minimum of travel time and fuel costs. Yellowfin tuna and mahimahi are also easily marketable species, but are seasonal. Peak mahimahi catches are usually from February through April while the yellowfin season usually runs from April through September. The troll fishery very rarely catches bigeye tuna.

In the 1980s, CNMI used to be the base of several U.S. purse seine vessels, but those operations ceased in that decade. CNMI's local tourism market coupled with its close proximity to Guam and large Asian markets make responsible fisheries development a key area for economic growth. CNMI fisheries development needs include longline vessel capacity, large vessel

docking space, fish processing and cold storage facilities, fish handling and HACCP training, and marketing development.

Section 113 authorized the CNMI government to enter into fishing agreements with FEP-permitted vessels. In 2013, the CNMI government made an agreement pursuant to Section 113 with HLA vessels permitted under the Pelagics FEP. In addition, interest in a quota utilization program is identified in the CNMI MCP. As of late March 2014, landings data for catch attributed to the CNMI under the 2013 agreement are unavailable. However, the preliminary estimate for bigeye tuna attributed to the CNMI in 2013 is less than amounts attributed to American Samoa in 2011 or 2012 (K. Bigelow, PIFSC, pers. comm., March 21, 2014).

3.3.3 Guam

For an in-depth description of Guam's fishing community see Allen and Bartram (2008), incorporated herein by reference.

Guam's principal pelagic fisheries comprise small, primarily recreational trolling boats that are towed to boat launch sites or are marina-berthed charter boats. They fish only within local waters, either within Guam's EEZ or on some occasions in the adjacent EEZ around CNMI. Most fishermen sell a portion of their catch to recoup fishing expenses and it is difficult to make a distinction between recreational, subsistence, and commercial fishers. Licenses are not required to sell fish in Guam, nor are there any reporting requirements for those selling fish. Data are collected through a creel survey administered by Guam's Department of Aquatic Resources.

The Western Pacific General Longline permit allows longline fishing in Guam and CNMI under the FEP and regulated with a suite of measures similar to the American Samoa and Hawaii longline fisheries. For example, the FEP established longline prohibited areas in the Marianas, extending 50 nm around Guam and 30 nm around the CNMI. The Council is drafting a Pelagics FEP amendment to prohibit large vessels (≥120 ft) from fishing within 100 nm around Guam and CNMI. The draft amendment would not affect the Council's ability to make the changes in Amendment 7 nor result in a cumulative environmental impact that would negatively affect the outcome of this action.

Like CNMI, skipjack tuna, and to a lesser degree yellowfin tuna, and blue marlin make up the bulk of the commercial trolling catch around Guam. Bigeye tuna are not caught in substantial numbers in the troll fishery.

Guam currently has hundreds of small-scale fishing vessels that troll for pelagic and bottomfish species using handline methods. Guam has no active longline vessel and no domestic purse seine vessels in operation. In the mid-2000s, one longline vessel with a Western Pacific General Longline permit operated out of Guam as part of a Western Pacific Community Demonstration Project Program, but has since been inactive. Guam also used to homeport several U.S. purse seine vessels, but that ceased in the late 1980s.

Due to its strategic location and regional air service hub, Guam also used to be a principal transshipment port for many foreign longline vessels, but the number of foreign vessels port calls

to Guam has significantly decreased over recent years. The decline in foreign port calls is believed to be linked to the U.S. Shark Finning Prohibition Act of 2000 and landing agreements between foreign vessels and neighboring Pacific Island Countries that restrict foreign vessels landing in Guam. Because of its history of a transshipment port, Guam does have cold storage facilities, but is lacking fish-processing facilities. A fisheries development need in Guam is local capital for purchasing or leasing larger vessels that could allow local Guam fishermen to participate in larger scale, offshore tuna fisheries. Guam is close to large Asian markets, serviced by daily from flights to and from Honolulu, and has an expanding local population and markets related to tourism and growing U.S. military presence. There is significant potential for U.S. longline vessels to be based in Guam.

Under Section 113, the Guam government is allowed to enter into fishing agreements with U.S. Pelagics FEP-permitted vessels. To date, no agreements have been made by the Guam Government; however, interest in a quota utilization program is identified in the Guam MCP.

3.3.4 Hawaii

Hawaii's pelagic fisheries, which include the longline, Main Hawaiian Islands (MHI) troll and handline, offshore handline, and the aku boat (pole-and-line) fisheries, are the state's largest and most valuable fishery sector. Tuna, billfish, and other tropical pelagic species (such as mahimahi, ono, and opah) supply most of the fresh pelagic fish consumed by Hawaii residents and support popular recreational fisheries. Hawaii longline vessels are capable of traveling long distances to high-seas fishing grounds, while the smaller handline, troll, charter and pole-and-line fisheries, which may be commercial, recreational or subsistence, generally occur within 25 miles of land, with trips lasting only one day.

The catch trend for pelagic species across all fisheries over time has been increasing from 16 million pounds (7,260 mt) in 2004 to a maximum of about 27 million pounds (12,250 mt) in 2007, with a mean of 22 million pounds (9,980 mt). Over this period, the swordfish fishery reopened in 2004, which contributed to higher total landing volumes (WPFMC 2012).

Longline

Longline fishing has almost a century of operations in Hawaii, commencing in 1917 with wooden sampan vessels operating basket-style tarred rope longlines, and using floats with marker flags, which gave rise to this fishery as the 'flag-line' fishery. Fishing was conducted close to shore and targeted bigeye and yellowfin tunas. The limited entry program caps the number of permits for the Hawaii longline fisheries at 164, and maximum vessel length is limited to 101 ft.

In the early 2000s when the Hawaii-based longline fishery experienced area and other closures to protect sea turtles, U.S. longline vessels from the west coast fished in the high seas of the WCPFC Convention Area north of Hawaii and landed their catch on the U.S. West Coast. No rules currently prevent a tuna longliner based on the west coast from fishing in the WCPFC area. If there should again be an expansion of such fishing, in combination with the Hawaii longline fishery it would be subject to the WCPFC limit of 3,763 mt of bigeye tuna.

There are two distinct Hawaii longline fisheries: one which sets lines deep to maximize the catch of bigeye tuna (deep-set fishery), and the other that sets gear shallow (shallow-set fishery) to target swordfish. Some swordfish vessels may switch to deep-set tuna fishing as the swordfish season ends. Since 2004, an average of 126 vessels actively deep-set, and 28 of these vessels switch seasonally to actively shallow-set. Recently, only two vessels strictly shallow-set. Unless distinctly discussed, the Hawaii deep-set and shallow-set fisheries will be referred to as the Hawaii longline fishery.

About one-third of the catch (numbers of fish) in the deep-set fishery is bigeye tuna, with the balance of the catch primarily mahimahi, blue shark, oilfish, pomfret, albacore, yellowfin, and skipjack tunas, moonfish (opah), striped marlin, spearfish and wahoo. Most of these fish are retained, apart from the blue shark, which is mostly discarded alive. About 40 percent of the shallow-set catch (numbers of fish) comprises swordfish, with blue shark, mahimahi, albacore and oilfish forming most of the balance of the catch. Although the shallow-set fishery targets swordfish, it also catches bigeye tuna incidentally. Like the deep-set fishery, most of the blue shark catch is discarded alive.

Effort trends for the Hawaii deep-set longline fishery are summarized in Table 8 and Table C-17 of Appendix C. Effort trends for the Hawaii shallow-set fishery are summarized in Table C-20 of Appendix C. From 2004-2012, the annual number of vessels that participated in the deep-set fishery has remained relatively stable, ranging from 124 to 129, and NMFS does not expect the number to increase much beyond this range in the near future (Table 8). Although there is potential for the number of active vessels to increase in under the limited entry program, which is capped at 164 permits, it is difficult to speculate on new vessels entering fishery due to new vessel costs, fishing participant turnover, and the existing regulatory environment.

The average number of deep-set trips per year (1,484) slightly decreased from 2004-2012, while the average number of sets per trip and hooks per set slightly increased from 10 to 12 and 2,007 to 2,374, respectively. Therefore, analyses show vessels are making fewer trips yet deploying more hooks per set. It is likely that fishermen are making more sets per trip and deploying more hooks per set to increase efficiency and spend less money on fuel, which has increased significantly over the last several years.

NMFS' Pacific Islands Fisheries Science Center (PIFSC) provided a statistical analysis of past fishing effort from 2004-2012 to inform the anticipated level of future effort in the Hawaii deep-set fishery. The deep-set fishery operated largely unchanged from 2004 to 2008, in terms of the area of operation and the number of vessels that deep-set fish. During this period, the fishery operated without catch limits and the number of hooks increased by roughly 2.1 million per year. In 2004, the fishery set 31,913,246 hooks and in 2008, the fishery set 40,083,935 hooks. In 2009 through 2012, the fishery was subject to a bigeye tuna catch limit of 3,763 mt in the western and central Pacific, where the majority of historical effort has occurred, constraining annual effort to 37,770,913 and 37,244,432 hooks in 2009 and 2010, respectively. However, in 2011 and 2012, the fishery operated under a Section 113 agreement that provided additional fishing opportunity beyond the catch limit of 3,763mt. As a result, the deep-set fishery operated throughout the year, and new records for hooks set were reached in 2011 and 2012. In these years, it operated similar

to 2007 and 2008 in terms of total catch of bigeye tuna. Total hooks deployed in 2012 were 43,965,781. Spatial distribution of the deep-set fishery for 2011 is shown in Figure 12.

The annual number of shallow-set fishing vessels also remains stable at roughly 30 vessels per year. Since the shallow-set fishery does not target bigeye tuna and derives most of its income from swordfish catch, further description of this fishery is not provided here. Additional statistics on the shallow-set fishery can be found in Appendix C.

Catch statistics and economic data from the Hawaii's commercial fisheries are provided in Tables 8 and 9. The Hawaii longline fishery is the largest fishery in Hawaii in terms of volume and value, representing over $85 million in ex-vessel revenue in 2012. Bigeye tuna comprises around two thirds of landings by the Hawaii longline fishery, but nearly 75 percent of the value (See Table 9).

Table 8: Number of active longline vessels, effort, and bigeye tuna caught in the Hawaii deep-set fishery, 2004-2012 (includes WCPO and EPO).

Year	Vessels making deep-sets	Deep-set fishing effort (hooks)	Deep-set fishing effort (trips)	Deep-set fishing effort (sets)	Bigeye tuna caught (number)
2004	125	31,913,246	1,522	15,902	142,188
2005	124	33,663,248	1,590	16,550	127,315
2006	127	34,597,343	1,541	16,452	117,465
2007	129	38,839,377	1,588	17,815	158,086
2008	127	40,083,935	1,532	17,885	150,852
2009	127	37,770,913	1,402	16,810	118,204
2010	122	37,244,432	1,360	16,085	135,636
2011	129	40,766,334	1,462	17,173	155,266
2012	128	43,965,781	1,356	18,069	158,951
Mean	**126**	**37,649,401**	**1,484**	**16,971**	**140,440**

Source: NMFS PIFSC, unpublished.

In the next five years, NMFS anticipates the Hawaii deep-set fishery to continue to operate largely unchanged in terms of fishing location, the number of vessels that fish, catch rates of target, non-target, bycatch species, depth of hooks, and deployment techniques in setting longline gear. Based on a statistical analysis of logbook data, NMFS expects fishing effort (sets and hooks) to slightly increase or remain similar to recent years and it is plausible that the current deep-set fleet of 124-129 vessels may be operating near its maximum in terms of hooks, sets, and trips. Based on fishery effort trends, NMFS estimates 128 vessels will make 1,523 trips,

with18,592 deep sets, and deploying 46,117,532 deep-set hooks in the near future (NMFS unpublished data). It is possible over time that effort may gradually increase if latent permits (approximately 35) are assigned to vessels and begin fishing or if existing vessels are replaced with larger vessels that may be able to expend more fishing effort.[26] However, as previously stated, increases in potential number of vessels are difficult to speculate given issues relating to operational costs, participant turnover, new vessels costs, and existing regulatory environment. Based on these factors, NMFS does not anticipate that the number of vessels or effort in the Hawaii longline fishery will substantially increase in the near future.

[26] Note that the Hawaii longline limited entry program is restricted to vessels less than 101 ft in length.

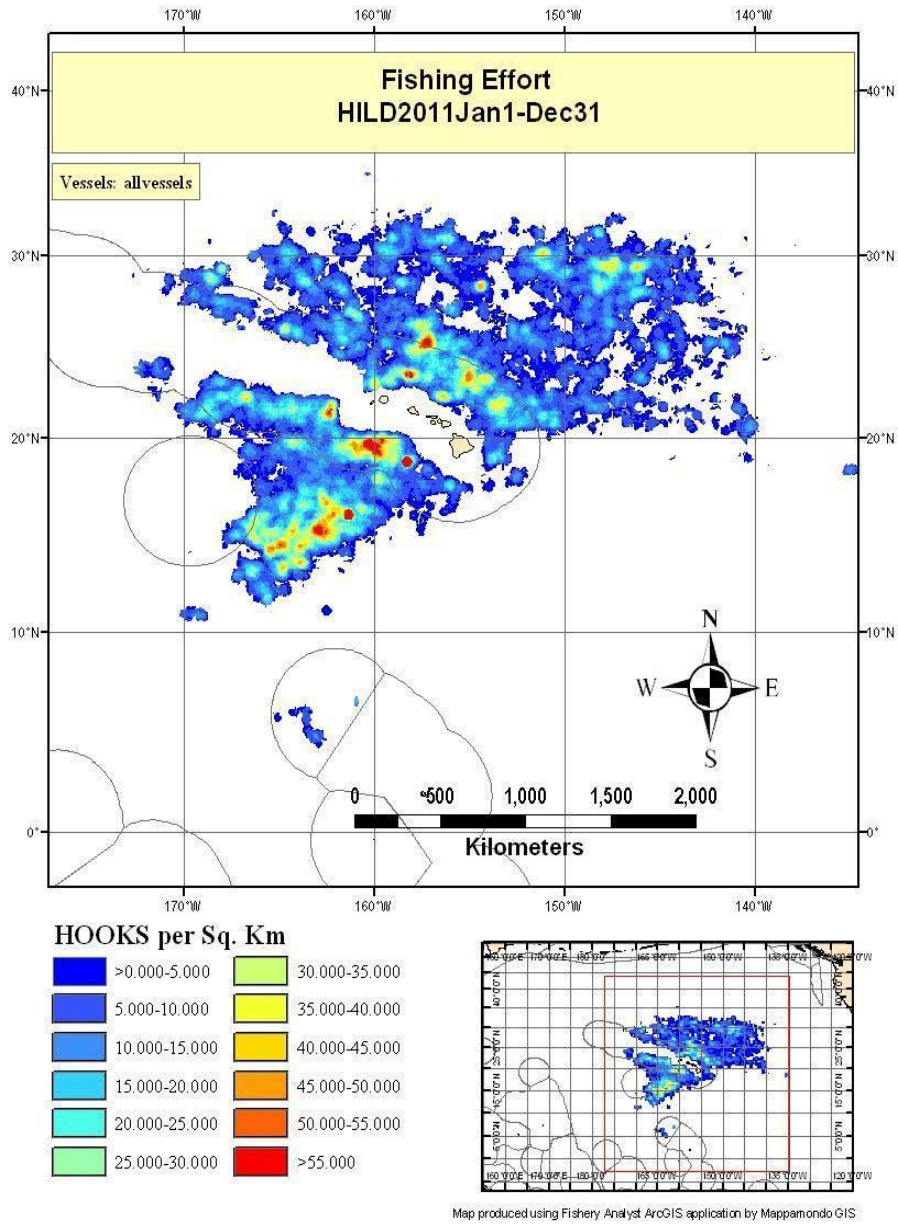

Figure 12: Spatial distribution of fishing effort by the Hawaii longline deep-set fishery, 2011.
Source: NMFS PIFSC, unpublished.

Table 9: Hawaii commercial pelagic landings, revenue, and average price by species for the Hawaii-based deep-set and shallow-set longline fisheries, 2011-2012.

	Deep-set longline						Shallow-set longline					
	2011			2012			2011			2012		
	Kept (1000 lbs)	Kept Value ($1000)	Avg. Value ($/lb)	Kept (1000 lbs)	Kept Value ($1000)	Avg. Value ($/lb)	Kept (1000 lbs)	Kept Value ($1000)	Avg. Value ($/lb)	Kept (1000 lbs)	Kept Value ($1000)	Avg. Value ($/lb)
Tuna PMUS												
Albacore	1,473	$2,463	$1.67	1,419	$3,345	$2.36	64	$62	$0.96	27	$34	$1.29
Bigeye tuna	12,315	$51,976	$4.22	12,731	$60,942	$4.79	106	$399	$3.76	75	$366	$4.90
Bluefin tuna	0	$3	$9.02	1	$5	$9.02	0	$0	$0.00	0	$2	$10.22
Skipjack tuna	453	$405	$0.89	540	$728	$1.35	1	$0	$0.43	1	$0	$0.43
Yellowfin tuna	2,009	$6,025	$3.00	1,885	$7,397	$3.92	38	$132	$3.44	29	$141	$4.88
Other Tunas	0	$0	$0.00	0	$0	$0.00	0	$0	$0.00	0	$0	$0.00
Tuna PMUS Subtotal	**16,252**	**$60,873**	**$3.75**	**16,576**	**$72,416**	**$4.37**	**210**	**$593**	**$2.83**	**131**	**$543**	**$4.15**
Billfish PMUS												
Swordfish	456	$1,340	$2.94	557	$1,659	$2.98	3,100	$7,933	$2.56	2,567	$7,343	$2.86
Blue marlin	797	$1,025	$1.29	629	$1,172	$1.86	27	$22	$0.83	26	$34	$1.29
Striped marlin	756	$949	$1.25	596	$1,298	$2.18	43	$50	$1.18	25	$44	$1.76
Spearfish	511	$554	$1.08	354	$648	$1.83	6	$8	$1.41	5	$8	$1.63
Other Marlins	33	$41	$1.24	23	$35	$1.54	0	$0	$0.76	0	$0	$0.00
Billfish PMUS Subtotal	**2,552**	**$3,908**	**$1.53**	**2,159**	**$4,813**	**$2.23**	**3,176**	**$8,014**	**$2.52**	**2,623**	**$7,429**	**$2.83**
Other PMUS												
Mahimahi	860	$2,219	$2.58	888	$2,219	$2.50	60	$161	$2.71	46	$122	$2.64
Ono (wahoo)	352	$1,009	$2.86	366	$1,167	$3.19	1	$2	$2.22	1	$3	$2.48
Opah (moonfish)	1,616	$2,923	$1.81	1,574	$3,191	$2.03	6	$10	$1.74	17	$44	$2.60
Oilfish	555	$761	$1.37	538	$739	$1.38	33	$42	$1.27	25	$34	$1.39
Pomfrets (monchong)	398	$1,343	$3.37	682	$1,913	$2.81	1	$4	$2.87	5	$17	$3.66
PMUS sharks	202	$173	$0.85	186	$200	$1.08	16	$11	$0.70	27	$23	$0.85
Other PMUS Subtotal	**3,984**	**$8,428**	**$2.12**	**4,233**	**$9,430**	**$2.23**	**117**	**$231**	**$1.98**	**121**	**$244**	**$2.01**
Other pelagics	**47**	**$36**	**$0.76**	**22**	**$26**	**$1.18**	**0**	**$0**	**$0.47**	**0**	**$0**	**$0.19**
Total pelagics	**22,835**	**$73,244**	**$3.21**	**22,990**	**$86,685**	**$3.77**	**3,503**	**$8,839**	**$2.52**	**2,876**	**$8,216**	**$2.86**

Source: PIFSC unpublished.

The Hawaii longline fishery is restricted under an annual longline bigeye tuna limit of 3,763 mt (8,293,652 lb) in the WCPO and 500 mt limit in the EPO for vessels over 24 meters.[27] The WCPO U.S. catch limit of bigeye tuna applicable to the Hawaii longline fleet represents approximately 5.3 percent of the total 2012 WCPO bigeye tuna longline catch (approx. 70,000 mt).

The WCPO striped marlin limit applicable to the U.S. (i.e. Hawaii) longline fishery is 571 mt. Catch of north Pacific striped marlin by the Hawaii longline fishery in 2012 was 209 mt (Table 11).

Troll

The number of commercial troll fishers is typically between 1,500 and 1,600 per year, while the troll catch has varied between 2.5 and 3.5 million lb, with an average of 2.8 million lb. The predominant species in the troll catch include yellowfin and skipjack tunas, mahimahi, blue marlin, and wahoo. The troll fishery primarily occurs within the U.S. EEZ around Hawaii, from 3-50 nm offshore. Average catch of individual bigeye tuna is 102 lb from 1991 to 2011 (Table C-13 in Appendix C).

Handline

The "offshore handline fishery" has evolved steadily and undergone a number of changes. This fishery originally centered on handline and troll fishing on tuna found in aggregations around the Cross Seamount and four offshore moored NOAA weather buoys. Although the FADs moored offshore of Hawaii by the State government have not been used extensively by the offshore handline fishery, the fishery has, in recent years, expanded to include fishing operations on privately-set FADs, some of which are relatively close to shore, thus blurring the distinction between "offshore handline" and "MHI handline" fisheries, as distinguished by the State of Hawaii Division of Aquatic Resources.

The offshore handline fishery targets juvenile and sub-adult bigeye tuna (53% of the catch) with a considerable catch of juvenile, sub-adult and adult size yellowfin (45% of the catch). Catch of bigeye tuna in the handline fishery is small and averages 114 pounds from 1991 to 2011 (Table C-14 in Appendix C). After developing the short-line to target large bigeye tuna, it became apparent that large quantities of pomfret were also available when fishing above seamounts found within the EEZ around Hawaii. By modifying the gear slightly, it was found that the gear could effectively target this species of monchong (pomfrets) while also catching medium and large bigeye tuna. Short-lines, which are defined as less than one nm in length, are not regulated as longline gear under current federal regulations. Unlike the troll and MHI handline fisheries, the offshore handline fishery does not include recreational fishermen.

Like the troll fishery, the MHI handline fishery includes full time and part time commercial fishermen and recreational fishers that possess a commercial license. Yellowfin tuna comprises about 62 percent of the catch with albacore accounting for nearly 20 percent and bigeye tuna at 8 percent of mean annual landings from 1991-2011. MHI catches have varied from 0.7 to 2.4

[27] These limits have been agreed to by the U.S. as a member of the WCPFC and IATTC, respectively. These limits are promulgated in Federal regulations (50 CFR § 300.224).

million pounds, with an overall mean of 1.4 million pounds annually during the same period (Table C-15 of Appendix C).

Hawaii's commercial pelagic fisheries landed about 31,642,000 lb (14,356 mt) in 2011 and 32,117,000 lb (14,572 mt; see Table 10 and Appendix C for more information).

Table 10: Hawaii commercial pelagic landings, revenue, and average price per pound by fishery, 2011-2012.

	2011			2012		
Fishery	**Pounds landed (x1000)**	**Ex-vessel revenue ($1000)**	**Average price ($/lb)**	**Pounds landed (x1000)**	**Ex-vessel revenue ($1000)**	**Average price ($/lb)**
Deep-set longline	22,835	$73,244	$3.21	22,990	$86,685	$3.77
Shallow-set longline	3,503	$8,839	$2.52	2,876	$8,216	$2.86
MHI trolling	2,962	$5,766	$2.85	3,666	$8,594	$3.29
MHI handline	1,112	$2,132	$2.48	1,568	$3,361	$2.54
Offshore handline	611	$834	$2.36	561	$1,094	$2.95
Other gear	619	$1,087	$1.96	456	$980	$2.82
Total	**31,642**	**$91,902**	**$3.05**	**32,117**	**$108,930**	**$3.57**

Sources: WPMFC 2012 and WPFMC unpublished.

Non-Target Species and Bycatch in the Hawaii Longline Fishery

The 2011 NOAA Fisheries U.S. National Bycatch Report provides an estimate of the total discards in terms of pounds caught and discarded is given, with data through 2005 (see Table 11). In 2005, the total percent of catch released for all species combined in the Hawaii longline fisheries was 26.77 percent. Generally, most marketable species such as tuna and billfish have low discard rates. Although striped marlin and other miscellaneous pelagic catch such as mahimahi, blue fin tuna, and wahoo are not directly targeted, these species are highly marketable and also have low rates of discards of less than 5 percent. In general, sharks caught are discarded. Blue shark and other sharks are not marketable, and therefore a high percentage of those species are discarded alive. However, a relatively higher proportion of mako and some thresher sharks are kept since there is a market for their meat (see Table 11).

Table 11: Total weight of discards, landings, and total catch in the Hawaii deep-set and shallow-set longline fisheries in 2005.

Species	Discards (pounds)			Percent of bycatch total for both deep- and shallow-set	Landings pounds	Total Catch pounds	Total in metric tons	Discards as percent of Total Catch
	Deep set	Shallow set	Total					
Albacore	8,027	15,928	23,955	0.28%	662,000	685,955	311.1	3.49%
Bigeye tuna	128,091	5,986	134,076	1.57%	10,977,000	11,111,076	5,039.9	1.21%
Bignose shark	66	66	132	0.00%		132	0.1	100.00%
Billfishes*	24,738	4,720	29,458	0.35%	473,000	502,458	227.9	5.86%
Black mackerel	55		55	0.00%		55	0.0	100.00%
Black marlin	611	152	763	0.01%		763	0.3	100.00%
Blue shark	4,816,698	822,524	5,639,222	66.22%	66,000	5,705,222	2,587.8	98.84%
Bony fishes	119	2	121	0.00%		121	0.1	100.00%
Bony fishes	258	95	353	0.00%		353	0.2	100.00%
Pomfret	1,168	4	1,173	0.01%	632,000	633,173	287.2	0.19%
Brilliant pomfret	723		723	0.01%		723	0.3	100.00%
Cartilaginous		6,969	6,969	0.08%		6,969	3.2	100.00%
Cookie shark	0	2	2	0.00%		2	0.0	100.00%
Cottonmouth Jacks	49		49	0.00%		49	0.0	100.00%
Crestfish	2,998		2,998	0.04%		2,998	1.4	100.00%
Crocodile shark	6,418	51	6,468	0.08%		6,468	2.9	100.00%
Dolphinfish	37,406	19,418	56,824	0.67%	972,000	1,028,824	466.7	5.52%
Driftfishes	42		42	0.00%		42	0.0	100.00%
Escolar	11,378	12,912	24,291	0.29%		24,291	11.0	100.00%
Galapagos shark	1,325	818	2,143	0.03%		2,143	1.0	100.00%

Species	Discards (pounds)			Percent of bycatch total for both deep- and shallow-set	Landings pounds	Total Catch pounds	Total in metric tons	Discards as percent of Total Catch
	Deep set	Shallow set	Total					
Great barracuda	8,490	22	8,512	0.10%		8,512	3.9	100.00%
Hammerhead sharks	2,414		2,414	0.03%		2,414	1.1	100.00%
Indo-Pacific blue marlin	27,353	11,398	38,751	0.46%	731,000	769,751	349.2	5.03%
Knifetail pomfret	12,932	88	13,020	0.15%		13,020	5.9	100.00%
Longfin mako shark	2,504	278	2,782	0.03%		2,782	1.3	100.00%
Longnose lancetfish	922,036	5,677	927,713	10.89%		927,713	420.8	100.00%
Louvar	0	15	15	0.00%		15	0.0	100.00%
Makos*	2,476	3,331	5,807	0.07%	233,000	238,807	108.3	2.43%
Manta ray	2006	132	2138	0.01%		2138	1.0	100.00%
Ocean sunfish	37,968	5,767	43,735	0.51%		43,735	19.8	100.00%
Oceanic whitetip shark	58,403	38,640	97,043	1.14%		97,043	44.0	100.00%
Oilfish	5,159	2,778	7,937	0.09%	380,000	387,937	176.0	2.05%
Omosudid	269		269	0.00%		269	0.1	100.00%
Opah	0	2,780	2,780	0.03%	1,093,000	1,095,780	497.0	0.25%
Pacific bluefin tuna	0		0	0.00%	1,000	1,000	0.5	0.00%
Pelagic puffer	2,022	146	2,167	0.03%		2,167	1.0	100.00%
Pelagic stingray	38,043	487	38,530	0.45%		38,530	17.5	100.00%
Pelagic thresher shark	2,005	150	2,155	0.03%		2,155	1.0	100.00%

Species	Discards (pounds)			Percent of bycatch total for both deep- and shallow-set	Landings pounds	Total Catch pounds	Total in metric tons	Discards as percent of Total Catch
	Deep set	Shallow set	Total					
Pompano dolphin	401		401	0.00%		401	0.2	100.00%
Rainbow runner	154		154	0.00%		154	0.1	100.00%
Razorback scabbardfish	2,692		2,692	0.03%		2,692	1.2	100.00%
Roudi escolar	2,388		2,388	0.03%		2,388	1.1	100.00%
Rough pomfret	1,671		1,671	0.02%		1,671	0.8	100.00%
Rough triggerfish	4		4	0.00%		4	0.0	100.00%
Sailfish	346		346	0.00%		346	0.2	100.00%
Salmon shark	600	628	1,228	0.01%		1,228	0.6	100.00%
Sandbar shark	3,225	1,082	4,308	0.05%		4,308	2.0	100.00%
Scalloped hammerhead	774		774	0.01%		774	0.4	100.00%
Scalloped ribbonfish	35		35	0.00%		35	0.0	100.00%
Shark	130		130	0.00%		130	0.1	100.00%
Sharks	51,085		51,085	0.60%	15,000	66,085	30.0	77.30%
Sharptail mola	6,217		6,217	0.07%		6,217	2.8	100.00%
Shortbill spearfish	36,218	3,168	39,386	0.46%		39,386	17.9	100.00%
Shortfin mako	156,618	31,522	188,140	2.21%		188,140	85.3	100.00%
Sickle pomfret	4,996	168	5,163	0.06%		5,163	2.3	100.00%
Silky shark	36,035	2,500	38,535	0.45%		38,535	17.5	100.00%
Skipjack tuna	81,196	172	81,368	0.96%	197,000	278,368	126.3	29.23%
Slender mola	34,557	11	34,568	0.41%		34,568	15.7	100.00%

Species	Discards (pounds)			Percent of bycatch total for both deep- and shallow-set	Landings pounds	Total Catch pounds	Total in metric tons	Discards as percent of Total Catch
	Deep set	Shallow set	Total					
Smooth hammerhead	2,454	930	3,384	0.04%		3,384	1.5	100.00%
Snake mackerel	156,338	686	157,024	1.84%		157,024	71.2	100.00%
Striped marlin	27,278	17,699	44,976	0.53%	1,177,000	1,221,976	554.3	3.68%
Swordfish	23,735	76,785	100,520	1.18%	3,527,000	3,627,520	1,645.4	2.77%
Tapertail ribbonfish	2,546		2,546	0.03%		2,546	1.2	100.00%
Thresher shark	483,539	7,568	491,108	5.77%	73,000	564,108	255.9	87.06%
Tiger sharks	4,310	5,578	9,888	0.12%		9,888	4.5	100.00%
Tunas*	20,719	776	21,495	0.25%		21,495	9.7	100.00%
Velvet dogfish	844		844	0.01%		844	0.4	100.00%
Wahoo	13,287	73	13,360	0.16%	458,000	471,360	213.8	2.83%
White shark	93		93	0.00%		93	0.0	100.00%
Yellowfin	86,273	628	86,902	1.02%	1,624,000	1,710,902	776.1	5.08%
Total	7,405,009	1,111,311	8,516,320	100.00%	23,291,000	31,807,320	14,427.6	26.77%

Note: An asterisk following the names of stock groups indicates fisheries for which bycatch estimates were available only for the generalized stock group.
Source: NMFS 2011.

3.3.5 Bigeye Tuna Catches by U.S. Longline Vessels in the Pacific

U.S. longline catches of bigeye tuna in the Pacific are principally made by the Hawaii longline fishery and secondarily by the American Samoa longline fishery. As described earlier, CNMI and Guam's longline fisheries are not currently active. As a result of the 2011-2012 ASG/HLA agreement, the amount of bigeye tuna reported to the WCPFC for the American Samoa longline fishery has increased (see Table 12).

Table 13 shows the total catches of bigeye tuna in the Pacific, separated by major fishery categories, Pacific-wide, WCPO, and EPO. Table 13 also shows the total U.S. longline catches of bigeye tuna as a percentage of: the WCPO longline bigeye tuna catch (6%), the total EPO longline bigeye tuna catch (3%), the total WCPO bigeye tuna catch (3%), total EPO bigeye tuna catch (1%), and the total Pacific-wide bigeye tuna catch (2%), respectively.

Table 12: Longline landings (mt) by species and species group for U.S. longline vessels operating in the WCPFC statistical area, 2008-2012.

	U.S. in North Pacific Ocean					American Samoa in North Pacific Ocean				American Samoa in South Pacific Ocean					Total in WCPFC Area				
Year	2012	2011	2010	2009	2008	2012	2011	2010	2009	2012	2011	2010	2009	2008	2012	2011	2010	2009	2008
Vessels	127	128	123	127	129	115	115	11	10	25	24	26	26	28	153	152	146	151	155
SPECIES																			
Albacore, North Pacific	479	497	324	178	298	115	113	32	2	0	0	0	0	0	594	610	356	179	298
Albacore, South Pacific	0	0	0	0	0	0	0	0	0	3,155	2,291	3,943	3,883	3,550	3,155	2,291	3,943	3,883	3,550
Bigeye tuna	**3,654**	**3,565**	**3,577**	**3,741**	**4,649**	**1,338**	**1,086**	**310**	**89**	**167**	**178**	**178**	**160**	**132**	**5,160**	**4,829**	**4,064**	**3,990**	**4,781**
Pacific bluefin tuna	0	0	0	1	0	0	0	0	0	7	2	3	1	1	7	2	3	2	1
Skipjack tuna	115	158	114	117	117	123	34	12	4	244	108	110	151	165	483	300	235	271	282
Yellowfin tuna	575	738	462	429	836	272	144	28	12	337	555	445	386	333	1,184	1,437	935	826	1,169
Other tuna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL TUNA	4,824	4,958	4,477	4,464	5,900	1,849	1,376	381	107	3,910	3,135	4,679	4,581	4,180	10,583	9,469	9,537	9,152	10,081
Black marlin	1	1	0	0	0	0	0	0	0	2	1	0	0	0	3	2	1	0	0
Blue marlin	226	290	238	334	333	50	45	10	4	36	40	45	37	34	312	375	293	374	367
Sailfish	5	10	9	10	10	3	2	0	0	1	4	2	2	1	9	15	11	11	11
Spearfish	111	169	79	97	210	35	35	5	1	1	5	2	3	1	147	209	86	100	211
Striped Marlin, N. Pacific	209	263	124	234	411	54	68	6	3	0	0	0	0	0	262	331	130	237	411
Striped Marlin, S. Pacific	0	0	0	0	0	0	0	0	0	7	3	2	4	1	7	3	2	4	1
Other marlins	1	1	1	0	2	0	0	0	0	0	0	0	0	0	1	1	1	0	2
Swordfish, North Pacific	859	837	1,013	1,242	1,301	38	22	11	3	0	0	0	0	0	897	859	1,024	1,244	1,301
Swordfish, South Pacific	0	0	0	0	0	0	0	0	0	14	12	11	9	7	14	12	11	9	7
TOTAL BILLFISH	1,410	1,570	1,464	1,916	2,267	180	171	33	10	62	64	62	54	43	1,652	1,806	1,559	1,980	2,310

Source: NMFS PIFSC; U.S. Part 1 annual report to the WCPFC.

Table 13: Bigeye tuna catch (mt) in the WCPO, EPO, and total combined, including contribution by U.S. longline vessels.

Year	WCPO Longline	WCPO Purse seine	Other Fisheries	Total	U.S. LL WCP-CA	U.S. LL % of WCPO LL	U.S. LL % of WCPO Total
2007	83,931	49,012	12,536	145,479	5,599	6.67	3.85%
2008	84,473	57,795	13,746	156,014	4,781	5.66	3.06%
2009	82,108	64,151	13,208	159,467	3,990	4.86	2.50%
2010	73,882	55,750	11,211	140,843	4,064	5.50	2.89%
2011	77,964	70,737	11,109	159,810	4,829	6.19	3.02%
2012	76,599	69,164	15,916	161,679	5,160	6.74	3.19%
mean	80,472	59,489	12,954	152,323	4,737	5.89	3.06%

Year	EPO Longline	EPO Purse seine	Other fisheries	Total	U.S. LL EPO	U.S. LL % of EPO LL	U.S. LL % of EPO Total
2007	29,847	63,451	44	93,342	417	1.40	0.45%
2008	26,136	75,028	28	101,192	1,310	5.01	1.29%
2009	31,282	76,800	15	108,097	730	2.33	0.68%
2010	35,227	57,753	1358	94,338	1,356	3.85	1.44%
2011	29,938	57,188	1051	87,177	1,050	3.51	1.20%
2012	28,938	68,597	1051	98,586	861	2.98	0.87%
mean	30,228	66,470	592	97,122	954	3.16	0.99%

Year	WCPO	EPO	Total	U.S. LL Total	U.S. LL % of Total Pacific
2007	145,479	93,342	238,821	6,016	2.52%
2008	156,014	101,192	257,206	6,091	2.37%
2009	159,467	108,097	267,564	4,720	1.76%
2010	140,843	94,338	235,181	5,420	2.30%
2011	159,810	87,177	246,987	5,879	2.38%
2012	161,679	98,586	260,265	6,021	2.31%
mean	153,882	97,122	251,004	5,691	2.27%

Source: SPC 2013; PIFSC unpublished data; calculations: WPFMC unpublished data.

3.3.6 Bigeye Tuna Catches by U.S. Purse Seine Vessels in the WCPO

The U.S.-flagged purse seine fleet has been fishing in the WCPO since the early 1980s. The South Pacific Tuna Treaty (SPTT) largely governs the fishing activities of U.S. purse seine vessels in the WCPO. The SPTT manages access of U.S. purse seine vessels to the EEZs of Pacific Islands Parties to the SPTT and provides for technical assistance in the area of Pacific Island Country fisheries development. The SPTT is implemented domestically by regulations (50 CFR 300 Subpart D) issued under authority of the South Pacific Tuna Act of 1988 (SPTA; 16 U.S.C. 973-973r).

From 1997-2010, the U.S. purse seine fleet in the WCPO conducted 6 percent of its effort in the U.S. EEZ, 22 percent on the high seas, and the remainder in the EEZs of Pacific Island Parties to the SPTT (unpublished NMFS data). Participation in the U.S. WCPO purse seine fishery increased from the late 1980s to the mid-1990s, and then gradually decreased until a low of 13 vessels was reached in 2006. The fleet has since increased to about the levels of the mid 1990s, and has been relatively stable for the past five years. The U.S. WCPO purse seine fleet now numbers at 39 vessels.

Skipjack tuna generally account for around 80 percent of the U.S. purse seine catch, yellowfin tuna for about 16 percent, and bigeye tuna for the remaining portion (about 4 percent) (See Table 14; SPC 2012).

Table 14: Number of vessels and tuna catch (mt) by the U.S. purse seine fleet, 2006-2011.

Year	Vessels	Skipjack		Yellowfin		Bigeye		Other catch	Total catch
		Catch	%	Catch	%	Catch	%		
2006	13	52,277	76	12,238	18	3,930	6	25	68,470
2007	22	69,875	79	15,393	17	3,468	4	25	88,761
2008	36	158,227	76	44,281	21	6,816	3	35	209,359
2009	39	235,621	84	35,979	13	9,888	4	144	281,732
2010	37	199,619	81	38,623	16	7,282	3	180	245,704
2011	37	167,776	82	25,422	12	10,041	5	142	203,381

Source: SPC 2012.

The trend in the volume of bigeye tuna caught by the U.S. purse seine fleet in the WCPO is provided in Figure 13.

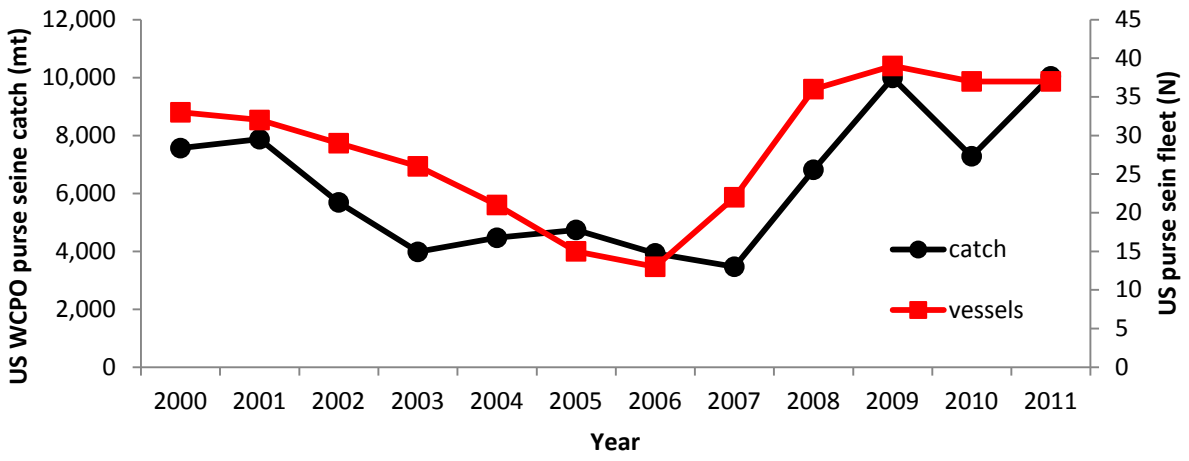

Figure 13: U.S. purse seine fleet size and catch trend of bigeye tuna, 2000-2011.
Source: SPC 2012.

3.4 Protected Species

Applicable Laws

Endangered Species Act
The ESA provides for the conservation of species that are endangered or threatened, and the conservation of the ecosystems on which they depend. Section 7(a)(2) of the ESA requires each federal agency to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. To "jeopardize" means to reduce appreciably the likelihood of survival and recovery of a species in the wild by reducing its numbers, reproduction, or distribution. When a federal agency's action "may affect" an ESA-listed species, that agency is required to consult formally with NMFS (for marine species, some anadromous species, and their designated critical habitats) or the U.S. Fish and Wildlife Service (USFWS; for terrestrial and freshwater species or their designated critical habitat). The product of formal consultation is the agency's biological opinion (BiOp). Federal agencies are exempt from this formal consultation requirement if they have concluded that an action "may affect, but is not likely to adversely affect" ESA-listed species or their designated critical habitat, and NMFS or USFWS concur with that conclusion (see ESA section 7 Formal Consultation; 50 CFR § 402.14(b)).

The ESA also prohibits the taking[28] of listed species except under limited circumstances. Western Pacific regional fisheries are operated in accordance with terms of ESA consultations that consider the potential interactions of fisheries with listed species, the impacts of interactions on the survival and recovery of listed species, and the protection of designated critical habitat.

As provided in 50 CFR § 402.16, NMFS is required to reinitiate formal consultation if:

[28] The definition of "take" includes to harass, harm, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct.

(1) the amount or extent of the incidental take is exceeded;
(2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in an opinion;
(3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in the opinion; or
(4) a new species is listed or critical habitat designated that may be affected by the action.

Longline and other pelagic fishing vessels operating in the western Pacific region and targeting pelagic species have the potential to interact with a range of protected species (such as marine mammals, sea turtles, and seabirds). Table 15 presents species listed as endangered or threatened under the ESA that have the potential to interact with longline and other fisheries under the Pelagics FEP. This section also provides the number of interactions expected between protected species and the American Samoa and Hawaii longline fisheries with regards to recent fishing effort.

Table 15: ESA-listed species with the potential to interact with vessels permitted under the Pelagics FEP.

Species	**ESA status**
Sea Turtles	
Green turtle (*Chelonia mydas*)	Threatened, except for Mexico's Pacific coast nesting population which is Endangered
Hawksbill turtle (*Eretmochelys imbricata*)	Endangered
Leatherback turtle (*Dermochelys coriacea*)	Endangered
North Pacific loggerhead turtle distinct population segment (DPS) (*Caretta caretta*)	Endangered
South Pacific loggerhead turtle DPS	Endangered
Olive ridley turtle *(Lepidochelys olivacea*)	Threatened, except for Mexico's nesting population which is Endangered
Marine Mammals	
Blue whale (*Balaenoptera musculus*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Hawaiian monk seal (*Monachus schauinslandi*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Main Hawaiian Islands insular false killer whale (*Pseudorca crassidens*)	Endangered
North Pacific right whale (*Eubalaena japonica*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Seabirds	

Hawaiian dark-rumped petrel (*Pterodroma phaeopygia sandwichensis*)	Endangered
Newell's shearwater (*Puffinus auricularis newelli*)	Threatened
Short-tailed albatross (*Phoebastria albatrus*)	Endangered
Sharks	
Scalloped hammerhead Indo-West Pacific DPS	Proposed threatened
Scalloped hammerhead Eastern Pacific DPS	Proposed endangered

The following refers to existing BiOps and summarizes the information contained in these documents (identified below) in describing baseline conditions. For further information, refer to the following documents on NMFS' website below, or by contacting NMFS using the contact information at the beginning of the document.
http://www.fpir.noaa.gov/DIR/dir_public_documents.html

NMFS 2001, Biological Opinion on Authorization of Pelagic Fisheries under the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region.

NMFS 2005, Continued authorization of the Hawaii-based Pelagic, Deep-Set, Tuna Longline Fishery based on the Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region.

NMFS 2010, Endangered Species Act Section 7 Consultation Biological Opinion on Measures to Reduce Interactions Between Green Sea Turtles and the American Samoa-based Longline Fishery-Implementation of an Amendment to the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region.

NMFS 2012, as amended, Continued operation of the Hawaii-based Shallow-set Longline Swordfish Fishery - under Amendment 18 to the Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region.

USFWS 2012, Biological Opinion of the U.S. Fish and Wildlife Service for the Operation of Hawaii-based Pelagic Longline Fisheries, Shallow-Set and Deep-Set, Hawaii.

<u>Marine Mammal Protection Act</u>
The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the take of marine mammals in the U.S. EEZ 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 authority and duties for the protection and conservation of all cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions, except walruses). The MMPA requires NMFS to prepare and periodically review marine mammal stock assessments. *See* 16 U.S.C. § 1361, *et seq*.

Pursuant to the MMPA, NMFS has promulgated specific regulations that govern the incidental take of marine mammals during fishing operations (50 CFR 229). Under section 118 of the

MMPA, NMFS must publish, at least annually, a List of Fisheries that classifies U.S. commercial fisheries into three categories, based on relative frequency of incidental mortality and serious injury to marine mammals in each fishery:

- Category I designates fisheries with frequent serious injuries and mortalities incidental to commercial fishing. Annual mortality and serious injury of a stock in a given fishery is by itself responsible for the annual removal of greater than or equal to 50 percent or more of any stock's potential biological removal (PBR) level (i.e., frequent incidental mortality and serious injuries of marine mammals).

- Category II designates fisheries with occasional serious injuries and mortalities incidental to commercial fishing. Annual mortality and serious injury of a stock in a given fishery is, collectively with other fisheries, responsible for the annual removal of greater than 10 percent of any stock's PBR level, and is by itself responsible for the annual removal of between 1 and less than 50 percent, exclusive, of any stock's PBR level (i.e., occasional incidental mortality and serious injuries of marine mammals).

  Category III designates fisheries with a remote likelihood or no known serious injuries or mortalities. A Category III fishery is, collectively with other fisheries, responsible for the annual removal of 10 percent or less of any stock's PBR level; or collectively with other fisheries, more than 10 percent of any stock's PBR level, but is by itself responsible for the annual removal of 1 percent or less of PBR level (i.e., a remote likelihood or no known incidental mortality and serious injuries of marine mammals).

The Hawaii deep-set longline fishery is a Category I fishery and the Hawaii shallow-set and American Samoa longline fisheries are Category II fisheries in the 2012 List of Fisheries (76 FR 73912, Nov. 29, 2011). Among other requirements, owners of vessels or gear engaging in a Category I or II fishery are required under 50 CFR 229.4 to obtain a marine mammal authorization to lawfully incidentally take non-ESA listed marine mammals by registering with NMFS' marine mammal authorization program. The CNMI and Guam longline fisheries are inactive and not designated at this time.

3.4.1 Sea Turtles

All Pacific sea turtles are listed under the ESA as either threatened or endangered except for the flatback turtle (*Natator depressus*), which is native to Australia and does not occur in the action area and thus will not be covered in this document. In addition to the BiOps listed in the previous section, more detailed information, including the range, abundance, status, and threats of the listed sea turtles, can be found in the recovery plans for each species at the following NMFS websites:

Green turtle: http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_green_pacific.pdf
Green turtle: http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_green_eastpacific.pdf
Hawksbill: http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_hawksbill_pacific.pdf
Olive ridley: http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_oliveridley.pdf
Leatherback: http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_leatherback_pacific.pdf

Loggerhead: http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_loggerhead_pacific.pdf

Sea Turtle Interactions

All sea turtles, being air-breathers, are typically found closer to the surface, e.g., in the upper 100 m of the ocean's surface; however, some turtles are also susceptible to deep-set longlining because of deeper foraging behavior. Therefore, sea turtles are vulnerable to longline fishing gear in the Hawaii deep- and shallow-set longline fisheries, American Samoa deep-set longline fishery, Guam and the CNMI longline fisheries. Other pelagic fisheries impacts are primarily limited to the potential for collisions with sea turtles. After considering a range of potential impacts on sea turtles, NMFS has determined that the pelagic fisheries of the western Pacific, operating in accordance with the Pelagics FEP and implementing regulations, would not jeopardize the survival or recovery of any listed species including sea turtles. NMFS has authorized a certain level of interactions (incidental take) through incidental take statements (ITS)) for these fisheries.

Hawaii deep-set longline fishery

A 2005 BiOp issued by NMFS for the deep-set longline fishery authorizes incidental take for green, leatherback, loggerhead, and olive ridley sea turtles. Table 16 specifies two thresholds for incidental take in the fishery. NMFS must reinitiate formal consultation under section 7 of the ESA if, in a single fishing year for the Hawaii pelagic deep-set longline fishery, the amount of either capture or mortality of sea turtles incidental to the fishery is equal to or greater than 50 percent of the total take level specified/anticipated for multiple years for any species (NMFS 2005a). Fishery interactions are monitored by NMFS and at least 20 percent of all deep-set trips are observed. NMFS statistically expands the observed totals (Table 17), based on observer coverage levels, to develop a fleet-wide estimate (Table 19). Each year the fleet-wide estimates are compared to the incidental take statement (Table 16). Although effort in the deep-set fishery (number of hooks and sets) has increased somewhat since 2005, the incidental take limit has not been exceeded (Tables 16 and 18).

Table 16: The numbers of turtles estimated captured and/or killed in the Hawaii deep-set fishery over three consecutive years (3-year ITS) in the 2005 biological opinion.

Sea Turtle Species	Estimated Incidental Take	
	Interactions	Mortalities
Green	21	18
Leatherback	39	18
Loggerhead	18	9
Olive ridley	123	117

Source: NMFS 2005.

Table 17: Observed interactions and conditions of sea turtles caught in the Hawaii deep-set fishery, 2009-2011.

Sea turtles species	Observed Number of Interactions		
	2009	2010	2011
Green	0	1 injured	1 dead

Leatherback	1 injured	1 injured	3 injured
Loggerhead	0	1 injured	0
Olive Ridley	4 dead	3 injured	6 dead

Note: These observations represent approximately 20 percent of the total number of trips.
Source: NMFS observer program annual status reports
http://www.fpir.noaa.gov/OBS/obs_hi_ll_ds_rprts.html

Table 18: Comparison of recent, extrapolated estimates of sea turtle interactions in the Hawaii deep-set fishery with authorized take in the 2005 biological opinion.

Sea turtles species	Sum of Estimated Incidental Take 2009-2011		3-year Incidental Take Statement in 2005 BiOp	
	Interactions	Mortalities	Interactions	Mortalities
Green	6	6	21	18
Leatherback	24	6.48	39	18
Loggerhead	6	6	18	9
Olive Ridley	64	59.52	123	117
Hawksbill	0	0	0	0

Note: The estimated incidental take includes an expansion of the observed sets and applied over the entire fishery for each year.
Sources: McCracken 2010, 2011b, 2012; NMFS 2005.

Table 19: Annual sea turtles interactions expanded from observed data to fleet-wide estimates for the Hawaii deep-set longline fishery, 2005-2011.

Year	Sea Turtles			
	Green	Leatherback	Loggerhead	Olive Ridley
2005	0	4	0	17
2006	6	9	0	55
2007	0	4	6	26
2008	0	11	0	17
2009	0	4	0	18
2010	1	6	6	10
2011	5	14	0	36
Mean	2	7	2	26

The Hawaii deep-set fishery continues to operate under the no-jeopardy 2005 BiOp. In June 2013, NMFS reinitiated consultation on the Hawaii deep-set fishery because of the recent listing of the MHI insular false killer whale DPS, and because of a single interaction with a sperm whale. The expected number of interactions and severity of interactions with sea turtles may be reduced in the future because the fishery is now required to use circle hooks (as opposed to J-style hooks) under take reduction plan regulations for false killer whales.

Critical habitat has not been designated in the action area, so no critical habitat would be affected by the Hawaii deep-set longline fishery.

Hawaii shallow-set longline fishery
The Hawaii shallow-set fishery is conducted in accordance with a NMFS 2012 BiOp. The fishery interacts with sea turtles; however, because of ongoing mitigation measures employed by the fishery, which includes training and handling requirements for reducing the severity of interactions, requirements for the fishery to use large circle hooks and mackerel-type fish bait, and the fact that he fishery closes once the interaction limit for sea turtles has been reached, the BiOp concludes that the fishery is not likely to jeopardize the continued existence of any ESA-listed sea turtle. The 2012 BiOp authorizes incidental take for the north Pacific loggerhead DPS, leatherback sea turtles, olive ridley sea turtles, and green sea turtles (Table 20). The NMFS Observer Program monitors incidental interactions in the fishery. Currently, all shallow-set trips are observed. Table 21 shows shallow-set fishing effort (sets), number of interactions between 2004 and 2011, and interaction rates of sea turtles per set.

Critical habitat has not been designated in the action area, so no critical habitat would be affected by the Hawaii shallow-set longline fishery.

Table 20: The numbers of sea turtles estimated to be captured and/or killed in the Hawaii shallow-set fishery over two consecutive calendar years in NMFS' 2012 biological opinion.

Species	1-year		2-year	
	Interactions	Mortalities	Interactions	Mortalities
N. Pacific loggerhead	34	7	68	14
Leatherback	26	6	52	12
Olive ridley	2	1	4	2
Green	3	1	6	2

Source: NMFS 2012b.

Table 21: Fishing effort (sets), and observed interactions and interaction rates in the Hawaii shallow-set longline fishery for the five species considered in NMFS' 2012 biological opinion over an 8-year period.

Year	Sets [a]	Interactions			
		N. Pacific loggerhead	Leatherback	Olive ridley	Green
2004	135	1	1	0	0
2005	1,645	12	8	0	0
2006	850	17	2	0	0
2007	1,570	15	5	1	0
2008	1,605	0	2	2	1
2009	1,761	3	9	0	1
2010	1,875	7	8	0	0

2011	1,463	12	16	0	4
Total	10,904	67	51	3	6

	Turtle Species and Release Disposition			
Interaction Rate[b]	0.00614	0.00468	0.00028	0.00055

[a] PIRO Observer Program, unpublished data. Number of sets is based on begin set date.
[b] Interaction rates are calculated by dividing total interactions by total sets. The interaction rates then provide the basis for estimating the annual interactions.
Source: NMFS 2012b.

American Samoa longline fishery
The American Samoa longline fishery is conducted in accordance with the provisions of the NMFS 2010 BiOp (NMFS 2010b) on the expected impacts of the fishery on ESA-listed species. NMFS concluded that the longline fishery is not likely to adversely affect loggerhead turtles, sperm whales, or humpback whales and will have no effect on blue, fin, or sei whales. The 2010 BiOp concluded that the American Samoa longline fishery is not likely to jeopardize the continued existence or recovery of green turtles, hawksbill turtles, leatherback turtles, and olive ridley turtles and issued an ITS for these turtles. NMFS has not designated critical habitat in the action area, so the American Samoa longline fishery would not affect critical habitat.

The NMFS Observer Program monitors interactions with approximately 20 percent of all trips observed, although past coverage was less due to lower federal funding. The fishery is required to conduct operations in accordance with a suite of management measures designed to reduce the number and severity of interactions with sea turtles. These include requirements for safe handline and mitigation training of protected species, specific requirements for gear configuration to set gear at a minimum depth of 100 m, and accommodation of observers upon request. The annual numbers of interactions and mortalities expected to result from the American Samoa longline fishery are shown for a 3-year period in Table 22 (i.e., a 3-year ITS). Recent fleet-wide estimates of sea turtle interactions for the American Samoa longline fishery are not available at time of writing; however, one green, two leatherbacks, and one olive ridley sea turtle interaction have been observed since completion of the BiOp and implementation of that action (see Table 23).

Table 22: The numbers of sea turtles estimated to be captured and/or killed in the American Samoa longline fishery over three consecutive years (3-year ITS) in the 2010 biological opinion.

Species	**Authorized Incidental Take**		
	Interactions	**Mortalities**	**Adult female equivalents**
Green turtles	45	41	10
Hawksbill turtles	1	1	1
Leatherback turtles	1	1	1
Olive ridley turtles	1	1	1

Source: NMFS 2010.

Year	Green		Olive Ridley		Loggerhead		Leatherback		Hawksbill	
	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
2006	-	3	-	-	-	-	-	-	-	-
2007	-	1	-	-	-	-	-	-	-	-
2008	-	1	-	-	-	-	-	-	-	-
2009	-	3	-	-	-	-	-	-	-	-
2010	1	5	1	-	-	-	-	-	-	-
2011	1	10	1	-	-	-	1	1	-	-
2012	-	-	1	-	-	-	1	-	-	-

Table 23: Number of sea turtle interactions by species observed in the American Samoa longline fishery from 2006-2012.
Source: http://www.fpir.noaa.gov/OBS/obs_as_ll_rprts.html

Guam and CNMI longline fisheries
NMFS concluded a formal consultation and issued a BiOp for the pelagic fisheries in the western Pacific on March 29, 2001. In this Opinion, NMFS examined the impact of Guam and CNMI longline fisheries on endangered species. At the time, there were three permitted longline vessels in Guam and one in the CNMI, but none were active. Although neither of these longline fisheries were active at the time, NMFS utilized fishery information from American Samoa longline fishery to estimate incidental take and mortality of ESA-listed species. The BiOp analyzed the annual effort of longline fishing in the 1998 American Samoa fishery (26 vessels and 2,359 trips). The BiOp established ITS for sea turtles for the Guam and CNMI longline fisheries and determined that this level of anticipated take is not likely to result in jeopardy to the green turtle, leatherback turtle, loggerhead turtle, or olive ridley turtle under the proposed regulations for the Guam and CNMI longline fisheries. Although this BiOp did not discuss hawksbill sea turtles, they are considered hard shell turtles and are included in the ITS. The BiOp also concludes that the fisheries are not likely to adversely affect ESA-listed marine mammals or critical habitat that has been designated. See Table 24 for the number of sea turtle authorized to be taken in the Guam and CNMI longline fisheries.

Table 24: The number of turtles estimated to be annually taken (captured and/or killed) in the Guam and CNMI longline fisheries in the 2001 biological opinion.

Fishery	Annual Estimated Incidental Take (All Species Combined)	Annual Estimated Incidental Mortality (All Species Combined)
Guam Longline	3 hardshell turtles, 1 leatherback	1 hardshell turtle
CNMI Longline	3 hardshell turtles, 1 leatherback	3 hardshell turtles, 1 leatherback

Source: NMFS 2001.

There were no observed or reported interactions with sea turtles in the CNMI longline fishery (from the two to four vessels that were active from 2008 to 2012). Currently there are no active

longline vessels in Guam; therefore, there have been no observed or reported interaction with a sea turtle.

3.4.2 Marine Mammals

***ESA-listed Marine Mammal*s**

Table 14 and below list marine mammal species that are listed as endangered or threatened under the ESA that have been observed or may occur in the area where Pelagics FEP fisheries operate.

- Blue whale (*Balaenoptera musculus*)
- Fin whale (*Balaenoptera physalus*)
- Hawaiian monk seal (*Monachus schauinslandi*)
- Humpback whale (*Megaptera novaeangliae*)
- Main Hawaiian Islands insular false killer whale (*Pseudorca crassidens*)
- North Pacific right whale (*Eubalaena japonica*)
- Sei whale (*Balaenoptera borealis*)
- Sperm whale (*Physeter macrocephalus*)

Detailed information on these species' geographic range, abundance, bycatch estimates, and status can be found in the most recent stock assessment reports (SARs), available online at: http://www.nmfs.noaa.gov/pr/sars/. Additional, recent information may be found in NMFS 2012b.

Although blue whales, fin whales, north Pacific right whales, and sei whales are found within the action area and could potentially interact with the Pelagics FEP fisheries, there have been no reported or observed incidental hookings or entanglements of these species in these fisheries. In 2011, the Hawaii deep-set longline fishery interacted with one sperm whale, which was the first recorded interaction since NMFS began observer coverage in 1994. Interactions with listed marine mammals are described below.

Non-listed Marine Mammals

Based on research, observer, and logbook data, the following marine mammals, not listed under the ESA, may occur in the region and may be affected by the fisheries managed under the Pelagics FEP:

- Blainville's beaked whale (*Mesoplodon densirostris*)
- Bryde's whale (*Balaenoptera edeni*)
- Bottlenose dolphin (*Tursiops truncatus*)
- Common dolphin (*Delphinus delphis*)
- Cuvier's beaked whale (*Ziphius cavirostris*)
- Dwarf sperm whale (*Kogia sima*)
- False killer whale (*Pseudorca crassidens*) other than the MHI Insular DPS
- Fraser's dolphin (*Lagenodelphis hosei*)
- Killer whale (*Orcinus orca*)
- Longman's beaked whale (*Indopacetus pacificus*)
- Melon-headed whale (*Peponocephala electra*)
- Minke whale (*Balaenoptera acutorostrata*)

- Northern fur seal (*Callorhinus ursinus*)
- Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)
- Pantropical spotted dolphin (*Stenella attenuata*)
- Pilot whale, short-finned (*Globicephala macrorhynchus*)
- Pygmy killer whale (*Feresa attenuata*)
- Pygmy sperm whale (*Kogia breviceps*)
- Risso's dolphin (*Grampus griseus*)
- Rough-toothed dolphin (*Steno bredanensis*)
- Spinner dolphin (*Stenella longirostris*)
- Striped dolphin (*Stenella coeruleoalba*)

Detailed information on these species' geographic range, abundance, bycatch estimates, and status can be found in the most recent stock assessment reports (SARs), available online at: http://www.nmfs.noaa.gov/pr/sars/. Interactions with marine mammals are described in the next section.

Marine Mammal Interactions

The Hawaii deep-set longline fishery operates in accordance with NMFS' 2005 BiOp, which requires a minimum of 20 percent observer coverage for the fishery to monitor protected species interactions, including marine mammals. Based on observer data from 2006 to 2011, the fishery interacted with several species of marine mammals (Table 25). Most of the animals were released injured. Many of these injuries were determined to be "serious injuries," or injuries likely leading to death. False killer whales have interacted with deep-set longline gear more than other marine mammal species and NMFS has implemented changes to the operations of the fishery based on the recommendations of the False Killer Whale Take Reduction Team to reduce incidental interactions. The mitigation requirements include: the use circle hooks, a permanently closed area, and an interaction limit, which, when reached, triggers a southern longline fishing exclusion zone (see 50 CFR § 229.37).

There are records of fishery interactions with humpback whales and one sperm whale. In addition, NMFS has assigned prorated interactions to the population of MHI insular false killer whales based on interactions with pelagic false killer whales, and on interactions with false killer whales from unknown populations and unidentified blackfish.

Table 25: Observed marine mammal interactions in the Hawaii deep-set fishery, 2006-2011.

Species	Number caught	Released injured	Released dead
Bottlenose dolphin	3	3	0
False killer whale	28	27	1
Risso's dolphin	5	4	1
Short-finned pilot whale	6	6	0
Striped dolphin	2	0	2
Spotted dolphin	1	0	1
Unidentified cetacean	5	5	0
Unidentified dolphin	3	3	0
Unidentified whale	10	10	0
Sperm whale	1	1	0

Note: Protected species interactions for Observer Program Quarterly and Annual Reports are based on vessel arrivals. The tally of an interaction may fall in a year other than the year when the interaction actually occurred.
Source: NMFS Observer Program Annual Status Reports
http://www.fpir.noaa.gov/OBS/obs_qrtrly_annual_rprts.html

Since observer coverage is approximately 20 percent of all deep-set trips per year, NMFS' PIFSC expands the observed interactions statistically to get an annual estimate for the total number of incidental interactions for all deep-set fishing trips that landed in that calendar year. Table 26 provides the extrapolated number of marine mammal interactions estimated to occur with the Hawaii deep-set longline fishery, from 2006 to 2010. These are estimates of all interactions, including those that result in mortality, serious injury, and non-serious injury. Extrapolated estimates for 2011 are not yet available.

Table 26: Estimated annual marine mammal interactions (including mortalities, and serious and non-serious injuries) with the Hawaii deep-set longline fishery from 2006-2010.

Species	2006	2007	2008	2009	2010	Mean*
Blackfish	16	0	9	0	3	5.4
Risso's dolphin	5	3	2	0	3	2.6
Short-finned pilot whale	6	2	5	0	0	2.6
False killer whale	18	15	11	55	19	23.7
Pantropical spotted dolphin	0	0	3	0	0	0.6
Striped dolphin	6	0	0	0	0	1.2
Bottlenose dolphin	1	0	0	5	4	2.1
Unidentified cetacean	2	4	3	17	12	7.8
Unidentified beaked whale	7	0	0	0	0	1.3

Note: These estimates are extrapolated from observed interactions in the fishery, which is covered by observers at a rate of approximately 20 percent annually. "Blackfish" include unidentified whales considered to be either false killer whales or short-finned pilot whales.
*Annual estimates are rounded to whole numbers. Five-year means are based on unrounded annual estimates, so they may differ from a five-year average of the rounded figures.

Source: McCracken 2011a.

Because of inter-annual variability in marine mammal interaction rates, NMFS typically evaluates multi-year averages when determining whether those rates exceed sustainable thresholds (e.g., Potential Biological Removal level, or PBR).

Main Hawaiian Islands insular false killer whale
False killer whales may become hooked or entangled by longline gear, especially while depredating on bait or catch. From 2005-2009, the range of data in the 2011 SAR, NMFS attributed 0.6 MHI insular false killer whale takes annually to the deep-set fishery from a PBR of 0.2 (Carretta et al. 2012). The 2012 SAR presents the bycatch estimates from 2006-2010. During that period, the deep-set fishery had an estimated average of 0.5 mortalities and serious injuries of MHI insular false killer whales per year (McCracken 2011a). This exceeds the stock's PBR level of 0.3 animals per year (Carretta et al. 2013). However, the permanent closure of the seasonally contracted longline prohibited area from October through January, as well as the required use of weak circle hooks and strong leaders, due to the December 2012 implementation of the FKWTRP, substantially reduces the potential for interactions with the MHI insular false killer whale (NMFS 2011b). This could reduce interactions that would be counted against PBR levels in the near future.

Sperm whales
Sperm whales are deep divers that spend little time at the surface. In 2011, one sperm whale interaction (entanglement) occurred in the deep-set fishery, and NMFS has preliminarily determined the interaction is prorated as 0.75 to serious injury and 0.25 to non-serious injury (according to Large Cetacean Injury Criteria outlined in NMFS' guidelines for distinguishing serious from non-serious injury of marine mammals, NMFS Instruction 02-238-01). The 2011 interaction is the only record from the deep-set fishery since observer coverage began in 1994. The 2005 BiOp did not contain an ITS for sperm whales and an MMPA section 101(a)(5)(E) incidental take permit has not been issued.

Carretta et al. (2012) estimate 6,919 sperm whales occur within the EEZ around the Hawaii. The stock's PBR level inside this EEZ is 15 sperm whales per year (Carretta et al. 2012). With one interaction with a sperm whale in the deep-set fishery occurred in 19 years of data collection, this level likely does not exceed the stock's PBR level of 15 annually. This level of impact is extremely low and unlikely to affect the viability of the population.

Table 27 provides total marine mammal interactions observed in the shallow-set fishery from 2006 through 2010. All trips are observed in the shallow-set fishery; therefore, expansion of the data is not necessary.

Table 27: Total annual marine mammal interactions (including dead, serious injuries, and non-serious injuries) for the Hawaii shallow-set longline fishery, 2006-2010.

Species	2006	2007	2008	2009	2010	Mean**
Blackfish*	0	0	1	0	0	0.2
Risso's dolphin	2	3	4	3	7	3.8
Humpback whale	1	0	1	0	0	0.4
False killer whale	0	0	1	1	0	0.4
Striped dolphin	0	0	1	0	2	0.6
Bottlenose dolphin	1	3	0	0	2	1.2
Unidentified cetacean	0	0	0	1	1	0.4
Pygmy or dwarf sperm whale	0	0	1	0	0	0.2

Note: * "Blackfish" includes unidentified whales considered to be either false killer whales or short-finned pilot whales. ** Annual estimates are rounded to whole numbers. Five-year means are based on unrounded annual estimates, so they may differ from a five-year average of the rounded figures.
Source: McCracken 2011a.

To date, no humpback, sperm, blue, fin, or sei whale interactions have been observed or reported in the American Samoa longline fishery. Observed marine mammal interactions in the American Samoa longline fishery are shown in Table 28. The target rate for observer coverage is 20 percent of all trips. This is subject to funding limitations and may fluctuate. The average rate of coverage is 26 percent since 2010.

Table 28: Number of marine mammal interactions observed in the American Samoa longline fishery, 2006-2011.

Year	2006	2007	2008	2009	2010	2011
Number of sets observed	287	410	379	306	798	1,257
Rough-toothed dolphin (6 released injured)	0	0	1	0	0	5
Cuvier's beaked whale (1 released dead)	0	0	0	0	0	1
False killer whale (4 released injured, 1 dead)	0	0	2	0	0	3
Unidentified cetacean (2 released injured)	0	0	0	0	0	2

Source: NMFS PIRO American Samoa Observer Program 2006-2011 Status Reports.
Note: Protected species interactions for Observer Program Quarterly and Annual Reports are based on vessel arrivals rather than when the interaction occurred. The tally of an interaction may fall in a year other than the year when the interaction actually occurred.

Recent estimates of the total (extrapolated) number of marine mammal interactions in the American Samoa longline fishery are not available. However, based on 2006-2008 data, the total estimated number of serious injuries and mortalities for marine mammals per year in the American Samoa longline fishery is 3.6 rough-toothed dolphins (CV=0.6) and 7.8 false killer whales (CV=1.7) (Carretta et al. 2012).

With no active longline fishery in Guam or the CNMI, there are no interactions with marine mammals reported for the past several years.

3.4.3 Seabirds

ESA-listed Seabirds

The endangered short-tailed albatross, threatened Newell's shearwater, and endangered Hawaiian dark-rumped petrel have ranges that overlap the fishing grounds of the Hawaii longline fisheries. The short-tailed albatross has a range that overlaps the pelagic fisheries operating around the CNMI and Guam. In addition, three other seabirds in the South Pacific were determined to be endangered under the ESA in 2009: the Chatham petrel (*Pterodroma axillaris*), Fiji petrel (*Pseudobulweria macgillivrayi*), and the magenta petrel (*Pterodroma magentae*). However, apart from Newell's shearwater, which was sighted on Tutuila only once in 1993 and considered an accidental visitor, the ranges of the other three species are assumed not to overlap with that of the American Samoa longline fishery or other pelagic fisheries north of the Equator (see sources cited in WPRFMC 2011). A comprehensive description of the species' distribution, population status, threats, and recovery strategy can be found in the species' recovery plans.[29] Since NMFS initiated the observer programs in Hawaii in 1994 and American Samoa in 2006, there have been no observed interactions between ESA-listed seabird species and the fisheries under the Pelagics FEP.

In 2012, an ESA section 7 consultation with the U.S. Fish and Wildlife Service covering the potential impacts of the Hawaii deep-set and shallow-set fishery on listed seabirds concluded that the Newell's shearwater and the Hawaiian petrel are not affected by the Hawaii deep-set fishery. In addition, USFWS concluded in the USFWS 2012 BiOp that the continued operation of the Hawaii deep- and shallow-set longline fisheries will adversely affect the short-tailed albatross but will not jeopardize its survival and recovery in the wild. No critical habitat has been designated for this species; therefore, none will be affected. The BiOp covering the short-tailed albatross anticipates that two (2) short-tailed albatross in the deep-set fishery and (1) short-tailed albatross in the shallow-set fishery may be taken every five years in the form of injury or death as a result of interactions with fishing activity operating under existing regulations (USFWS 2012a). This is an authorized observed level of take and if this level is exceeded, NMFS will be required to reinitiate consultation with the USFWS. Since NMFS initiated the mandatory Hawaii longline observer program in 1994, there have been no observed interactions between ESA-listed seabird species and Hawaii deep-set or shallow-set longline fisheries under the Pelagics FEP.

In an informal consultation, dated May 19, 2011, USFWS concurred with NMFS' determination that the American Samoa longline fishery is not likely to adversely affect the Newell's shearwater. In a separate communication on July 29, 2011, and recorded in a memorandum for the record on the same date, USFWS advised that, because of the lack of overlap between the range of the American Samoa longline fishery and the ranges of Chatham, Fiji, and magenta petrels, the fishery would likely not adversely affect those petrels.

Seabirds interactions have not been reported or observed in the Guam or CNMI longline fisheries, therefore; a 2011 ESA section 7 consultation with USFWS determined these fisheries are not likely to adversely affect the Newell's shearwater or the short-tailed albatross. Since

[29] Available online at: http://ecos.fws.gov/tess_public/TESSWebpageRecovery?sort=1.

2012, there have been no active longline vessels in Guam or CNMI, so there are no reports of interactions with seabirds.

Non-listed Seabirds

Seabird regulations for the Hawaii longline fisheries were published in the *Federal Register* on December 19, 2005 (70 FR 75075). Deep-set fishing operations north of 23º N latitude are required to comply with seabird mitigation regulations that are intended to reduce interactions between seabirds and Hawaii longline fishing vessels (50 CFR parts 600 and 665). The regulations require that longline fishermen employ a suite of mitigation measures that are specific to side-setting or stern-setting, and may include blue-dyed bait, weighted branch lines, strategic offal discards, setting from the side of the vessel, using a "bird curtain", or a hydraulic line-setting machine, among others. These measures help deter birds from becoming hooked or entangled while attempting to feed on bait or catch. For a complete description of the requirements, see 50 CFR § 665.815. These requirements would remain in effect under all Alternatives.

In addition to the ESA-listed seabirds described above, the Hawaii deep-set and shallow-set longline fisheries occasionally interact with other seabirds such as albatrosses, Northern fulmar, and sooty shearwater.

Albatrosses

Albatrosses that forage by diving are some of the most vulnerable species to bycatch in fisheries (Brothers et al. 1999). These species are long-lived, have delayed sexual maturity, small clutches and long generation times, resulting in populations that are highly sensitive to changes in adult mortality. Nineteen of the world's 21 albatross species are now globally threatened with extinction according to the IUCN (IUCN 2004, BirdLife 2004), and incidental catch in fisheries, especially longline fisheries, is considered one of the principal threats to many of these species (Veran et al. 2007).

Hawaii longline fisheries interact at low levels with black-footed and Laysan albatross, but due to strict mitigation measures enacted under the Pelagics FEP, interactions have been drastically reduced since 2000. The Hawaii longline fishery has reduced seabird interactions by 67 percent in the deep-set fishery (Gilman et al. 2008), and a 96 percent in the shallow-set fishery. Increased observer coverage (20-26 percent for the deep-set fishery and 100 percent for the shallow-set fishery) has also resulted in better monitoring and reporting of interactions.

On October 7, 2011, in response to a petition to list the black-footed albatross under the ESA, the USFWS found that the Hawaiian Islands breeding population and the Japanese Islands breeding population of the black-footed albatross are separate distinct population segments, as defined by the DPS policy (76 FR 62503). However, the USFWS also found that neither DPS of the black-footed albatross currently warrants listing under the ESA. The USFWS observed that black-footed albatross bycatch should continue to be minimized by the implementation of effective bycatch minimization measures, and concluded that Hawaii-based longline fishing is not a significant threat to the black-footed albatross.

Non-listed Seabird Interactions

Table 29 contains the estimated numbers of albatross that have interacted with the Hawaii deep- and shallow-set longline fisheries from 2006 through 2011 based on observed interactions by the NMFS Observer Program. From 2004, observer coverage rates were approximately 20 percent in the deep-set fishery and 100 percent in the shallow-set fishery. The major reduction in the number of interactions was due in most part to requirement that the shallow-set longline fishery begin setting one hour after local sunset and to complete setting one hour before local sunrise. Seabirds likely drown if the interaction occurs during gear deployment (setting), but during gear retrieval (hauling), seabirds may be released alive when fishermen promptly apply seabird handling and release techniques. Based on observer data nearly all seabirds hooked or entangled in the Hawaii deep-set longline fishery are dead, since interactions presumably occur during the setting. In 2011, fishermen released two seabirds alive and observers recorded 46 dead (NMFS 2012a).[30]

In addition, from 2004 to 2011, based on observed sets, the deep-set fishery interacted with one red-footed booby, one brown booby and 23 sooty shearwaters. In the same period, the shallow-set fishery interacted with one northern fulmar and one sooty shearwater (http://www.fpir.noaa.gov/SFD/SFD_seabirds.html).

Table 29: Estimated total number of interactions with albatrosses in the Hawaii deep- and shallow-set longline fisheries, 2006-2011.

Year	Laysan	Black-footed	Total
2006	73	15	88
2007	85	83	168
2008	124	88	212
2009	139	141	280
2010	105	197	302
2011	92	236	328

Source: NMFS PIFSC.

Most of the seabird interactions now occur in the deep-set longline fishery (Table 30). Although fewer are caught, a greater percentage of Laysan albatrosses are caught in the shallow-set fishery see Table 31).

Table 30: Estimated interactions with albatrosses in the Hawaii deep-set longline fishery, 2005-2011.

[30] http://www.fpir.noaa.gov/SFD/SFD_seabirds.html

Year	Laysan	Black-footed	Total
2005	43	82	125
2006	7	70	77
2007	44	77	121
2008	55	118	173
2009	60	110	170
2010	157	66	223
2011	187	73	260
Average	79	85	164

Source: NMFS PIFSC.

Table 31: Observed albatross interactions in the Hawaii shallow-set longline fishery

Year	Laysan	Black-footed	Total
2004	1	0	1
2005	62	7	69
2006*	8	3	11
2007	40	8	48
2008	33	6	39
2009	81	30	112
2010	40	38	79
2011*	49	19	68
Average	39	14	53

Note: * NMFS closed the fishery before the end of the year because an annual turtle interaction limit was reached.

The USFWS issued a special permit in 2012 under the Migratory Bird Treaty Act (MBTA) to the Hawaii shallow-set fishery. The permit authorizes incidental take of certain seabirds for a period of three years (Table 32; USFWS 2012b).

Table 32: Total incidental take authorized under the three-year MBTA Special Purpose Permit for the Hawaii shallow-set longline fishery.

Year	Authorized incidental take (N)			
	Laysan albatross	Black-footed albatross	Northern fulmar	Sooty shearwater
2012	129	57	10	10
2013	143	64	10	10
2014	159	71	10	10
Total	430	191	30	30

Source: USFWS 2012b.

Many seabird species may occur in the area of operation of the American Samoa longline fishery, similar to Hawaii, Guam, and CNMI. Observers have recorded two interactions with unidentified shearwaters in the American Samoa longline fishery from 2006-2012.

3.4.4 Proposed ESA listings

Scalloped hammerhead sharks
On April 5, 2013, NMFS published in the *Federal Register* a 12-month finding and proposed rule to list four of six identified distinct population segments (DPSs) of scalloped hammerhead sharks under the ESA (78 FR 20718).[31] The finding and proposed rule did not include a proposal to designate critical habitat. Two proposed DPSs occur in the action area. NMFS has proposed the Indo-West Pacific DPS as threatened, and includes areas around most of the U.S. Pacific territories and possessions. NMFS has proposed the Eastern Pacific DPS as endangered, and generally includes the eastern Pacific east of 140° W.

Operation of the Hawaii longline fisheries overlap the proposed threatened Indo-West Pacific and endangered Eastern Pacific DPS boundaries near the limits of where the fisheries operate in the south and east (i.e., south of 10° N and east of 140° W). However, the proposed DPS boundaries may change; it is unclear where and to what extent the fishery ultimately will overlap with the Indo-West Pacific and Eastern Pacific DPSs. Other longline fishing in the region, including American Samoa and elsewhere, would likely occur within the range of the Indo-West Pacific DPS.

NMFS observers have recorded catches of scalloped hammerhead sharks in the Hawaii deep-set and American Samoa longline fisheries, but catches are rare. Over the eight-year period from 2004 to 2011, observers in the Hawaii deep-set fishery recorded three incidentally-caught scalloped hammerhead sharks in the area of the proposed threatened Indo-West Pacific DPS south of 10° N. (Additional records of catch at similarly low levels exist prior to 2004.) No records exist for the Hawaii deep-set fishery of any scalloped hammerhead caught in the area of the proposed endangered Eastern Pacific DPS (NMFS PIRO Observer Program, unpublished data). From 2006, when NMFS started mandatory observer coverage in American Samoa, to 2011, observers have recorded eight scalloped hammerheads caught by the fishery. NMFS presumes these fish were from the Indo-West Pacific DPS due to the fishery's location but that is not confirmed through genetic analysis. NMFS has not deployed observers on the low levels of past longline effort in Guam or CNMI. The fishery logbooks allow for longline fishermen to record "Other Shark (specify)" caught during operations; however, due to very low and infrequent fishing effort in the past, presumed rarity of catch, and possibility of misidentification, NMFS might not rely on any logbook records for occurrence of scalloped hammerhead sharks in Guam or CMNI's longline fisheries.

After publishing a proposed rule, NMFS considers public comment and new information. NMFS has one year to publish a final determination on whether to list the species. If NMFS lists both DPSs, and if any of the U.S. fisheries in the western Pacific have the potential to adversely affect the species or its designated critical habitat, NMFS would initiate consultation in accordance

[31] NMFS issued a technical correction to the DPS boundary lines in the Pacific on April 30, 2013. The supporting document is found on regulations.gov by searching NOAA-NMFS-2011-0261-0072.

with section 7 of the ESA. At this time, because of the very low level of catch, and because the longline fisheries would not change under any of the Alternatives, none of the Alternatives, including the no-action Alternative, would change the fisheries' effects on scalloped hammerhead sharks in any way that would prevent their potential listing (or designation, in the case of critical habitat). At present, the current fishery is likely to continue to have a very low level of interaction with this species (see Table 11).

Chapter 4: Environmental Consequences

This chapter describes the environmental consequences that could result from the implementation of each Alternative. Table 1 provides comparative outcomes summarizing impacts of the Alternatives. The analysis uses the information described in Chapter 3 and Appendix C as the baseline to evaluate the action Alternatives compared to the impacts of Alternative 1 - No-action/Status Quo. The environmental resources that are potentially affected include the following: target and non-target species (including bycatch), protected resources, and marine habitat. This chapter also considers the impacts on fishery participants, fishing communities, and enforcement and administration. Finally, this chapter discusses climate change impacts and Environmental Justice.

4.1 Potential Impacts of the Alternatives

The WCPFC has currently not agreed to catch or effort limits for pelagic MUS applicable to the Territories. Under all Alternatives, if the WCPFC agrees to limits for pelagic MUS applicable to the Territories in the future, the Council or NMFS would complete separate environmental analyses for those catch or effort limits prior to implementation. In addition, under Alternative 4, the Council or NMFS would analyze potential impacts from any catch or effort limits for pelagic MUS that the Council could recommend and NMFS could specify in the absence of WCPFC-limits or as additional or more restrictive limits for conservation and management purposes applicable to FEP-permitted fisheries in the Territories.

4.1.1 Potential Impacts to Target and Non-target Stocks

The analysis of the Alternatives under this topic includes impacts to target and non-target stocks. The analysis focuses on impacts to bigeye tuna, which is experiencing overfishing in the WCPO. At this time, specified fishing agreements between Territories and FEP-permitted vessels are expected to be established to attribute bigeye tuna catch in support of responsible fisheries development for the Territories. The congressional mandate of Section 113 authorizes specified fishing agreements. However, under Alternatives 1, 3, and 4, NMFS would attribute all pelagic species caught under a specified fishing agreement to the particular Territory. NMFS did this in 2011, 2012, and 2013 to maintain complete records of all fish attributed to a Territory (American Samoa and CNMI) under an agreement with FEP-permitted vessels. If the WCPFC agrees on limits for other pelagic MUS and the Council makes recommendations to NMFS to implement such limits, then potential impacts of such limits will be analyzed when proposed for rulemaking.

The targeting of bigeye tuna by U.S. longline vessels drives incidental catches of other pelagic MUS such as yellowfin tuna and striped marlin. Incidental catches of non-target pelagic species correspond to longline fishing effort, but also involve variations in population dynamics such as recruitment influenced by oceanographic conditions.

The following analysis (also see Appendix D) uses TUMAS (Tuna Management Simulator) to evaluate impacts to bigeye tuna from international fisheries occurring within the WCPFC Convention Area. TUMAS is an online web tool designed to allow users to control fisheries data

under various scenarios and project the status of a particular stock in the future.[32] This application was developed by the SPC-OFP and relies on stock assessments of tropical tunas in the WCPO.

With respect to bigeye tuna, the most recent version of TUMAS incorporates the 2011 stock assessment of bigeye tuna in the WCPO (see Davies et al. 2011). This stock assessment is a spatially disaggregated MULTIFAN-CL model that separates the WCPO into six regions. As designed, TUMAS incorporates bigeye tuna catch information from the early 1950s up to 2010 and allows users to scale catch data by fisheries overall or in one or more of the six stock assessment regions to make predictions about likely stock responses to catch or effort changes. New stock assessments are incorporated into TUMAS as they become available. The TUMAS model available at the time of writing incorporates 2010 catch information of bigeye tuna and does not include 2011 or 2012 catches.

TUMAS also offers the ability to conduct projections under two stock-recruitment scenarios for bigeye tuna:

1) Long-term recruitment average (1952-2009), which is termed "spawner recruitment relationship" in the model; and

2) Recent average recruitment (1989-2009).

The two recruitment scenarios offer different stock status trajectories, with long-term average recruitment being more pessimistic and recent average recruitment being more optimistic. The long-term recruitment average includes several decades (1950s-1970s) of older recruitment estimates that were derived from periods when fishing mortality on bigeye tuna was much lower and confined primarily to longline fishing. Higher levels of bigeye tuna recruitment occurred after the 1980s with the expansion of FAD-based purse seine fishing in the WCPO, and thus the recent average recruitment scenario (1989-2009) better reflects current conditions and conditions that are likely to prevail into the near future, where bigeye tuna catches will be from a mixture of purse seine and longline fisheries.

With regards to deterministic projections, such as those produced using TUMAS, the WCPFC Science Committee has recommended that the WCPFC science provider (SPC-OFP) conduct projections using recent average recruitment and the long-term recruitment average; however, since the higher level of recent bigeye tuna recruitment is considered to be a better indicator of future recruitment levels, greater emphasis is provided to recent average recruitment when presenting catch projections (WCPFC 2010; WCPFC 2011(d); J. Hampton, SPC-OFP, pers. comm., 2013).[33]

[32] http://www.tumas-project.org/about-tumas

[33] In 2011, the SPC-OFP ran projections using both recent average recruitment and long-term average recruitment; however, the SPC-OFP only presented projections using recent average recruitment at the Eighth Regular Session of the WCPFC in March 2012. This exemplifies the greater emphasis being placed on recent average recruitment versus long-term average recruitment when conducting projections on the stock status of bigeye tuna. See WCPFC 2011(d).

It is expected that the SPC-OFP will incorporate data after 2010 in the TUMAS tool when the 2014 stock assessments of tropical tunas are completed by the SPC-OFP. With respect to 2011 catches, and as indicated below, the SPC-OFP has run projections to evaluate the impacts of 2011 fishing conditions on bigeye tuna stock status; however, the SPC-OFP has yet to include 2011 data in the online TUMAS tool. In addition, 2012 catches are still considered preliminary and therefore have not been used by the SPC-OFP to run projections for consideration by the WCPFC. However, catches of bigeye tuna in 2012 are believed to be similar to levels observed in 2011.

The fishing conditions in 2010, however, are especially useful for management purposes because they are representative of the volume of bigeye tuna caught in the purse seine, longline, and other fisheries (e.g., Indonesian/Philippine surface fisheries) that would result in eliminating overfishing on WCPO bigeye tuna in the near future, which is consistent with existing WCPFC objectives. For example, under a scenario best approximating reported fishery catch and effort in 2010, the SPC-OFP projected overfishing to be eliminated with the F/F_{MSY} ratio of bigeye tuna to be 0.96 by 2021 (Pilling et al. 2013). This is driven by several factors: the lower than average FAD use in 2010, lower longline catches, and a large (30%) reduction in reported catches from the domestic fisheries of Indonesia and the Philippines (Ibid.). For a scenario approximating 2011 fishery conditions, the SPC-OFP projected overfishing to continue with the F/F_{MSY} ratio of bigeye tuna to be 1.29 by 2021 under the recent average recruitment scenario (Pilling et al. 2013). The difference between 2010 and 2011 fishery outcomes is mainly due to the return to higher levels of FAD-based purse seine effort in 2011 (Ibid.).

Subsequent to 2011 catches of bigeye tuna, the WCPFC agreed to CMM 2012-01, which maintained longline catch limits for bigeye tuna. CMM 2012-01 established additional measures to reduce the impact of purse seine fishing, including the implementation of an additional month prohibiting FAD usage, or an annual limit of FAD sets to 8/12 (75%) of the average number of FAD sets from 2001-2011 and for SIDS, 8/9 (88.8%) of the 3-year average for 2009-2011, restrictions to 2010 levels through the PNA vessel day scheme for PNA members, and restrictions on all other states to purse seine effort in their EEZs to 2001-2004 or 2010 levels. In the same measure, the WCPFC has agreed on an objective to eliminate overfishing on bigeye tuna ($F/F_{MSY} \leq 1.0$) through a step-by-step approach through 2017 (CMM 2012-01). To accomplish this objective, the WCPFC has established more restrictive measures in CMM 2013-01 on purse seine fisheries and longline fisheries than what is provided in CMM 2012-01. Thus, the outcome based on 2011 fishing conditions as described above is considered less likely to occur in the future.

On the other hand, the fishing conditions observed in 2010 are understood by the WCPFC as representative of fishing conditions that would meet its objective in eliminating overfishing on bigeye tuna in the future. As noted above, 2011 conditions resulted in a projected continuation of overfishing, primarily from higher FAD use in the purse seine fishery compared to 2010. Fishing conditions in 2012 were similar to those in 2011. In order to meet the objective to eliminate bigeye tuna overfishing, the WCPFC has agreed on CMM 2013, which is more restrictive than 2012-01, and if further reductions are needed, will establish additional measures through a step-by-step approach through 2017 that are likely to result in fishing conditions similar to 2010.

If replicated, the fishing conditions in 2010 would achieve the WCPFC objective of eliminating overfishing on bigeye tuna, whereas 2011 and 2012 fishing conditions would not. As such, the following analysis relies on the fishing conditions in 2010 as the best available scientific information to evaluate the impact of the action Alternatives on bigeye tuna stock status with respect to overfishing (F/F_{MSY}) and overfished reference points (SB/SB_{MSY}) in the Pelagics FEP. Furthermore, the limits established under CMM 2013-01 and any needed additional measures established through 2017 are more likely to result in fishing conditions similar those observed in 2010 than compared to 2011 and 2012.

For comparative purposes, the analysis below provides projection results using both recruitment scenarios and scaled Hawaii longline catches combined with 2010 fishing conditions. As noted, the WCPFC has agreed on an objective to eliminate bigeye tuna overfishing ($F/F_{MSY} \leq 1.0$) through a step-by-step approach through 2017 (CMM 2012-01, CMM 2013-01). The TUMAS projection results are provided for years 2017 and 2020, with 2020 being the last year available in the TUMAS model. While projection results are included for years 2017 and 2020 in the following analysis, it is noted that the differences in projected values between years are believed to be statistically indistinguishable with respect to overfishing (F/F_{MSY}) and overfished (B/B_{MSY}) reference points. However, when comparing projection results between years under the same catch levels, there is a noticeable trend in stock status, with the stock improving under the recent average recruitment scenario and declining under the long-term average recruitment scenario. See Appendix D for projected results compiled in tabular form.

Although using the long-term average recruitment scenario for the TUMAS projections results in overfishing under all Alternatives, less emphasis is placed on these results because recruitment levels associated with the long-term recruitment average are not believed to be representative future levels of recruitment. Beginning in the late 1980s, higher levels of recruitment have been observed and incorporated in the stock assessment for bigeye tuna. The long-term recruitment average includes several decades (1950s-1970s) of recruitment estimates that were derived from periods when fishing mortality on bigeye tuna was much lower and confined primarily to longline fishing. Moreover, the older recruitment estimates, especially in the 1950s were based on longline data from the Japanese longline fishery when it was more spatially constrained and had not spread out across the WCPO.

Higher levels of bigeye tuna stock recruitment occurred after the 1980s with the expansion of FAD-based purse seine fishing in the WCPO. This high level of juvenile catch is explained in the stock assessment as elevated levels of bigeye tuna recruitment. Moreover, the dynamics of the ecosystem may also have responded to the increasing levels of fishing mortality, which have reduced the upper trophic level predator biomass including adult bigeye tuna, likely resulting in more favorable survival rates for juvenile bigeye tunas (Myers and Worm 2003; Sibert et al. 2006; Polovina et al. 2009; Woodworth-Jefcoats et al. 2012). Furthermore, the 2011 stock assessment for WCPO bigeye tuna indicates that most of the high levels of recruitment observed in the model occur at low estimated spawning biomass (Davies et. al 2011). As such, recent average recruitment of bigeye tuna is likely to be a better reflection of future levels of recruitment, given that favorable conditions will likely persist including the mix of longline and purse seine fishing gears harvesting bigeye tuna in the WCPO.

Because recent average recruitment is believed to be a better representation of current and future recruitment trends, greater emphasis is placed on recent average recruitment associated projections to evaluate impacts from the alternatives to future bigeye tuna stock status. This is consistent with the advice provided by WCPFC Science Committee (WCPFC 2010; 2011(d)) and subsequent projections conducted by the SPC-OFP (WCPFC 2011(d)). See Appendix D for further information.

4.1.1.1 Alternative 1: No Action - Manage Territory Limits Consistent with Existing Provisions of Section 113

Under Alternative 1, the Territories are authorized by Section 113 to enter into agreements with FEP-permitted vessels to transfer catch or effort limits for the purposes of responsible fisheries development. Note that under Section 113, which serves as the basis for this Alternative, there are currently no limits to the amount of pelagic MUS that can be transferred under a Territory agreement. This is because there are no catch or effort limits in place for the longline or other fisheries of the Territories under WCPFC conservation and management measures (e.g., CMM 2012-01, CMM 2013-01).

Alternative 1 does not contain a process for the Council and NMFS to specify Territory catch or effort limits and their use in agreements with FEP-permitted vessels. In addition, this Alternative does not contain a mechanism to limit the amount of catch or effort that may be assigned by a Territory. The impacts to target and non-target stocks due to the lack of a process for the Council and NMFS to specify annual limits or transferable limits are such that the amount transferred combined with catches made domestically in the Territories may exceed conservation objectives. This Alternative does not contain a mechanism to appropriately limit the amount a Territory may transfer under an agreement. Scenarios could arise whereby the amount of catch or effort transferred, combined with domestic catches of fisheries in a particularly Territory, could exceed established catch or effort limits, or add minor to moderate impacts to stocks and impede international and domestic management measures.[34] If there is no mechanism in place for the Council and NMFS to establish specific annual limits for any pelagic MUS then there is no immediate process in place to mitigate such impacts if they arise. Under the No-action Alternative, the impacts to bigeye tuna or other MUS with conservation needs could result in continued overfishing of the stock, which in turn could result in additional management measures being required to limit catch or effort. This Alternative could result in minor to moderately adverse impacts to bigeye tuna stocks, and other stocks whose catch is associated with bigeye tuna catches, depending on the harvest levels of bigeye tuna and whether additional conservation and management measures are necessary or implemented. Unless extended by Congress, Section 113 authorizations will expire after 2013.

CNMI and Guam pelagic fisheries

As described in sections 3.3.2 and 3.3.3 and Appendix C, the commercial and non-commercial pelagic fisheries of CNMI and Guam are currently conducted with primarily troll and handline gears to target tuna (other than bigeye), billfish, mahimahi, and wahoo. The CNMI and Guam

[34] Such scenarios would require increased fishing capacity in Guam and CNMI or significant diversification in the American Samoa longline fishery.

troll fisheries mostly target skipjack tuna and seasonally catches yellowfin tuna and mahimahi. These fisheries do not catch much bigeye tuna due to the location of fishing activity and because bigeye tuna are not readily caught at the surface with troll gear. The annual landings of targeted tuna species in Guam and CNMI are an insignificant fraction of the total catches of these species in the WCPO by all fleets. For example, in 2011, the amount of yellowfin tuna landed in Guam was estimated at 588,633 pounds (267 mt). In 2011, approximately 948,835,224 lb (430,506 mt) of yellowfin was caught in the WCPO, thus catches of yellowfin by Guam's pelagic fisheries represent approximately 0.06 percent of the WCPO yellowfin catch. Similarly, CNMI's pelagic fisheries have contributed very minimally to fishing mortality of pelagic species when compared to total WCPO catches. There is very little bycatch in these fisheries and most catch is retained for local sale or for personal consumption. The Council, NMFS, and local fishery managers review the catches of these fisheries annually and believe the catches are sustainable.

In 2013, Hawaii longline vessels permitted under the Pelagics FEP operated under a Section 113 agreement with the CNMI government. As of late March 2014, landings data for catch attributed to the CNMI under the 2013 agreement are unavailable. However, the preliminary estimate of the amount of bigeye tuna attributed to the CNMI in 2013 is less than amounts attributed to American Samoa in 2011 or 2012 (K. Bigelow, PIFSC, pers. comm., March 21, 2014).

Based on projects currently identified in their respective MCPs, funding derived from agreements would likely be used for fisheries development projects associated with enhancing infrastructure (e.g., cold storage in CNMI and dock improvements in Guam). As there are no active longline vessels currently in CNMI and Guam, any CNMI or Guam agreement with FEP-permitted vessels would not likely lead to immediate expansion in longline fishing in the U.S. EEZ around CNMI or Guam or adjacent high seas. Therefore, in the near term, Alternative 1 would likely maintain baseline catch and effort levels for existing pelagic troll fisheries in both locations, and there would be no additional impacts to target or non-target stocks.

American Samoa pelagic fisheries

As described in Chapter 3, the largest pelagic fishery in American Samoa is the commercial longline fishery targeting albacore tuna, which is sold to the local Pago Pago canneries. The amount of albacore landed by the American Samoa longline fishery in 2011 was 4,350,802 pounds (1,974 mt). The 2011 WCPO catch of South Pacific albacore was estimated at 75,258 mt, thus the American Samoa longline fishery represents approximately 2.6 percent of the total annual South Pacific albacore catch. The stock of south Pacific albacore is healthy; it is not overfished and overfishing is not occurring.

Troll and handline fishing also occurs on a commercial and non-commercial basis in American Samoa, representing relatively small annual catches of yellowfin and skipjack tunas, and other pelagic MUS. Troll and handline fisheries in American Samoa are reported to catch zero bigeye tuna. Catches by the pelagic fisheries are believed to be sustainable and are reviewed annually by the Council, NMFS, and local fishery managers.

Based on fisheries development needs identified in the American Samoa MCP, funds derived from an agreement as authorized under Alternative 1 would likely be used to support

infrastructure development (e.g., docks) and projects to diversify the existing albacore longline fishery such as training for safe handling of fresh fish for sale. Depending on the level of funding and prioritization between MCP projects, and the new fresh/frozen fish market opportunities currently in place in Pago Pago, there is the likelihood that the American Samoa longline fishery may diversify and responsibly development into a multispecies fishery that includes the landing of albacore, yellowfin, and bigeye tunas, as well as other valuable pelagic MUS for export to off-island markets.

There are 60 permits authorized under the American Samoa longline limited entry permit program, split among 4 vessel size categories (Class A (≤ 40.1 ft in length); Class B (40.1-50 ft); Class C (50.1-70 ft); Class D (> 70 ft). Class B, C, and D permit categories are registered with vessels fishing in the EEZ around American Samoa or are dual-permitted and also fishing in the EEZ around Hawaii and adjacent high seas. There are several inactive Class A and B permits. If fisheries development lead to some longline vessels being able to diversify their landings (i.e., in addition to frozen albacore), then catches of yellowfin and bigeye tunas, and other pelagic species may increase under this Alternative in the future. The number of vessels that would diversify their catches and the amount of fish and species composition of catches by these vessels are not predictable at this time. However, given that participation is capped under the American Samoa longline limited entry program at 60 permits, overcapitalization of the fleet is not likely, and the catch of target and non-target stocks by the fishery is not expected to substantially increase over baseline levels, and there would be no additional large impacts to target or non-target stocks.

The amount of bigeye tuna that was transferred under the American Samoa Government agreement with the Hawaii Longline Association (ASG/HLA agreement) in 2011 and 2012 was 628 mt and 771 mt, respectively. When added to the bigeye tuna caught by American Samoa vessels operating out of Pago Pago and to the bigeye tuna caught by vessels with dual American Samoa and Hawaii longline permits, the amounts totaled 1,264 mt and 1,505 mt, respectively (see Table 12). While bigeye tuna catch limits under the WCPFC CMM 2013-01 do not apply to American Samoa, the total catch reported for American Samoa is below the 2,000-mt threshold used in WCPFC conservation and management measures (e.g., CMM 2008-01, CMM 2012-01, CMM 2013-01). However, if the American Samoa longline fishery diversified and began targeting bigeye tuna, bigeye tuna landings combined with a transferred amount of bigeye tuna under an agreement would likely exceed 2,000 mt annually. This action would ensure that catch would not exceed 2,000 mt annually for American Samoa, given existing international management measures, while also recognizing that WCPFC limits do not apply to SIDS and PTs including American Samoa.

While there is not a WCPFC catch limit in place for yellowfin tuna applicable to American Samoa (or for any CCM currently), the amount of yellowfin reported to the WCPFC in 2011 and 2012 for American Samoa, which included yellowfin catch under the ASG/HLA agreement and dual-permitted vessels, was approximately 600 mt in both years. The American Samoa longline fishery caught nearly 900 mt of yellowfin in 2004, which is a baseline year included in the previous WCPFC measure (CMM 2008-01, paragraph 31). As a result of fisheries development, a diversified longline fishery may lead to catches of yellowfin that exceed levels that were once identified as a baseline for non-SIDS/PTs in previous WCPFC measures. However, as previously

described, there are no yellowfin catch limits in CMM 2012-01 and CMM 2013-01 that apply to the Territories, and the WCPO yellowfin stock is not considered to be experiencing overfishing, nor is it in an overfished condition. The Council and NMFS do not expect large adverse effects to yellowfin tuna.

NMFS targets observer coverage in the American Samoa longline fishery at 20 percent annually. Bycatch of non-target species in the fishery is comprised mostly of sharks and other pelagic species, which are not retained due to little or no market value or marketing opportunities. Bycatch levels are shown in Table C-5. The majority of sharks caught in the fishery are returned alive to the sea. NMFS does not expect the current sustainable levels of bycatch to increase under Alternative 1, even if the fishery diversified. For example, under a diversified longline fishery that benefited from funds derived from Territory agreement in terms of vessel upgrades and fresh fish training, bycatch might decrease from baseline levels due to an ability to properly store and land species that otherwise might have been returned to the sea. Due to a historical lack of fresh fish markets in American Samoa, large yellowfin and bigeye tunas are sometimes discarded if caught in the beginning of the fishing trip because fish of such size are not optimal for cannery operations. Now that Tri Marine is established in Pago Pago, and offering to buy fresh/frozen tuna for export markets from local American Samoa longline vessels, there is potential that tunas and other MUS that otherwise may have been bycatch may be retained and sold. This may likely reduce bycatch levels from historical levels; however, this is also conditional on fleet upgrades (e.g., ice machines) and training (e.g., fresh fish handling).

Hawaii pelagic fisheries

As described in section 3.2.4 and Appendix C, the combined Hawaii longline fishery is the largest fishery in terms of volume and value in Hawaii. The primary target species of the Hawaii longline deep-set fishery is bigeye tuna, but the fishery also lands other secondary non-target and incidentally-caught species of commercial value including yellowfin tuna, swordfish, striped marlin, blue marlin, mahimahi, wahoo, monchong (pomfret), opah, escolar, and mako shark. Hawaii's other commercial pelagic fisheries include troll and handline for yellowfin and bigeye tunas, mahimahi, and other pelagic MUS.

The Hawaii longline fishery, as the primary U.S. longline fishery in the WCPO, is subject to an annual longline bigeye tuna limit of 3,763 mt in the WCPO and a 500-mt limit (including any fishing by the territories) in the EPO for vessels over 24 meters.[35] The U.S. catch limit for bigeye tuna in the WCPO applicable to the Hawaii longline fisheries (includes both deep- and shallow-set) represents 2.3 percent of the total 2012 WCPO bigeye tuna caught by all gears, and 5 percent of the total 2012 WCPO bigeye tuna longline catch (see Table 13).

Under this Alternative, agreements between Territories and FEP-permitted vessels are expected to be established to attribute bigeye tuna catch in support of fishery development in the Territories. As described earlier, bigeye tuna is the primary target species for the Hawaii deep-set longline fleet, and since 2009, the fishery has caught all or nearly all of the U.S. longline (non-Territory) bigeye tuna catch limit (3,763 mt; see Table 12).

[35] These limits have been agreed to by the U.S. as a member of the WCPFC and IATTC, respectively. These limits are promulgated in federal regulations (50 CFR § 300.224).

In 2011 and 2012, the Hawaii longline fishery caught 3,565 mt and 3,654 mt of bigeye tuna in the WCPO, which is below the annual U.S. WCPO longline catch limit of 3,763 mt for bigeye tuna. In addition, in 2011 and 2012, 628 mt and 771 mt of bigeye tuna catch, respectively, were transferred to the Hawaii longline vessels under the ASG/HLA agreement (See Table 33). The resultant amount of bigeye tuna landed by Hawaii longline vessels operating under the U.S. limit and the ASG/HLA agreement for 2011 and 2012 was 4,193 mt and 4,425 mt, respectively (approximately 5.7% of the total WCPO longline bigeye tuna catch).

Table 33: Amount (mt) of catch by species transferred under the American Samoa government catch agreement with the Hawaii Longline Association, 2011 and 2012.

	Species Catch (mt)															
Year	**Bigeye tuna**	**Yellowfin tuna**	**Albacore**	**Skipjack**	**Opah**	**Striped marlin**	**Escolar**	**Monchong (pomfret)**	**Blue marlin**	**Spearfish**	**Mahimahi**	**Wahoo**	**Swordfish**	**Mako shark**	**Thresher shark**	**Blue shark**
2011	628	86	51	10	40	45	31	20	26	22	31	9	6	5	3	1
2012	771	174	58	96	39	30	34	31	26	22	14	18	11	4	2	2

Note: Amounts equate to landed catch and not total catch since some fish may have been discarded at sea. NMFS attributed all catches made by vessels operating under the agreement to American Samoa. For 2011, NMFS attributed catch to American Samoa from November 18 – December 31. For 2012, NMFS attributed catch to American Samoa from November 20 – December 31.
Source: PIFSC unpublished data

As reported to the WCPFC in 2011 and 2012 (see Table 12), catches of bigeye tuna by the Hawaii longline fleet were below the annual U.S. WCPO longline bigeye tuna limit (3,763 mt). In addition, catches attributed to American Samoa were below previously existing bigeye tuna limits of 2,000 mt applicable to WCPFC non-SIDS and PT members that harvested 2,000 mt or less pursuant to CMM 2008-01, CMM 2012-01, and CMM 2013-01, which do not apply to the U.S. Pacific territories. While these data may suggest that the status quo is consistent with conservation and management objectives expressed in WCPFC conservation and management measures, Section 113 does not identify any limits on catch or effort transferred under agreements.

As described in section 3.1, bigeye tuna is a pan-Pacific stock that has recently been assessed separately in the WCPO and EPO for management purposes. The WCPO stock assessment is expansive, covering bigeye tuna from Indonesia in the far western Pacific, to the 150° W in the central Pacific Ocean.[36] The WCPO stock assessment further separates fishing areas into six regions, and evaluates biomass and fishing mortality information and trends within the regions. The regions with the highest impact to bigeye tuna in the WCPO are Regions 3 and 4 – representing 88 percent of bigeye tuna fishing mortality (WCPFC 2011a). Regions 3 and 4 comprise the tropical equatorial zone between 20° N and 10° S, and whereby the area between 10° N and 10° S is distinguished as the core zone for the tropical tuna longline and purse seine fisheries (see Figure 4). The majority of fishing effort by the Hawaii longline fishery occurs north of above 20° N in Region 2, and further 98 percent of bigeye tuna caught by the Hawaii longline fishery comes from north of 10° N and outside of the which is outside of the core equatorial zone of heavy purse seine and longline fishing (NMFS unpublished data; NMFS PIFSC 2013).

Fishing activity by Hawaii longline vessels conducted under Territory agreements pursuant to Section 113 would likely center around Hawaii, both within the EEZ and on the adjacent high seas in the North Pacific subtropical zone and outside of 10° N and 10° S equatorial belt. As shown in Figure 14, the estimated impact of bigeye tuna catches in Region 2 on the stock is much lower than Region 4 where the fishery and stock also occur. According to the 2011 stock assessment for bigeye tuna in the WCPO, the trends in biomass in Region 2 are estimated to be more due to recruitment trends rather than fishing (Davies et al. 2011). The WCPFC Scientific Committee has recognized the disparity in impacts to the stock between evaluated regions in the stock assessment and has recommend that the WCPFC consider adopting spatial management measures to address overfishing of bigeye tuna (WCPFC 2011a).

An analysis of the potential impact to the WCPO bigeye stock based on the amount of bigeye tuna transferred under the 2011 and 2012 ASG/HLA agreement (628 mt and 771 mt in each year, respectively) was conducted using TUMAS developed by the SPC-OFP. As shown in Appendix D, the expected annual amount of fish transferred under the agreements (approx. 700 mt) combined with the U.S. WCPO longline bigeye tuna limit (3,763 mt), for a total of 4,463 mt, has

[36] The most recent stock assessment for bigeye tuna in the WCPO was conducted in 2011. It can be accessed from the web at: http://www.wcpfc.int/doc/sa-wp-02/stock-assessment-bigeye-tuna-western-and-central-pacific-ocean. According a 2013 stock assessment in the EPO, bigeye tuna is in a better condition; no longer subject to overfishing, compared to bigeye tuna in the WCPO, due to significant reductions in longline catches in the EPO within the last decade primarily by Asian distant water fishing nations.

a 0.50 percent and a 0.41 percent increase on F/F_{MSY} level using recent average recruitment, and a 0.40 percent and 0.52 percent increase on F/F_{MSY} level using long-term average recruitment, when projected through 2017 and 2020, respectively. Accordingly, under the assumption of recent average recruitment, the projections indicate that overfishing would not be occurring through 2020 when the 2010 projected total WCPO bigeye tuna catches are combined with 700 mt transferred under a Territory agreement (2017 $F/F_{MSY} = 1.013$ and 2020 $F/F_{MSY} = 0.979$, whereby the fractional overage in 2017 falls within an acceptable range for determining that overfishing is not occurring). If projecting the contribution of 700 mt transferred under a Territory agreement plus 2010 fishing conditions using long-term average recruitment, the F/F_{MSY} ratio is 1.32 through 2020, indicating that overfishing would continue.

TUMAS was also used to evaluate the impact to bigeye tuna biomass to that of biomass to produce MSY (B/B_{MSY}), which relates to an overfished stock status under the Pelagics FEP. Under the established control rules of the Pelagics FEP, the B/B_{MSY} ratio of 0.6 is the threshold for designating bigeye tuna as overfished. The TUMAS results indicate that the level of catches anticipated under No-action Alternative 1, when combined with 2010 catches and projected into the future, would produce an B/B_{MSY} ratio of 1.696 and 1.815 for years 2017 and 2020, respectively, using recent average recruitment. If using long-term average recruitment, the No-action Alternative, when combined with 2010 catches and projected into the future, is likely to produce a B/B_{MSY} ratio of 0.899 and 0.806 in 2017 and 2020, respectively. Based on the TUMAS analysis, the addition of 700 mt of bigeye tuna potentially harvested by U.S. longline vessels operating under a Territory agreement combined with 3,763 mt would not result in an overfished status for bigeye when 2010 catches are projected through 2020 and under both recruitment scenarios (see Appendix D).

In summary, if 2010 fishing conditions are held to in the future, which is expected as a result of stricter WCPFC measures, in addition to the amount of catches anticipated under this Alternative, this Alternative would prevent bigeye tuna overfishing under the recent average recruitment scenario, but not under the long-term average recruitment scenario. For both recruitment scenarios, however, bigeye tuna would not be considered overfished under the Pelagics FEP when projected through 2020. Because recent average recruitment is believed to be a better representation of current and future recruitment trends, greater emphasis is placed on recent average recruitment associated projections (see Appendix D).

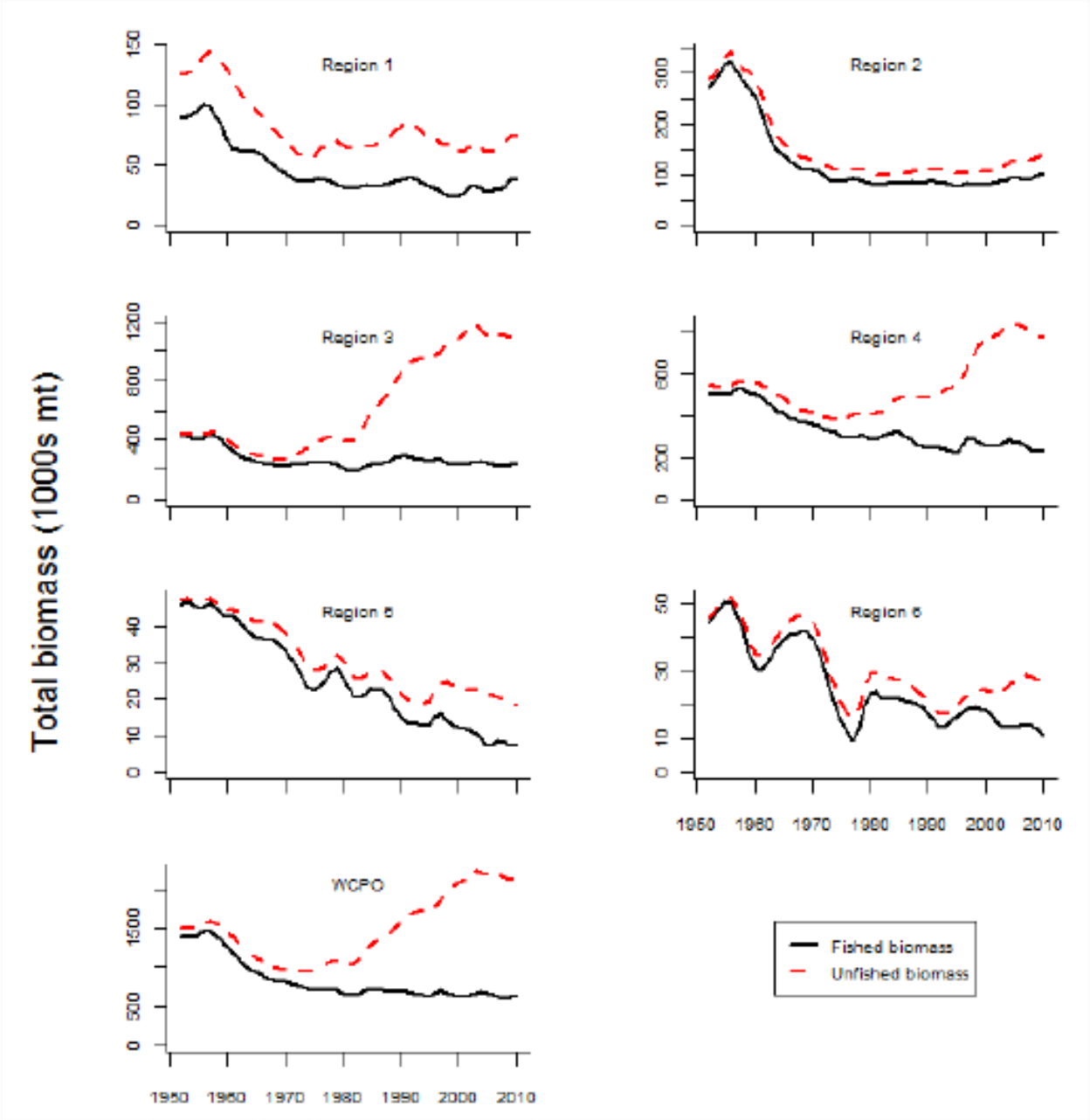

Figure 14: Estimated total biomass trajectories of bigeye tuna in the WCPO with biomass trajectories that would have occurred in the absence of fishing.
Source: Davies et al. 2011.

The Hawaii longline deep-set fleet (approximately 126 vessels) may be operating near its maximum in terms of hooks, sets, and trips. However, it is possible that over time effort may increase if latent permits (approximately 35) are assigned to vessels that begin fishing or if existing vessels are replaced with larger vessels that may be able to expend more fishing effort.[37] However, predicting future effort is difficult due to potentially fluctuating operational costs, participant turnover, and regulatory constraints. Based on these and other possible factors,

[37] Note that the Hawaii longline limited entry program is restricted to vessels less than 101 ft in length.

NMFS does not anticipate that the number of vessels or effort in the Hawaii longline will substantially increase in the near future.

With regard to other target and non-target stocks, the WCPFC has established several conservation and management measures for HMS fish stocks (see Table 2). Catch limits have been agreed to by the WCPFC for bigeye tuna and striped marlin for longline fisheries; while other WCPFC measures restrict fishing effort for certain pelagic species (see Table 2). In the Hawaii longline fishery, trends in striped marlin catches, as well as catches of non-target stocks, follow that of longline effort for bigeye tuna with interannual variability (see Table 12). If fishing effort for bigeye tuna were to increase over the baseline, the catch of other target and non-target stocks would be expected to proportionately increase with the increases in fishing effort. Because the Council and NMFS closely monitor catches based on landings data, any such increases are expected to be detected and subject to additional management measures to ensure fishing remains within required limits.

A recent stock assessment for western and central north Pacific striped marlin indicates that it is overfished and experiencing overfishing (ISC 2012). The WCPFC Science Committee has indicated that reducing fishing mortality would likely increase spawning stock biomass and may improve the chances of higher recruitment (WCPFC 2012a). WCPFC CMM 2010-01 for North Pacific striped marlin requires members and cooperating non-members to limit striped marlin catches by all gears from their highest catches from 2000-2003, and then further reduce catches by 10 percent in 2011, 15 percent in 2012, and 20 percent in 2013. The SIDS and PTs are exempt from catch limits under the North Pacific striped marlin measure. The striped marlin limit applicable to the U.S. (i.e., Hawaii's fisheries) is 571 mt, from which reductions are required in years 2012 and 2013 by all fisheries that catch striped marlin. The Hawaii longline fishery catches approximately 90 percent of the total North Pacific striped marlin caught by Hawaii fisheries. In 2011 and 2012, when U.S. longline vessels were operating under the ASG/HLA agreement, 39 mt and 31 mt of North Pacific striped marlin were attributed to American Samoa. Prior to the transfer of catches under the ASG/HLA agreement, the Hawaii longline fishery is reported to have caught 263 mt and 209 mt of North Pacific striped marlin, in 2011 and 2012, respectively, which was below 90 percent (462 mt) of the 2011 limit of 514 mt and below 90 percent (436 mt) of the 2012 limit of 485 mt.

The scalloped hammerhead shark is caught rarely in U.S. longline fisheries in the Western Pacific Region. In 2013, NMFS identified the species is comprised of six distinct population segments, which are considered species under the ESA, and recently proposed several of them to be listed under the ESA (78 FR 20718, with corrections; April 5, 2013). From 2004-2011, observers in the deep-set fishery recorded three scalloped hammerhead sharks caught incidentally in the area of the proposed threatened Indo-West Pacific distinct population segment south of 10° N. (Additional records of catch at similarly low levels exist prior to 2004.) No records exist for the deep-set fishery of any scalloped hammerhead caught in the area of the proposed endangered Eastern Pacific DPS (NMFS Observer Program, unpublished data). Incidental catch is likely to continue at very low levels as historically observed.

Taking into account the limited likelihood of the Hawaii longline fishery to expand (both deep-set and shallow-set), as well as the fact that all additional harvest of bigeye tuna continues to

remain sustainable, substantial increases in catches of target or non-target species are not anticipated under the No-action Alternative. In the future, if the catch limit for North Pacific striped marlin or other future catch or effort limits agreed to by the WCPFC are exceeded or expected to be exceeded, the Council and NMFS will consider fishery management measures that reduce or maintain catch of these species at levels agreed to by the WCPFC. Should NMFS determine that any other target and non-target stocks are overfished or subject to overfishing, and WCPFC management measures appear ineffective, the Council is likely to consider recommending future management measures to the Secretary to rebuild the stock or reduce fishing mortality.

4.1.1.2 Alternative 2: Section 113 Authority Ends

This Alternative projects that Congress would not extend the Section 113 authorizations beyond the current expiration after December 31, 2013, and that the Council's recommendation to amend the Pelagics FEP to implement Section 113 would not be approved or implemented by NMFS.

This Alternative would not provide the Territories with the authority to enter into agreements with FEP-permitted vessels. The Council and NMFS would continue to manage territory pelagic fisheries under the Pelagics FEP and existing regulations. If the WCPFC agreed on Territory catch or effort limits, NMFS could implement the limits under the authority of the WCPFIA or under the Magnuson-Stevens Act, based on the Council's recommendation.

Without Territory agreements, catches by Territory fisheries and U.S. longline vessels in the WCPO would be similar to 2009 and 2010 levels (see Table 12, Appendix C, and Appendix D). The same holds true for non-target stocks under this Alternative. Without the authorization of Territory agreements with FEP-permitted vessels, the catches of non-target stocks by the U.S. longline fisheries would likely be reduced in the WCPO, likely similar to levels that occurred in 2009 and 2010; ranging from 10-200 mt depending on the species of non-target stocks (see Table 12).

Absent Territorial agreements, the mechanism that agreements offer for the infusion of capital in support of responsible fisheries development would be eliminated, resulting in a lower potential for Territorial diversification (e.g., American Samoa) and capacity-building (Guam and CNMI), which would enable the U.S. Territories to participate in the world's largest tuna fishery. For example, under the 2011 and 2012 ASG/HLA agreement, funds were transmitted to NMFS to deposit into the Sustainable Fisheries Fund to support fisheries development projects identified in the American Samoa MCP.

Catches of target and non-target species by U.S. longline fisheries in the WCPO would likely be lower by several hundred tons (e.g., bigeye tuna) to tens of tons (e.g., WCNP striped marlin) without agreements, than in comparison to 2011 and 2012 (see Table 33). It is expected that if the WCPO U.S. longline limit for bigeye tuna was reached, and fishing for or retaining bigeye tuna in the WCPO was prohibited, the Hawaii longline fleet would shift its effort to the EPO (east of 150° W longitude). Under this scenario, it is anticipated that effort in the EPO would not be as high due to the distance to fish in that area, likely impacting smaller vessels in the fleet

more, and would reduce the amount of total annual catches of target and non-target species (see Table 33). In addition, catches of bigeye tuna could be reduced, as catch per unit effort in the EPO is seasonally variable and unlikely to be as high in the WCPO at the end of the calendar year. Hawaii longline vessels typically fish in the WCPO and closer to the MHI during the winter months, taking advantage of what is believed to be a seasonal run of bigeye tuna. As previously mentioned, the longline effort for bigeye tuna influences catches of non-target species, so any reduction in fishing effort in the EPO that would have been expended in the WCPO if agreements are not authorized, it would also result in a reduction in catches of non-target species during that period.

As observed in the longline shallow-set fishery, a potential indirect effect of this Alternative on bigeye tuna is related to foreign fishing filling market gaps left by constrained U.S. vessels. For example, if the U.S. longline limit for bigeye tuna is reached in the WCPO during the calendar year, and the Hawaii longline fleet is prohibited from fishing for and retaining bigeye tuna in the WCPO, the Hawaii seafood market may be negatively affected due to reduced catches and poorer quality fish landed by the Hawaii longline feet because longer trips would be taken to the EPO. This impact to the market occurred in 2010 (Richmond et al. 2012). Similarly, based on the closure of the longline shallow-set fishery in 2004, it is also expected that foreign caught bigeye tuna would be imported into Honolulu to fill any potential market gaps. Bigeye tuna imports into Hawaii show a significant increase in 2012, which suggest there are fleets that are targeting the Hawaii seafood market (See Figure 15). For example, the spike in 2012 bigeye tuna imports into Hawaii is primarily from a 350-percent increase in imports from the Republic of the Marshall Islands (see Figure 15), which has access agreements to foreign longline vessels consisting mostly of Chinese longline vessels.[38] The operational area of the WCPO Chinese longline fleet targeting bigeye tuna is believed to mostly be in Region 4, which shows significant impacts from fishing on bigeye tuna biomass, which biomass would otherwise be much higher in that area in the absence of such fishing (see Figure 14). Therefore, a potential consequence of this Alternative is that less monitored and less environmentally friendly foreign fisheries targeting the same stocks (e.g., bigeye tuna) would fill market gaps left by U.S. fisheries that are constrained from fishing to optimum yield.

[38] See the 2013 Annual Part 1 Report of Marshal Islands to the WCPFC: http://www.wcpfc.int/system/files/AR-CCM-12-Republic-Marshall-Islands-Part-1.pdf

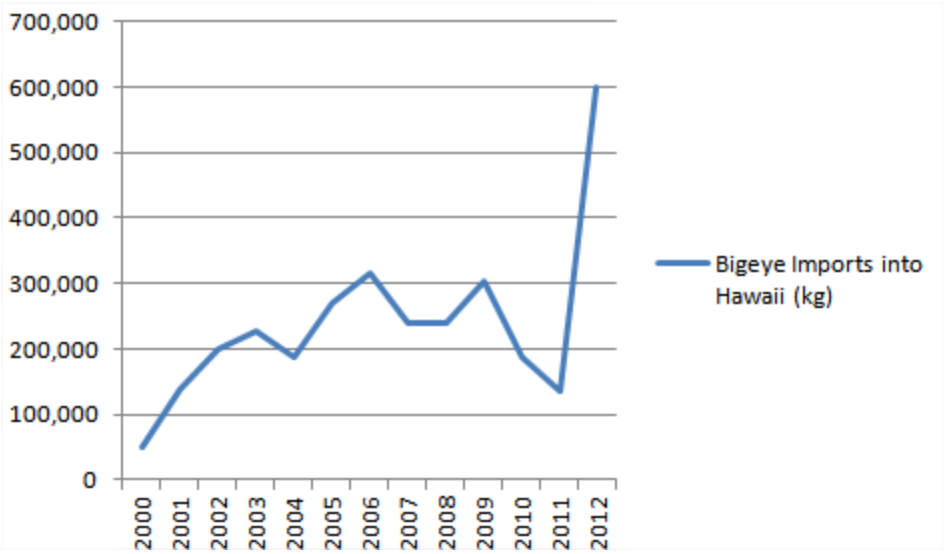

Figure 15: Trend of fresh bigeye tuna imported to Hawaii, 2000-2012.
Source: WPFMC unpublished; data from:
http://www.st.nmfs.noaa.gov/pls/webpls/trade_district_allproducts.results?qtype=IMP&qyearfrom=2001&qyearto=2013&qproduct=TUNA+BIGEYE&qdistrict=32&qsort=PRODUCT&qoutput=TABLE

4.1.1.3 Alternative 3: Amend the FEP to Establish a Process that is Identical to the Provisions of Section 113

Alternative 3 would implement the specific provisions of Section 113 within the Pelagics FEP. Like Alternative 1, Alternative 3 does not contain a process for the Council and NMFS to specify overall Territory catch or effort limits or limits on the amount a Territory could assign under an agreement with FEP-permitted vessels. The impacts to target and non-target stocks in the absence of a process for the Council and NMFS to specific annual limits or transferable limits are such that the amount transferred combined with catches made domestically in the Territories may exceed conservation requirements of the stock. For example, without a mechanism and process to appropriately limit the amount a Territory may transfer under an agreement, scenarios could arise whereby the amount of catch or effort transferred, combined with domestic catches of fisheries in a particularly Territory, could exceed future or established catch or effort limits, or be large enough to increase overfishing pressure and jeopardize the capacity of the stock to produce maximum sustainable yield on a continuing basis.

Under Alternative 3, impacts to target and non-target species would be expected to be similar to Alternative 1, as there would be effectively be no change in management measures or restrictions as compared to the status quo, except that Alternative 3 would continue beyond December 31, 2013. See Alternative 1 analysis on impacts to target and non-target stocks for more information.

4.1.1.4 Alternative 4: Amend the FEP to Establish a Management Framework Consistent with Section 113, and Establish a Process for NMFS to Specify Territory Catch or Effort Limits and Assignable Limits under Qualifying Agreements (Council Preferred Alternative)

Alternative 4 would establish a process for the Council and NMFS to specify overall Territory catch or effort limits or limits on the amount of pelagic MUS a Territory could assign under an agreement with FEP-permitted vessels. In addition, this Alternative would establish a process for the Council and NMFS to review potential Territory agreements for consistency with the Pelagics FEP and other applicable law. Under Alternative 1, the Territories do not have catch or effort limits under WCPFC CMMs, and there is no management framework in place to set limits should stock status indicate significant impacts are occurring, or a need for limits. Therefore, the Council preferred Alternative 4 would provide the Council and NMFS the ability to establish catch and effort limits that take into account the stock status, as it may change over time, of target and non-target stocks of pelagic MUS, and further, establish appropriate limits on the amount of catch or effort that is transferable under a Territory agreement. As opposed to Alternative 1, this mechanism would ensure that the amount of catch or effort transferred, combined with catches or effort made domestically in the Territories, would not undermine WCPFC CMMs or their objectives and would continue to be sustainable. The mechanism would also provide for consistency with Magnuson-Stevens Act requirements and other applicable laws. Alternative 4, therefore, better facilitates responsiveness to conservation needs, among others, than Alternative 1 because it would create a flexible process to respond to new information regarding future conservation status of the HMS stocks on an annual basis.

Similar to Alternative 1, Territory agreements would be authorized in support of responsible fisheries development in the Territories. Based on projects currently identified in the respective Territory MCPs, funding derived from agreements are to be used for MCP projects, including, for instance, fisheries development projects associated with enhancing infrastructure (e.g., cold storage in CNMI and dock improvements in Guam). As there are no active longline vessels currently in CNMI and Guam, any CNMI or Guam agreements with FEP-permitted vessels would not likely lead to immediate expansion in longline fishing in the U.S. EEZ around CNMI or Guam or adjacent high seas. Therefore, in the near term, Alternative 4 would likely maintain baseline catch and effort levels of target and non-target stocks by existing small-scale pelagic troll fisheries in Guam and CNMI. The Council, NMFS, and local fishery management agencies will continue to monitor and review these fisheries and implement management measures needed to ensure sustainability of western Pacific fisheries.

Based on fisheries development needs identified in the American Samoa MCP, funds derived from an agreement as authorized under Alternative 4 would be to support infrastructure development (e.g., ice houses, storage, docks) and projects to facilitate diversification from the existing frozen albacore longline fishery, such as training in fresh fish handling. Depending on the level of funding and prioritization between MCP projects, and the new fresh/frozen fish market opportunities currently in place in Pago Pago, there is a possibility that the American Samoa longline fishery could diversify and responsibly develop into a multispecies fishery that includes the landing of albacore, yellowfin, and bigeye tunas, and other valuable pelagic MUS for export to off-island markets. The number of vessels that would diversify their catches and the

amount of fish and species composition of catches by these vessels is speculative at this time and thus cannot be further analyzed in this EA. However, potential catches are commensurately limited, given that the American Samoa longline limited entry program caps participation at 60 vessels.

The amount of bigeye tuna that was transferred under the ASG/HLA agreement in 2011 and 2012 was 628 mt and 771 mt, respectively. These figures, when added to the bigeye tuna caught by American Samoa vessels operating out of Pago Pago and to the bigeye tuna caught by vessels with dual American Samoa and Hawaii longline permits, totaled 1,264 mt and 1,505 mt, respectively (see Table 12). While longline catch limits for bigeye tuna under CMM 2008-01, CMM 2012-01 and CMM 2013-01 do not apply to American Samoa, the total amounts reported for American Samoa are below the 2,000 mt threshold limits established under previous and existing WCPFC conservation and management measures.[39]

As described in the analysis for Alternative 1, catches of non-target species in the Hawaii longline fishery are driven by the fishing effort for bigeye tuna. If fishing effort for bigeye tuna were to increase under Alternative 4, the catches of other target and non-target stocks would be expected to increase commensurate with the increases in fishing effort. The likely scenario under Alternative 4 is expected to result in Hawaii longline fishing effort levels similar to 2011 and 2012. Catches of non-target species under this Alternative are anticipated to be sustainable and within baseline levels described under Alternative 1.

Alternative 4 also contains the provision that Territory agreements could require landings instead of monetary contributions to the Western Pacific Sustainable Fisheries Fund to support fisheries development within the Territories. However, under existing conditions, fishing under agreements would likely be for bigeye tuna, and because Honolulu is the principle U.S. market for bigeye tuna in the Pacific, it is anticipated that a Territory agreement would not require the majority of bigeye tuna catches to be landed in a particular Territory.

American Samoa and Hawaii longline limited entry regulations, as well as all other FEP regulations applicable to longline vessels, would continue to apply. The current requirements that longline vessels have a vessel monitoring system, accommodate observers upon request, and submit logbooks, would allow fishery managers to monitor vessels operating under a Territory agreement that requires landings. If landings in a Territory were required under an agreement, it would be speculative to evaluate where such fishing activity would occur. The Council did not recommend a minimum number of vessels that would need to participate under a landing agreement or a minimum weight of fish that would need to be landed. Therefore, many factors that could be analyzed in a landing agreement, such as the number of vessels that need to land fish, where fishing activity would occur, or the volume of fish that would be landed, are unknown. It is expected that the agreement would need to provide benefits to the Territory to further develop fisheries. As discussed previously, benefits may be limited under these types of agreements. Local proprietors (fuel stations, food, water, lodging, etc.), fish processors, and fish wholesalers would receive direct benefits from landing requirements; however, it is difficult to

[39] With the exception of SIDS and PTs, CCMs that caught less than 2,000-mt of bigeye tuna are required to not exceed 2,000 mt in subsequent years, even if catches were substantially lower than 2,000 mt annually; see CMM 2008-01 and CMM 2013-01).

quantify those benefits. Thus, additional analysis may be undertaken when such an agreement is submitted.

Currently, there are logistical constraints to landing requirements in agreements due to limited Territory markets, limited fresh fish export capabilities, and limited wharf space. In addition, in order to maximize landings of bigeye tuna in the Territories and the distance involved from fishing around Hawaii and making landings in the Territories, vessel size and vessel configuration (e.g., ice vs. frozen storage holds) also limit the potential for Territory agreements with landing requirements. In addition, the high cost of travelling to the territories to land fish would likely discourage this type of agreement.

For example, if vessels from the Hawaii longline fleet were to fish under an agreement with the American Samoa Government that contained a landing requirement, the catch of target and non-target species of vessels fishing in the North Pacific would not be expected to be different from catches reported in the Hawaii longline fishery. If fishing in the South Pacific, the catch composition of target and non-target species would likely be similar to U.S. longline vessels currently fishing in the American Samoa longline fishery. If a vessel only has a Hawaii longline permit, no freezer capacity, and deep-set gear specific to fishing north of the equator, then the vessel would likely be loaded with ice, provisioned in Hawaii (food, fuel, etc.), and fish in the North Pacific for pelagic fish that would likely be marketed locally or at the cannery in American Samoa.

Landing agreements are not likely to be made between Hawaii longline vessels and Guam or CNMI at this time because of limited market capacity for high volumes of longline caught pelagic species and little economic incentives on behalf of vessel owners due to potentially high transit costs and current attribution regulations. If a Guam or CNMI agreement with landing requirements is established with Hawaii longline vessels, the catch composition of target and non-target species by vessels operating under such agreement would be similar to the longline vessels operating around Hawaii due to same gear configuration and fishing in tropical and sub-tropical waters of North Pacific.

4.1.1.4.1 Impacts from Sub-Alternatives 4(a) and 4(b)

Under Sub-Alternative 4(a), no Council-recommended longline limits applicable to bigeye tuna would be specified by NMFS for the Territories, nor would there be any Council-recommended limits on the amount of bigeye tuna that could be transferred under a Territory agreement. This Alternative would be expected to result in similar impacts to target and non-target stocks as Alternative 1.

Under the Council-preferred Sub-Alternative 4(b), an annual 2,000-mt longline limit for bigeye tuna would be established for each Territory and a 1,000-mt annual transferable limit for bigeye tuna would be set per Territory. Therefore, Sub-Alternative 4(b) would likely authorize less bigeye tuna catch than Alternatives 1, 3, and Sub-Alternative 4(a), under which bigeye tuna catches by the Territories and the amounts that Territories can assign to FEP-permitted vessels under agreements are not subject to any catch or effort restrictions.

If for example, the American Samoa longline fishery diversified and began catching more bigeye tuna, Sub-Alternative 4(b), as opposed to Sub-Alternative 4(a), would limit the total amount of bigeye tuna catch by the American Samoa longline fishery, including any bigeye tuna transferred under an agreement, to 2,000 mt annually.

A TUMAS analysis was used to evaluate the potential impact on bigeye tuna stock of 1,000 mt of bigeye tuna assigned under a Territory agreement added to the U.S. WCPO limit for bigeye tuna of 3,763 mt, which is the most likely scenario under this Alternative, assuming only one agreement per year and that all 1,000 mt would be assigned. The TUMAS analysis indicates that the impact of 4,763 mt of bigeye tuna catch, when combined with 2010 fishing conditions, has a 0.60 percent and 0.51 percent potential increase on the F/F_{MSY} level based on recent average recruitment, and a 0.56 percent and 0.67 percent potential increase on the F/F_{MSY} level based on the long-term average recruitment, when projected through 2017 and 2020, respectively. Under the scenario of recent average recruitment, the simulated projections indicate that overfishing would not occur when the contribution of an additional 1,000 mt transferred under a Territory agreement is included and projected through 2020 (2017 $F/F_{MSY} = 1.014$ and 2020 $F/F_{MSY} = 0.980$, whereby the fractional overage above 1.0 in 2017 falls within an acceptable range for determining that overfishing is not occurring). Under the scenario of long-term average recruitment, the projections indicate that overfishing would continue to occur when the contribution of an additional 1,000 mt transferred under a Territory agreement is included and projected through 2020 (2017 $F/F_{MSY} = 1.267$ and 2020 $F/F_{MSY} = 1.350$).

With respect to the overfished reference point $B/B_{MSY} < 0.6$, the addition of 1,000 mt to the U.S. WCPO limit of 3,763 mt, combined with projected 2010 catches under both recruitment scenarios does not result in the bigeye tuna stock becoming overfished when projected through 2020 (B/B_{MSY} ratio = 1.826 under recent average recruitment; B/B_{MSY} ratio = 0.805 under long-term average recruitment; see Appendix D).

Although not considered a likely scenario under this Alternative, TUMAS was used to evaluate the impact to bigeye tuna of 3,000 mt of catch transfers under Territory agreements with FEP permitted vessels added to the U.S. WCPO limit for bigeye tuna of 3,763 mt. Results from the analysis indicate that the impact of 6,763 mt of bigeye tuna caught, when combined with 2010 fishing conditions, has a 1.98 percent and 1.95 percent potential increase on the F/F_{MSY} level increase based on recent average recruitment, and 1.34 percent and 1.49 percent potential increase on the F/F_{MSY} level based on long-term average recruitment, when 2010 catches are projected through 2017 and 2020, respectively. Under the scenario of recent average recruitment, the simulated projections indicate that overfishing would not occur when the contribution of an additional 3,000 mt transferred under a Territory agreement is included and projected through 2020 ((2017 $F/F_{MSY} = 1.028$ and 2020 $F/F_{MSY} = 0.994$, whereby the fractional overage above 1.0 in 2017 falls within an acceptable range for determining that overfishing is not occurring). Whereas, using the long-term average recruitment scenario, the addition of 3,000 mt to the U.S. WCPO limit of 3,763 mt, combined with projected 2010 catches, overfishing continues with a F/F_{MSY} level of 1.282 and 1.370 for 2017 and 2020, respectively, above the overfishing threshold of $F/F_{MSY} > 1.0$.

With respect to the overfished reference point $B/B_{MSY} < 0.6$, the addition of 3,000 mt to the U.S. WCPO limit of 3,763 mt, combined with projected 2010 catches under both recruitment scenarios does not result in the bigeye tuna stock becoming overfished when projected through 2020 (B/B_{MSY} ratio = 1.774 under recent average recruitment; B/B_{MSY} ratio = 0.793 under long-term average recruitment; see Appendix D).

TUMAS was also used to evaluate the impact to bigeye tuna if the entire 9,763 mt (3,763 + 6,000 mt, if 2,000 mt for each Territory were caught).[40] This outcome is very unlikely because the U.S. Territories currently do not have the capacity to harvest this amount of bigeye tuna, but it is included for analytical purposes. Results from the analysis indicate that the impact of 9,763 mt of bigeye tuna caught, when combined with 2010 fishing conditions, has a 4.07 percent and 4.10 percent potential increase on the F/F_{MSY} level increase based on recent average recruitment, and a 6.51 percent and 8.41 percent potential increase on the F/F_{MSY} level based on long-term average recruitment, when projected for years 2017 and 2020, respectively. Based on the assumption of recent average recruitment, the simulated projection of an additional 6,000 mt added to 2010 bigeye tuna catches results in $F/F_{MSY} = 1.049$ for 2017 and $F/F_{MSY} = 1.015$ for 2020; however the fractional overage above 1.0 in 2017 and 2020 falls within an acceptable range for determining that overfishing is not occurring. Using long-term average recruitment, the simulated projection of an additional 6,000 mt added to 2010 bigeye tuna catches indicates an overfishing status ($F/F_{MSY} = 1.456$) through 2020 (see Appendix D).

With respect to the overfished reference point $B/B_{MSY} < 0.6$, the addition of 6,000 mt to the U.S. WCPO limit of 3,763 mt, combined with projected 2010 catches under both recruitment scenarios does not result in the bigeye tuna stock in the WCPO becoming overfished when projected through 2020 (B/B_{MSY} ratio = 1.779 under recent average recruitment; B/B_{MSY} ratio = 0.744 under long-term average recruitment; see Appendix D).

Based on current levels of fishing effort and participation in the Hawaii longline fishery, as well as the existing U.S. WCPO longline limit of 3,763 mt for bigeye tuna, and based on the past agreement where the amount of bigeye tuna assigned under the ASG/HLA agreement was 628 mt and 771 mt in 2011 and 2012, respectively, it is anticipated that under the preferred Alternatives (Alternative 4 and Sub-Alternative 4(b)), the most likely scenario is that a total of up to 1,000 mt of bigeye tuna would be transferred annually under Territory agreements.

Contributing to this is that under the regulations implementing this amendment, FEP-permitted vessels are only be allowed to operate under one Territory agreement during the year, which at the current level of effort and participation in the Hawaii longline fleet, effectively limits the potential amount of bigeye tuna and non-target stocks that would be caught annually under the Council's preferred Alternatives 4 and 4(b). As recent history has shown, the U.S. WCPO limit for bigeye tuna is typically predicted to be reached in November or December, with Hawaii longline vessels operating (in 2011-2013) under a Section 113 agreement for the remaining

[40] Recall that under the current WCPFC conservation and measure, the PTs are not subject to annual longline catch limits for bigeye tuna; however, 6,000 mt represents a maximum amount of longline caught bigeye tuna that could be harvested by U.S. Territory fisheries under this Alternative (2,000 mt x 3 PTs), and which exceeds current capacity within the Territories.

period of the calendar. The remaining two months or so of catches made under a Territory agreement are anticipated to not be high enough to exceed the 1,000-mt limit on a Territory agreement.

Similar to Alternative 1, the TUMAS analysis indicates that the likely scenario under this Alternative (3,763 mt + 1,000 mt) has marginal impacts on bigeye tuna status when using 2010 catch information (historically low purse seine FAD sets and lower than average longline bigeye tuna catches) projected into the future. If 2010 fishing conditions are held to in the future, which is expected as a result of stricter WCPFC measures, in addition to the amount of catches anticipated under this Alternative, this Alternative would prevent overfishing on bigeye tuna under the recent average recruitment scenario, but not under the long-term average recruitment scenario; however, for both recruitment scenarios, bigeye tuna would not be considered overfished under the Pelagics FEP when projected through 2020.[41]

Moreover, the preferred Sub-Alternative 4(b) also establishes a process for the Council to review and specify Territory longline limits and allocation limits on annual basis and to make adjustments in response to scientific advice with respect to the status of target and non-target stocks. This framework, which is not included in the no-action Alternatives, supports adaptive management of longline limits for bigeye tuna established under the under the Pelagics FEP and will allow the Council and NMFS to ensure that such limits are sustainable.

As mentioned above, catches of non-target species in the Hawaii longline fishery are driven by the fishing effort for bigeye tuna. If fishing effort for bigeye tuna increases, the catches of other target and non-target stocks would be expected to increase commensurate with the increases in fishing effort. The likely scenario under Alternative 4 and Sub-Alternative 4(b) is expected to result in Hawaii longline fishing effort and catch levels similar to those observed in 2011 and 2012. Catches of non-target species under this Alternative are anticipated to be within baseline levels described under Alternative 1 and would be sustainable.

[41] Because recent average recruitment is believed to be a better representation of current and future recruitment trends, greater emphasis is placed on recent average recruitment associated projections (see Appendix D).

4.1.2 Potential Impacts to Protected Species

Of the fisheries managed under the Pelagics FEP, longline fisheries have the most potential for protected species interactions, as this gear type involves baited hooks suspended in depths near the surface to about 300 m. The current levels of interactions for the American Samoa and Hawaii longline fisheries are described in section 3.5. These fisheries operate under separate NMFS Biological Opinions and corresponding Incidental Take Statements, are subject to observer coverage and reporting, and must be conducted using a suite of mitigation measures to reduce the number and severity of protected species interactions (see 50 CFR 665 Subpart F and 50 CFR § 229.37).

4.1.2.1 Alternative 1: No Action – Manage Territory Limits Consistent with Existing Provisions of Section 113

As described in section 4.1.1.1, there are no active longline vessels currently in CNMI and Guam, and any CNMI or Guam agreement with FEP-permitted vessels would not likely lead to immediate expansion in longline fishing in the U.S. EEZ around CNMI or Guam or adjacent high seas. Therefore, in the near term, Alternative 1 would likely maintain baseline effort levels for existing pelagic troll fisheries in both locations. Troll fisheries in CNMI and Guam are not known to interact with protected species.

Based on fisheries development needs identified in the American Samoa MCP, funds derived from an agreement as authorized under Alternative 1 would likely be used to support infrastructure development (e.g., docks) and projects to diversify the existing albacore longline fishery such as training for safely handling fresh fish for sale. Depending on the level of funding and prioritization between MCP projects, and the new fresh/frozen fish market opportunities currently in place in Pago Pago, there is a small to moderate possibility that the American Samoa longline fishery could diversify and responsibly develop a multispecies fishery that includes the landing of albacore, yellowfin, and bigeye tunas, and other valuable pelagic MUS for export to off-island markets.

Existing regulations for longline fishing in American Samoa include requirements for the fishery to conduct operations in accordance with a suite of management measures designed to reduce the number and severity of interactions with sea turtles. These include requirements for safe handling and mitigation training and gear for protected species, specific requirements for gear configuration to set gear at a minimum depth of 100 m, and accommodation of observers upon request (see 50 CFR 665). The expected levels of sea turtle interactions in the American Samoa longline fishery are shown in Table 22.

A diversified American Samoa longline fishery would not be expected to change fishing operations or lead to levels of longline effort that are higher than levels recorded within the history of the American Samoa longline fishery. For this reason, the number of annual marine mammal interactions observed in the American Samoa longline fishery would be expected to remain at existing levels (see Table 27). All existing regulations relating to protected species mitigation for the American Samoa longline fishery would be maintained under this Alternative.

The current and maximum likely levels of fishing effort by longline fisheries managed under the FEP would continue to be partially dependent on take authorized under the ESA and regulations under other applicable laws. For example, under MMPA false killer whale take reduction plan regulations, if the annual trigger is met (currently 2) for serious interactions with false killer whales from the pelagic stock within the U.S. EEZ around Hawaii, a "Southern Exclusion Zone" near the MHI is closed to longline fishing (see 50 CFR 229). Although there are other ITS specified in biological opinions for FEP-managed fisheries, NMFS would be required to re-initiate consultation under ESA section 7 if any ITS is exceeded or another criterion for reinitiation is triggered.

Additional vessels could enter the Hawaii longline fishery through the use of latent permits. However, as described in section 3.3.4, NMFS anticipates the Hawaii deep-set fishery to continue to operate largely unchanged in terms of fishing location, the number of vessels that deep-set longline gear, catch rates of target, non-target, bycatch species, depth of hooks, or deployment techniques in setting longline gear, with respect to baseline operations. Some factors influencing this may include fluctuating operational costs, participant turnover, and regulatory constraints. If longline fishing effort were to increase under this Alternative, increased impacts to protected species could result, but any increase is not expected to be significant because there are existing management measures to control and limit incidental catch of protected species. Interaction rates would depend on multiple factors such as oceanographic conditions, fishing patterns, and fishing locations. Section 113 established that agreements between the Territories and FEP-permitted vessels shall impose no requirements regarding where such vessels must fish or land their catch (Section 113(a)). Taking this into account, Hawaii longline vessels operating under a Territory agreement would likely continue to operate in a manner consistent with historical fishing patterns and in locations within the EEZ around Hawaii and adjacent high seas throughout the calendar year. Because the 2011 and 2012 fishing effort levels that occurred under the ASG/HLA agreement were similar to recent historical levels, the impacts to protected species under this Alternative from Hawaii longline vessels operating under a Territory agreement are expected to be within baseline levels identified section 3.5.

4.1.2.2 Alternative 2: Section 113 Authority Ends

This Alternative would not provide the Territories the authority to enter into agreements with FEP-permitted vessels. Territory and Hawaii pelagic fisheries would continue to be managed under applicable Pelagics FEP regulations and protected species statutes (ESA, MMPA, and MBTA). Without Territory agreements, protected species interaction rates between Territory fisheries and U.S. longline vessels in the WCPO would likely be similar to 2009 and 2010 levels (see section 3.5), when landings were limited to 3,763 mt of bigeye tuna. However, if Territory agreements are not authorized, and the U.S. WCPO longline limit for bigeye tuna is reached, Hawaii longline effort is expected to shift to the EPO, where interactions with protected species may also occur. Due the distance involved in transiting to the EPO and potential for poorer quality fish upon landing, the ability to fish in the EPO is not predicted to result in the same amount of fishing effort that would have been expended if the WCPO remained open to fishing for bigeye tuna.

The Council believes that longline fisheries managed under the FEP are among the most responsible fisheries in the world as they are highly monitored, strictly enforced, and subject to a suite of effective protected species mitigation requirements. Although a specific study on interaction rates with protected species by the longline deep-set fishery versus foreign fisheries has not been conducted, catch restrictions that reduce the ability of U.S. longline fisheries managed under the Pelagics FEP to obtain optimum yield and supply fresh fish to U.S. seafood consumers, may, as was the case in the shallow-set fishery, result in foreign fisheries targeting the same HMS stocks to fill potential market gaps left open by the U.S. fishery. As was observed in the shallow-set fishery, foreign fishing operations appear to have higher protected species interaction levels than n longline fisheries managed under the Magnuson-Stevens Act and Pelagics FEP.

For example, in the 2012 imports of bigeye tuna into Hawaii, there was a 350 percent increase from the Marshall Islands over 2011 (see Figure 15). An analysis evaluating sea turtle interactions from the 55 foreign-flagged longline vessels fishing out of the Marshall Islands that target bigeye tuna estimated the annual level of sea turtle interactions to be 149 leatherbacks, 53 greens, 32 olive ridleys, and 11 hawksbills, totaling 244 turtles per year, of which only 20 were estimated to be alive upon capture (Gilman et al. 2013). By comparison, the Hawaii deep-set longline fishery with approximately 126 active vessels averaged seven leatherback interactions per year (see Table 19 and section 3.4.1). Although foreign imports of bigeye tuna into the Hawaii due a constrained Hawaii longline fishery are not believed to be a one to one replacement, the difference in monitoring and level of interactions between U.S. fleets and foreign fishing fleets are believed to substantial.

4.1.2.3 Alternative 3: Amend the FEP to Establish a Process that is Identical to the Provisions of Section 113

This Alternative would be expected to have similar impacts to protected species as Alternative 1, because it would incorporate the provisions of Section 113 into an FEP without any changes or modifications. See section 4.1.2.1 for discussion of impacts.

4.1.2.4 Alternative 4: Amend the FEP to Establish a Management Framework Consistent with Section 113, and Establish a Process for NMFS to Specify Territory Catch or Effort Limits and Assignable Limits under Qualifying Agreements (Council Preferred Alternative)

As opposed to Alternative 1, Alternative 4 provides the ability for the Council to recommend annual territorial catch and effort limits as well as limits on the amount of catch or effort that could be transferred annually under a Territory agreement and could have greater conservation benefits to protected species. This is because interactions with protected species are mostly correlated with levels of fishing effort. Under this Alternative, a management framework and process would be established under the FEP that would allow fishing effort to be constrained through the establishment of Territory catch or effort limits, and limits on the amount that could be transferred under Territory agreement.

Under this Alternative, Territories would be authorized to enter into agreements with FEP-permitted vessels. As a result, funding may be available to support fisheries development in the Territories. The American Samoa longline fishery may diversify to include the landing of yellowfin and bigeye tunas for off-island markets, but this result should not significantly change fishing locations, operations, or level of fishing effort from historical baseline levels; therefore, impacts to protected species should not significantly change from baseline levels. Territory fisheries in CNMI and Guam are not expected to change in the near term, because any development to increase local fisheries infrastructure and vessel capacity may take more time. As a result, CNMI and Guam pelagic troll fisheries are expected to continue to operate without expected impacts to protected species.

The Hawaii longline fishery is not expected to rapidly expand in the near future as described in section 3.3.4, and protected species interaction rates are expected to be similar to 2011 and 2012. The likely scenario under Alternative 4 is that similar levels of fishing effort and protected species interactions as observed in 2011 and 2012 would occur. The level of fishing effort realized in 2011 or 2012 for the Hawaii deep-set longline fishery was largely similar to the effort level analyzed in the NMFS 2005 BiOp, and estimated sea turtle interactions did not exceed authorized incidental take levels. Alternative 4 is unlikely to result in an appreciable change from the recent levels of interactions with protected species and Territory and Hawaii longline fisheries would continue to operate in accordance with the requirement of the ESA and MMPA determinations, and with the MBTA permit issued by the USFWS.

Finally, given the relatively low and limited amount of tuna and other pelagic MUS that would be assigned to and harvested by vessels under Territory agreements, the cost of travelling to a Territorial port to land fish might not be economical. The markets in Hawaii and American Samoa are vastly different. American Samoa has a major market for albacore tuna whereas Hawaii has major markets for bigeye and yellowfin tunas, and swordfish. While Alternative 4 would allow landing requirements to be included in Territory agreements in lieu of payments into the Sustainable Fisheries Fund, it is likely to be more economical for U.S. longline vessels operating under a Territory agreement to fish in the EEZ around their home port and adjacent high seas, and to land the catch in their home port. For this reason, it is not expected that agreements would include requirements to land catch in a Territory in the near future. If, in the future, landings are required, VMS, logbooks, and observer coverage would allow fishery managers to monitor fishing locations, catches, and protected species interactions.

A vessel must possess an American Samoa longline permit to fish in the U.S. EEZ around American Samoa. If the vessel only has a Hawaii permit, it can only land fish in American Samoa. Only 12 vessels operate under both an American Samoa and Hawaii limited entry permit, so only these dual-permitted vessels based in Hawaii would be able to fish in the EEZ around American Samoa. If a Territory agreement required landings in a Territory, it is possible that six of the dual permitted vessels (as of June 2013) are large enough and capable of traveling to American Samoa, fish in the EEZ to target albacore, and land fish. If these dual-permitted vessels choose to fish in the EEZ around American Samoa they would need to modify their gear to comply with the requirements for fishing south of the equator (see 50 CFR § 665.813). If the agreement is with the American Samoa Government then other vessels that do not have dual permits would likely target bigeye tuna around Hawaii and on the high seas between Hawaii and

the equator then travel to the Territory to land the fish. The number of vessels expected to fish in the EEZ or south of the equator is not expected to significantly increase beyond the approximately 26 vessels that currently fish in the EEZ around American Samoa. Under these scenarios, interaction rates for protected species would likely be similar to existing estimates for the American Samoa and Hawaii longline fisheries.

Because local markets are very small and limited in operational capacity in CNMI and Guam, agreements that include landing requirements into these Territories are not likely to be made in the near term. If the Territory agreement is between Hawaii vessels and CNMI or Guam, then vessels would likely fish around Hawaii and on the high seas between Hawaii and the Territories. Interaction rates for protected species from vessels fishing close to Guam and CNMI are unknown because there are no reported or observed interactions with protected species with longline fishing activity around Guam and CNMI. Observers have not been deployed on longline vessels that fished around Guam or the CNMI, nor have interactions been reported in logbooks; therefore, interaction rates are not calculated for longline activity around Guam or the CNMI. However, if vessels fish around Hawaii and on the high seas between Hawaii and Guam/CNMI, then interactions rates for protected species would likely be similar to existing estimates for the Hawaii longline fishery.

4.1.2.4.1 Impacts from Sub-Alternatives 4(a) and 4(b)

Under Sub-Alternative 4(a), impacts to protected species would be similar to those described under Alternative 1.

Under Sub-Alternative 4(b), annual limits of 2,000 mt of bigeye tuna caught by longline would be specified for each of the Territories. For Guam and CNMI, which currently do not have active longline vessels, it is not possible to estimate foreseeable levels of effort that may be used to predict impacts to protected species. Fisheries development in Guam and CNMI is not expected to be rapid, but rather an iterative process; therefore, it is expected that any fisheries development resulting in increased participation in the near term will not result in levels of interactions currently authorized.

For American Samoa, fisheries development as a result of this action may lead to a diversification of the American Samoa longline fishery to be able to target albacore and other pelagic MUS such as bigeye and yellowfin tunas. However, such potential diversification is not expected to result in higher amounts of fishing effort by American Samoa longline vessels, but rather support the targeting and retention of various pelagic MUS, including bigeye tuna. Therefore, fishing effort levels are expected to be within baseline levels and the interactions currently authorized by NMFS are not predicted to be exceeded under this Alternative. In addition, the requirements for American Samoa longline vessels to deploy their gear to fish below 100 m to mitigate interactions with sea turtles would be maintained in a diversified longline fishery that targets albacore and other pelagic MUS.

Under Sub-Alternative 4(b), each Territory would be restricted to 1,000 mt of bigeye tuna per year that it could transfer to FEP-permitted vessels under an agreement. However, even with the ability to enter in Territory agreements, NMFS anticipates that the FEP-permitted fisheries,

including the Hawaii deep-set fishery, will continue to operate largely unchanged in terms of fishing location, the number of vessels that deep-set fish, the number of hooks deployed, catch rates of target, non-target, bycatch species, depth of hooks, or deployment techniques in setting longline gear, with respect to baseline operations. This was observed in 2011 and 2012 when a Territory agreement was authorized under the status quo (Section 113). Under this action, FEP-permitted vessels would only be allowed to operate under one Territory agreement at a time. Given this controlling measure, combined with the U.S. WCPO limit of 3,763 mt, and the current level of vessel participation, it is likely that the level of effort expected to occur under this alternative would be commensurate with baseline levels. Therefore, under Sub-Alternative 4(b), protected species interactions are not expected exceed currently authorized levels (see Tables 16, 17, 24 and 28).

4.1.3 Impacts on Marine Habitat and Essential Fish Habitat

Essential Fish Habitat (EFH) is defined as those waters and substrate necessary for federally managed species to spawn, breed, feed, and/or grow to maturity. It is the legal tool that NMFS uses to manage marine habitat to ensure that the federally managed species identified by the fishery management councils have a healthy future. Habitat Areas of Particular Concern (HAPC) are subsets of EFH that merit special attention because they meet at least one of the following four criteria:

1) provide important ecological function;
2) are sensitive to environmental degradation;
3) include a habitat type that is/will be stressed by development;
4) include a habitat type that is rare.

HAPC are afforded the same regulatory protection as EFH and do not exclude activities from occurring in the area, such as fishing, diving, swimming or surfing.

An “adverse effect” to EFH is anything that reduces the quantity and/or quality of EFH. It may include a wide variety of impacts such as:

1) direct impacts (e.g., contamination or physical disruption);
2) indirect impacts (e.g., loss of prey, reduction in species’ fecundity); or site-specific/habitat wide impacts, including individual, cumulative or synergistic consequences of actions.

None of the alternatives considered would adversely impact the marine habitat, particularly critical habitat, EFH, HAPC, marine protected areas (MPAs), marine sanctuaries, or marine monuments. None of the western Pacific pelagic fisheries are known to have large adverse impacts to habitats and none of the Alternatives are likely to lead to substantial physical, chemical, or biological alterations to the habitat. Fishing activity would not occur in identified critical habitat, so no critical habitat would be impacted by the regulatory changes. Longline fishing does not occur in MPAs, marine sanctuaries or marine monuments so no marine protected areas would be impacted.

Longline fishing involves suspending baited hooks in the upper surface layers of the water column, which does not materially impact benthic marine habitat under typical operations.

Derelict longline gear may impact marine benthic habitats, especially substrate such as corals if carried by currents to shallow depths; however, the loss of longline gear during normal fishing operations is not believed to be at levels that result in significant or adverse impacts to EFH, HAPC, or the marine habitat (See Table 34).

When fishing, all longliners occasionally lose hooks, mainline, floats, float line, and branch lines, which include hooks, lead weights, and usually wire leaders in the deep-set fishery. Fishermen do try to recover gear, and are normally successful – as the floats used in the fishery are marked to be visible from distance, even at night. Lost hooks are unlikely to have a major impact to the physical marine environment. First, hooks are not expected to continue ghost fishing indefinitely since baits would decompose. Second, hooks are made of steel and decompose over time. Most J-shaped and circle hooks are composed of steel and, depending on quality, the hooks will corrode. Hooks lost on the deep-sea bed in water just above freezing, will corrode more slowly, and stainless steel hooks will corrode at a slower rate than non-stainless steel hooks. None of the alternatives would change fishing methods or the likelihood that gear could be lost.

In addition, participants in the Hawaii longline fishery have been participating in the Honolulu Harbor Derelict Fishing Gear Port Reception Program since 2006, where fishermen voluntarily dispose of spent longline gear and derelict fishing gear they encounter. The derelict fishing gear is then incinerated on Oahu's H-Power facility to generate electricity. This model private/public partnership is expected to continue under all of the alternatives.

EFH and HAPC have been identified for species managed under the Pacific Pelagic, Pacific Remote Islands, American Samoa, and Mariana Islands Fishery Ecosystem Plans, which cover fishery management of Pelagic, Precious Corals, Bottomfish and Seamount Groundfish, Crustaceans, and the Coral Reef Ecosystem Fisheries. The definitions of EFH and HAPC for these species groups were included in the Western Pacific Fishery Ecosystem Plans and are presented in Table 34.

Table 34: Essential Fish Habitat and Habitat Areas of Particular Concern for Management Unit Species Groups Under the Pelagics, Pacific Remote Island Areas, Mariana Archipelago, and American Samoa Fishery Ecosystem Plans.

SPECIES GROUP (FEP)	EFH (juveniles and adults)	EFH (eggs and larvae)	HAPC
Pelagic	Water column down to 1,000 meters (m) depth from shoreline out to EEZ boundary	Water column down to 200 meters depth from shoreline out to EEZ boundary	Water column down to 1,000 m that lies above seamounts and banks.
Bottomfish and Seamount Groundfish	Water column and all bottom from shoreline down to 400 m deep	Water column down to 400m depth from shoreline out to 200-nm EEZ boundary	All escarpments and slopes between 40-280 m, and three known areas of juvenile opakapaka habitat
	(adults only): Water column and bottom from 200-600 m deep, bounded by 29°-35° N and 171° E-179° W	(including juveniles): Water column down to 200 m depth of all EEZ waters bounded by 29°-35° N and 171° E -179° W	Not identified
Precious Corals	Known precious coral beds in the Hawaiian Islands located at: Keahole, Makapuu, Kaena, Wespac, Brooks, and 180 Fathom gold/red coral beds, and Milolii, S. Kauai, and Auau Channel black coral beds		Makapuu, Wespac, and Brooks Bank beds, and the Auau Channel
Crustaceans	Lobsters/crab: Bottom from shoreline down to 100 m deep Deepwater shrimp: Outer reef slopes between 550-700 m deep	Lobsters/crab: Water column down to 150 m deep from shoreline out to EEZ boundary Deepwater shrimp: outer reef slopes between 300-700 m deep	All banks within the Northwestern Hawaiian Islands with summits less than 30 m
Coral Reef Ecosystems	Water column and benthic substrate to a depth of 100 m from shoreline out to EEZ boundary		All MPAs identified in FEP, all PRIAs, many specific areas of coral reef habitat (see FEP)

Note: All areas are bounded by the shoreline, and the outward boundary of the EEZ, unless otherwise indicated.

No adverse impacts on EFH or HAPC have been identified for any management unit species or species groups in Table 34 as a result of the alternatives considered. There are no known studies that show impacts to species fecundity or negative impacts on predator/prey relationships that result in significant impacts to food web dynamics. The removal of top predator pelagic species

such as bigeye tuna, yellowfin tuna, and billfish above natural mortality rates, that is, when fishing is occurring, for these species would likely not cause major imbalances or wide-ranging changes to ecosystem functions and habitats, because NMFS and the Council are managing fisheries at sustainable levels. None of the action alternatives would change the fisheries in a way that would adversely affect EFH or HAPC.

4.1.4 Impacts on Fishery Participants and Fishing Communities

4.1.4.1 Identification of Relevant Fishing Communities

This action may affect NMFS-designated fishing communities pursuant to the Magnuson-Stevens Act, which include American Samoa, CNMI, Guam, and Hawaii. Chapter 3 and Appendix C describe these communities and their relevant pelagic fisheries.

4.1.4.2 Identification of Regulated Fisheries

As the alternatives contemplate establishing catch or effort limits for pelagic fisheries of the Territories based on WCPFC agreed limits, or Council-recommended and NMFS-specified limits, and further, whether or not to provide the Territories the authority to enter into agreements with FEP-permitted vessels, all fisheries permitted under the Pelagics FEP potentially may be affected by the Alternatives. Currently, the permitted fisheries of the Territories include longline fisheries in American Samoa (limited entry), Guam (general permit), and CNMI (general permit). Other fisheries affected by the alternatives include the Hawaii longline fishery (limited entry), and with much less potential, participants who hold permits to conduct troll or handling fishing around the Pacific Remote Island Areas and squid jig fishing (see 50 CFR § 665.801). Because this action would generally affect longline fishing and is not expected to have a direct or indirect effect on other pelagic fisheries, the following analysis focuses primarily on longline fishing regulated under the Pelagics FEP.

4.1.4.3 Fishery Dependence and Engagement

American Samoa and Hawaii have home-based pelagic longline fleets, but CNMI and Guam have currently little to no such domestic longline capacity. Guam was once a major transshipment port for Japanese and Taiwanese longline vessels, but this activity has been significantly curtailed in the last 10 years, due to what is believed to be changes in foreign fishing vessel operations and restrictions from the Shark Finning Prohibition Act of 2000.

Pelagic longline fishing contributes greatly to American Samoa's social and economic fabric, despite the Territory's relatively short history practicing modern longlining (see Appendix C.) While Samoans have historically relied upon pelagic fish, a commercial market and employment for pelagic longline fishing in American Samoa was established only in the past 20 years. In 1995, the Secretariat of the Pacific Community trained American Samoans in small-scale longline fishing. The number of longline vessels increased substantially between 1995 (five vessels) and 2001 (62) and longlining has largely replaced pelagic troll fishing in the Territory. NMFS established a limited entry program for the fishery in 2005 and currently 48 vessels have an American Samoa longline permit. On average, 26 of these actively fish each year.

The fishery has transitioned from smaller boats (less than 50 feet) built locally using fiberglass or aluminum and operated predominantly by indigenous American Samoans to one dominated by larger vessels owned and operated by non-indigenous American Samoans.

American Samoa exports few goods and sees very few true tourists, so residents depend upon and are engaged in the pelagic longline fishery. Pelagic landings (e.g., tunas, wahoo) comprised nearly 90 percent of the $10.5 million dollars of commercially landed fish in 2009 (PIFSC, 2012a). In particular, local tuna canning is an important source of jobs and income in the fishing community. Furthermore, the American Samoa government calculates that the canneries contribute between 10-12 percent of the aggregate household income and 20 percent of electrical sales (WPFMC, 2010).

The pelagic fishery is Hawaii's largest and most valuable fishery sector. In 2012, the fishery landed approximately 32 million pounds of catch worth with an estimated ex-vessel value of $108 million (see Table 10). The longline component generates the largest revenue by far and is largely responsible for Honolulu ranking in the top 10 U.S. ports in economic value. Over 90 percent of longline trips from Hawaii target tunas.

In contrast to American Samoa, the longline commercial fishery in Hawaii is iconic, with a long history. The fishery dates to around 1917 and was influenced by Japanese immigrants, who shaped early fishing techniques (WPFMC, 2009c). Participation more than tripled during the late 1980s, from 37 vessels in 1987 to 138 vessels in 1990. Fishermen from Atlantic and Gulf states began targeting swordfish and tuna at about this time (Ito and Machado, 2001). The longline fleet now operates as two distinct fisheries based on gear deployment: deep-set longlining and shallow-set longlining. Deep-set longlining primarily targets tuna whereas shallow-set longlining targets swordfish (WPFMC, 2010). NMFS established a limited entry program in 1994 that allows for 164 vessels, however; the fishery has only averaged about 126 vessels during the past decade. In 2012, 131 permits were active and approximately 500 longline fishermen hold a State Commercial Marine License. At least 12 of the Hawaii longline permit holders also hold an American Samoa limited access permit (dual permits). With certain restrictions, NMFS allows dual permit holders to continue fishing for bigeye tuna outside the EEZ around Hawaii and land them under that permit after the U.S. bigeye tuna catch limit in the WCPO is reached.

The Hawaii longline fisheries add approximately $90 million to the local economy in ex-vessel, landed value revenue (see Table 10). As catch makes its way through the supply and retail chain, the value probably triples. In addition, the Hawaii longline fisheries supports hundreds of jobs related to captain and crewing, on-shore support, and fish wholesalers (NMFS 2010). Unlike American Samoa, however, the fishing community of Oahu does not depend heavily upon, nor is it highly engaged in, the longline fishery. Pelagic fishing-associated jobs comprise less than 1 percent of total employment on Oahu (DBET, 2011) and tourism and defense spending in the State dwarf the revenue generated by longlining. Tourism alone brings in approximately $12 billion per year (DBET, 2011). However, the Hawaii longline fisheries do provide the majority of fresh tuna and other pelagic species, which is important to local seafood markets and restaurants, and local food security.

Chapter 3 and Appendix C contain additional information describing the best available data on the history, extent, and type of participation of the fishing community in pelagic fisheries in American Samoa, CNMI, Guam, and Hawaii.

4.1.4.4 Economic and Social Impacts to Participants and Communities

Under Alternative 1, Section 113 authorizes the Territories to use, assign, allocate, and manage catch limits of pelagic MUS or fishing effort limits that have been agreed to by the WCPFC through agreements with U.S. vessels permitted under the Pelagics FEP. These agreements direct funds to the Western Pacific Sustainable Fisheries Fund to support fisheries development projects identified in a Territory's MCP.

Pursuant to Magnuson-Stevens Act section 204(e), the Council, in close coordination with a particular Territory, uses the Sustainable Fisheries Fund to implement projects identified in a Territory's MCP. Under Alternatives 1, 3 and 4, fishing communities in Territories would benefit indirectly through fishery improvement projects funded from Territory agreements. Benefits are expected to vary per fisheries development project from minor to moderate in magnitude of impact, depending on the fishery improvement projects implemented. These projects are likely to involve improvements to or construction of infrastructure and facilities, upgrades to existing vessels, and vessel capacity, and the development of fishermen training programs. As described in Chapter 1, the Territories, like other SIDS and PTs in the WCPO, are interested in responsibly developing their fisheries for purposes of economic growth and food security.

Also under Alternatives 1, 3, and 4, the Territories stand to realize minor to moderately positive benefits from developing catch history within WCPFC managed fisheries. As mentioned, the WCPO supports the world's largest tuna fishery; however, Guam and CNMI, do not currently have the domestic fishing capacity to participate in the WCPO tuna fishery. American Samoa has domestic longline capacity with only a history of albacore fishing. The authorization of Territory agreements allow catch to be attributed to the Territories and demonstrate their aspirations to participate in the larger, internationally managed WCPO fisheries.

For Alternatives 1, 3, and 4, Hawaii longline fishery participants also stand realize minor to moderately positive benefits from the ability to enter into agreements with Territories. Hawaii longline fishery participants are subject to the annual U.S. longline limit for bigeye tuna in the WCPO, which has been reached previously in the latter part of the year and resulted in NMFS prohibiting the landing and retention of bigeye tuna in the WCPO. As bigeye tuna is principal target species of the Hawaii longline fishery, fishery participants have an incentive to keep fishing throughout the year. In general, benefits from agreements include a reduction in the need to fish for seasonally-variable bigeye tuna in the EPO (which saves fuel costs), the continued availability of fresh, high quality tuna, lower consumer prices due to more product being available, and more stable income for fishery participants. If some Hawaii longline vessels begin to fish under an agreement and catch is attributed to a Territory, it is expected that some of the U.S. WCPO catch limit would still be available for vessels that are not party to the agreement or that do not have an American Samoa longline permit. These vessels may continue fishing and landing in Hawaii under the U.S. WCPO catch limit. That has been the case in 2011 and 2012. In addition, the EPO may be available for U.S. longline vessels all year, since the EPO bigeye tuna

catch limit applies to U.S. vessels over 24 m long and most longline vessels based in Hawaii are shorter. However, as mentioned, the availability of bigeye tuna in the EPO can be seasonally variable.

Since the Hawaii longline fleet fishes predominately in the WCPO, fishermen are able to optimize their fishing schedule by choosing when to fish in certain areas, since they can have a better sense of transit times and costs. As a less desirable option, fishing in the EPO usually means longer transit times, which results in higher fuel costs, fewer numbers of sets, and potentially poorer quality fish at auction. Further, profits could be lower for fishermen who must fish in the EPO because the availability of bigeye tuna in the EPO can vary seasonally and inter-annually. For all of these reasons, Alternatives 1, 3, and 4 are likely to have minor to moderately positive benefits for Territory and Hawaii longline fisheries, but long-term benefits from Alternatives 3 and 4 remain because Section 113 expires after 2013 and, therefore, the benefits under Alternative 1 would not extend beyond 2013.

Alternative 2, which would not allow Territory agreement with FEP-permitted vessels, would have minor to moderately negative consequences for Territory fisheries, the Hawaii longline fishery, and Hawaii seafood consumers depending upon when the Hawaii longline fishery reaches a catch or effort limit. Alternative 2 would eliminate a potential mechanism to facilitate the infusion of capital into fisheries development projects identified in the MCPs of the Territories. As a consequence, there would be little, if any, near future fisheries development in the Territories, potentially resulting in a stagnant fishery economy.

Based on past experience, there would be a change in the Hawaii longline fishery's profit margins without agreements that allow harvesting during the year-end holiday season. In addition to potential negative economic impacts described above, potential safety-at-sea issues arise under Alternative 2. If the U.S. annual WCPO longline limit for bigeye tuna is reached and NMFS prohibits the retention and landing of bigeye tuna in the WCPO, Hawaii longline vessels either must tie up for the remainder of the season, switch to shallow-set longline fishing for swordfish, or fish for bigeye tuna in the EPO. Hawaii longline vessels are restricted from being longer than 101 ft and many active vessels are shorter, ranging from 60-75 ft long. When permitted, vessels in the Hawaii longline fishery fish throughout the year and in many different weather conditions. However, fishing for swordfish and fishing in the EPO for bigeye tuna generally involve longer trips and greater distances from shore. Fishing during the winter months, when strong storms are common in the North Pacific, may pose minor to moderate safety-at-sea concerns in comparison to the other alternatives considered herein. Therefore, potentially minor to moderate safety-at-sea issues arise if vessels have to travel greater distances if prohibited from targeting bigeye tuna in the WCPO.

Prior to Section 113, NMFS prohibited the landing and retention of bigeye tuna (or "closure") caught in the WCPO in 2009 and 2010. Since the closure occurred toward the end of the year, and hence during the holiday season when fresh, high-quality tuna are in high demand in Hawaii, members of the Oahu fishing community were concerned about price spikes or the unavailability of preferred holiday fare. A PIFSC study of the 2010 closure found minor to moderately negative consequences, though neither the longline industry, nor seafood consumers experienced strictly negative impacts (Richmond et al. 2012). Many small sized vessels were not able to fish because

they could not reach the EPO or could not fish because they did not meet the regulatory exceptions to the closure. Also, sub-premium quality tuna (though still good quality fish) was sold at a lower than average price.

However, some Hawaii non-longline boats did very well during the closure because higher quality fish fetched better prices. As a direct result of the closure, which occurred on November 22, 2010, Hawaii small boat non-longline fishermen increased their catch and sales of bigeye tuna. In fact, December 2010 landings of, and revenue from, bigeye tuna by small boat vessels was $166,430, up 533 percent from $26,291 in December 2009 when the fishery closure occurred on December 29, 2009. The Hawaii longline fisheries were prohibited from retaining bigeye tuna in the WCPO for about 40 days in late November 2010. The subsequent December 2010 bigeye tuna landed value was $5.13 per lb, compared to an average 2010 bigeye tuna price of $4.05 per lb (26% difference) and a December 2009 average price of $3.81 per lb (35% difference) (Minling Pan, NMFS PIFSC, pers. comm.). However, these small vessel fleets would not be able to replace the Hawaii longline fleet in terms of volume and value of fresh fish, as typically bigeye tuna caught by longline receives a higher price at market than troll- or handline-caught bigeye tuna.

Sub-Alternative 4(a) would not establish Territory longline limits for bigeye tuna or limits on the amount of bigeye tuna that a Territory could annually assign. This would result in impacts to fishery participants as observed under the status quo above.

Under Sub-Alternative 4(b), the Territories would each have an annual 2,000-mt longline limit for bigeye tuna and a limit of 1,000 mt for bigeye tuna that could assignable each year under Territory agreements. Longline fisheries in Guam and CNMI have yet to develop much fishing capacity to harvest that quantity of bigeye tuna on an annual basis, so the limit would not affect FEP-permitted vessels located in the Marianas, which are currently inactive. The American Samoa longline fishery has around 20-25 active vessels, but capped at 60 permits under the limited entry program. The fishery currently targets albacore when fishing in the South Pacific, and vessels with dual Hawaii and American Samoa permits target bigeye tuna when fishing out of Hawaii. The American Samoa longline fishery would need to diversify and likely add vessel capacity in order to reach a 2,000-mt limit in the near term. However, if American Samoa entered into a Territory agreement, which assigned up to 1,000 mt of bigeye tuna, catches by American Samoa longline vessels fishing in the South Pacific and North Pacific, combined with the 1,000 mt of bigeye tuna assigned under an agreement, could get close to a 2,000-mt limit for bigeye tuna (see Table 12; 1,505 mt of bigeye tuna was reported for American Samoa in 2012). If this occurred, and the fishery was prohibited from retaining or landing bigeye tuna after reaching its 2,000-mt limit, minor to moderately adverse impacts to fishery participants could result. However, any government that makes agreements with FEP-permitted vessels could control the amount of catch transferred up to 1,000 mt, thereby reducing any impacts to local fishery participants. In addition, the Council would be reviewing and recommending annual limits as well as reviewing agreements and could make adjustments with respect to avoiding unwanted impacts to fishery participants.

Alternatives that would Minimize Adverse Impacts on Communities
Under the current international and domestic management of fisheries that catch bigeye tuna, U.S. longline fisheries are subject to an annual catch limit. Regulations already in place require the fishery to close once the limit is reached. Under Alternatives 1, 3, and 4, Territories could enter into agreements with Pelagics FEP-permitted vessels, provided all conditions are met, including payments into the Sustainable Fishing Fund (or landings, in the case of Alternative 4).

Alternative 4 would provide for increased Council and NMFS oversight of agreements as compared to the other Alternatives. Under Sub-Alternative 4(b), 1,000-mt annual bigeye tuna transferable limits would be established that would help ensure that enough bigeye tuna is available to Territory longline fisheries if development occurs in the future for CNMI or Guam, or if the American Samoa-based longline fishery diversifies in the future. Alternative 4 with Sub-Alternative 4(b) appears to best minimize minor to moderately adverse impacts on fishing communities in the U.S. Pacific Islands Region and may provide minor to moderate benefits.

4.1.5 Impacts on Administration and Enforcement

4.1.5.1 Alternative 1: No-Action - Manage Territory Limits Consistent with Existing Provisions of Section 113

Alternative 1 involves administrative costs associated with the application of agreements, including in-season monitoring of the U.S. WCPO longline catch limits for bigeye tuna by NMFS' PIFSC, and regulatory and management costs associated with announcing a catch prohibition and notifying fishermen, and attributing catches to the correct category and Territory in accordance with the agreements or dual permitted vessels. Using historical data and data collected during the fishing year, PIFSC projects the Hawaii longline fleet's bigeye tuna catches against the U.S. WCPO limit estimates, thereby reducing the potential for exceeding the limit. Due to this rigorous level of monitoring and regulation in place, the Hawaii longline fishery has been effectively held below the U.S. WCPO bigeye tuna limit under CMM 2008-01. Administrative costs are also derived from promulgating regulations establishing the U.S. WCPO catch and effort limits.

Monitoring of catch is generally described as:

- NMFS monitors catch by U.S. vessels operating in the WCPO against the U.S. catch limit through submission of logbooks (numbers of fish caught and retained) (http://www.fpir.noaa.gov/SFD/SFD_regs_3.html). Using average fish length/weight information derived from State of Hawaii dealer reporting data, NMFS converts catch statistics into total weight.
- NMFS begins to attribute catch made by vessels under Section 113(a) agreements to the applicable territory seven days prior to the pre-attribution forecast date for reaching of the U.S. bigeye tuna limit. All other pelagic species caught by vessels under an agreement would be attributed to the Territory.
- Catch by vessels that are not part of a Section 113(a) agreement is attributed according to certain NMFS protocols. Some catch may be attributed to American Samoa or the U.S. limit. For example, catch not caught by vessels fishing under a Section 113 agreement, but rather caught by other vessels that are a part of the fishery landing fish in Hawaii is

sometimes attributed to the U.S. and sometimes to American Samoa, depending on whether or not the vessel has an American Samoa limited entry permit and on whether or not the fish was caught outside the EEZ around Hawaii. Fish caught by a vessel outside of the EEZ around Hawaii by a vessel with a limited entry permit from American Samoa, landing fish in Hawaii (which requires a Hawaii limited entry permit) are considered to have been caught by American Samoa.

- Catches made by U.S. longline vessels under a Territory agreement are compiled by NMFS on an individual vessel basis, but such catches would not establish nor confer individual vessel catch history within a particular Territory. The attribution of catches made by vessels operating under a Territory agreement is contained within the U.S. Annual Part I report to the WCPFC. Information about where the catches were made would still be available for use by scientists in stock assessments.
- When the U.S. bigeye tuna limit has been reached, NMFS prohibits the retention and landing of bigeye tuna from the WCPO, with limited exceptions.

This Alternative also involves administrative costs associated with tracking and assigning catches made under Territory agreements with FEP-permitted vessels. The current administrative burden for the U.S. government involves NMFS' fishery scientists monitoring catches by the Hawaii-based longline fishery, forecasting when the U.S. limit may be reached, collecting and correcting catch data, and attributing catch to either the U.S. bigeye tuna catch limit, Section 113 attributed catch, or American Samoa catch by dual permitted vessels. In 2011, only one vessel was not fishing under the ASG/HLA agreement; this catch was attributed to the U.S. bigeye tuna catch limit. PIFSC will need to run a second type of forecast after the attribution date to determine if or when vessels not operating under an agreement will use the remaining U.S. bigeye tuna catch limit before the end of the year. PIFSC estimates the current administrative burden of this component of the Hawaii longline monitoring program as about half of a full-time employee salary per year and $75,000 in administrative costs. There are also administrative costs to the Federal government associated with notifying the fishery of the prohibition on retaining and landing bigeye tuna from the WCPO.

Regarding enforcement, Alternative 1 involves PIFSC tracking the fishery and projecting the date the U.S. bigeye tuna catch limit will be reached, and then the NOAA Office of Law Enforcement and U.S. Coast Guard monitoring vessel compliance with applicable regulations and laws through vessel monitoring systems and vessel boardings at sea. Changes to the level of monitoring or an increase in costs are not expected since this is the status quo.

4.1.5.2 Alternative 2: Section 113 Authority Ends

This Alternative would have minor positive impacts associated with administration and enforcement as Alternative 1, because Territory agreements would not be authorized under this Alternative. Therefore, the administrative costs associated with tracking and assigning catches made under Territory agreements with FEP-permitted vessels would not be required under this Alternative. NMFS would continue to monitor catch by U.S. vessels operating in the WCPO against the U.S. catch limit through submission of logbooks as described above. If the U.S. longline industry reached the annual limit of bigeye tuna in the WCPO, NMFS would prohibit the retention and landing as occurred in 2009 and 2010 through fishery notices.

4.1.5.3 Alternative 3: Amend the FEP to Establish a Process that is Identical to the Provisions of Section 113

This Alternative would likely have the same or very similar impacts associated with administration and enforcement as Alternative 1, but would continue after December 31, 2013.

4.1.5.4 Alternative 4: Amend the FEP to Establish a Management Framework Consistent with Section 113, and Establish a Process for NMFS to Specify Territory Catch or Effort Limits and Assignable Limits Under Qualifying Agreements (Council Preferred Alternative)

Alternative 4 would have similar impacts as Alternative 1. However, this alternative coupled with Sub-Alternative 4(b) would add minor to moderate levels of additional monitoring and rulemaking costs as a result of the 2,000-mt total bigeye tuna longline limits applicable to the Territories as well as 1,000 mt transferrable limits under agreements between a Territory and FEP-permitted vessels each year. Maximum annual limits that could be transferred under a particular agreement could result in multiple agreements in effect during a given year, resulting in the need for appropriate levels of review and monitoring. For example, a Territory could make agreements with U.S. fishing vessels as long as the same vessels are not under more than one agreement at a time. The catch by the vessels for each agreement must be monitored to ensure that when all the catch of bigeye tuna under the agreement is attained these vessels must be notified that they may no longer retain bigeye tuna in the WCPO. There would be additional personnel and administrative costs needed for NMFS to review the agreements and announce specifications.

Reporting catch data to the WCPFC for catches attributed to each of the Territories under agreements may create new categories of catch for the period of attribution for the Territories, in addition to forecasting and monitoring the non-attributed fishing that continues in Hawaii or in the other Territories if they are attributing part of their catch elsewhere with FEP permitted vessels. This increases the potential for categories of catch for which there will be less than three vessels in a category that cannot be provided publicly because of data confidentiality.

As compared to the Alternatives 1 and 3, Alternative 4 is expected to result in improved administrative oversight and may result in some improved efficiency in managing Territory agreements with FEP-permitted vessels of fishery resources, through the establishment of procedures for the review of fishing agreements and the attribution of catch.

To implement this level of catch monitoring, PIFSC estimates that one new full time employee ($150K) for each Territory ($450K) and 0.5 full-time employee ($75K) for increased data management. The tasks involved include new procedures and time requirements for monitoring the territory agreement catches.

4.2 Cumulative Impacts

The Magnuson-Stevens Act and NEPA require appropriate analysis of the potential cumulative effects of a proposed action, as well as the cumulative effects of the alternatives to the action.

Under NEPA, cumulative effects are defined as those combined effects on the human environment that result from the incremental impact of this action when added to other past, present, and reasonably foreseeable future actions, regardless of what federal or non-federal agency or person undertakes such other actions (40 CFR § 1508.7). The following cumulative effects analysis is organized by the following issues: target and non-target species, protected species, and fishery participants and communities.

4.2.1 Cumulative Effects to Target and Non-Target Species

4.2.1.1 Past, Present, and Reasonably Foreseeable Management Actions

Pelagics FEP

The Pelagic FMP was approved and implemented by the Secretary of Commerce in 1987. In 2009, the Secretary of Commerce approved the Pelagics FEP that replaced the FMP and included all previous requirements. Management actions under the FMP that have helped to ensure western Pacific fisheries are sustainable include establishment of the Hawaii longline limited entry program, capped at 164 permits, and the American Samoa longline limited entry program, which is capped at 60 permits. Also included in the Hawaii limited entry program is a restriction on vessel size of no greater than 101 ft, which limits the fishing capacity of individual vessels. Longline fisheries in Guam and CNMI are permitted with a Western Pacific general longline permit under the FEP and regulated with a suite of measures similar to the American Samoa and Hawaii longline fisheries. For example, the FEP established longline prohibited areas in the Marianas, extending 50 nm around Guam and 30 nm around the CNMI. All longline fisheries under the FEP are comprehensively managed through catch reporting, observers coverage, VMS, gear restrictions, vessel marking, and other management measures. See 50 CFR 665 for Pelagics FEP regulations.

Several recommended FEP amendments/regulatory amendments have been recommended by the Council, but are in drafting stage and yet to be transmitted for Secretarial review under the Magnuson-Stevens Act. These include the following issues:

- American Samoa longline limited access permit program modifications to support fishery participation by small vessels (< 50 ft) in the fishery and reduce program complexity;
- Establishment of regulations for an American Samoa-based shallow-set longline fishery;
- Large vessel (> 120 ft) prohibited fishing area around CNMI and Guam; and
- Prohibition on FAD sets by U.S. purse seine fishery in U.S. EEZ waters.

The analyzed action alternatives would not have interactive effects with this actions listed above, primarily because the alternatives would not change the current fisheries' impacts on target, non-target, and bycatch species.

RFMO Management of HMS stocks

In the Pacific Ocean, the international management of HMS stocks is divided between two RFMOs, the WCPFC and IATTC (see Figure 1). The WCPFC and IATTC are a result of negotiated conventions between coastal states and states with vessels fishing on high seas and within waters of national jurisdiction of coastal states under access agreements. The conventions applicable to the WCPFC and IATTC are based upon existing international law such as the

United Nations Law of the Sea Convention (UNCLOS), and the United Nations Fish Stocks Agreement on Straddling and Highly Migratory Species (UNFSA).

The U.S. is a member of both the WCPFC and IATTC and is obligated as a member to implement decisions of these RMFOs that are applicable to the U.S.

The management of HMS stocks in the Pacific is complicated by multiple factors including the need to balance rights of coastal states and small developing nations to gain and maintain access to fishery resources and interests of distant water fishing nations in maintaining economically viable harvests, the economic importance of fisheries for developing coastal states, and the overlapping multispecies characteristics of two the largest international fisheries, the purse seine fishery and the longline fishery. For example, the purse seine fishery targets skipjack and yellowfin tunas and dominates landings, representing approximately 75 percent of the total WCPO catch in 2011 and 56 percent of the value (Williams and Terawasi 2012). Longline fisheries for yellowfin, bigeye, and albacore tunas equate to approximately 10 percent of the WCPO catch, but 33 percent of value, with pole and line fisheries and artisanal coastal fisheries responsible for the remainder of the tuna harvests in the WCPO (Ibid.). The purse seine fishery also catches juvenile bigeye tuna incidentally while fishing on FADs. Although the percentage of bigeye tuna in the total catch of the purse seine fishery is believed to be relatively low (approximately 5% in WCPO), the massive catch volume of the purse seine fishery results in significant amount of juvenile bigeye tuna mortality (Williams and Terawasi 2013).

According to the 2011 stock assessment, the juvenile bigeye tuna fishing mortality coupled with the longline fishery targeting adult bigeye tuna has resulted in an overfishing condition and approaching an overfished condition in the WCPO (Davies et al. 2011). NMFS has determined that overfishing of bigeye tuna in the WCPO is occurring but not approaching an overfished condition, because the Magnuson-Stevens Act defines approaching an overfished condition as when the stock will become overfished within two years and NMFS has not made a positive determination under this criterion. The 2011 stock assessment concluded that the MSY level for bigeye tuna would increase if mortality of small fish were reduced which would allow greater overall yields to be sustainably obtained (Davies et al. 2011).

In 2005, the WCPFC agreed to its first measure addressing overfishing of bigeye tuna. The WCPFC followed up the 2005 measure with CMM 2008-01 with the objective of achieving, over a three-year period, from 2009 to 2011, a 30 percent reduction in bigeye tuna fishing mortality, and no increase in yellowfin tuna fishing mortality (relative to a specified historical baselines for each member). CMM 2008-01 required WCPFC members to implement the following measures for their purse seine fisheries: fishing effort limits for the high seas and EEZ at 2001-2004 levels, seasonal FAD closure period (2 months in 2009, 3 months in 2010, 2011), closure of Western Pacific high seas pockets in 2010 and 2011, full catch retention in 2010 and 2011, and 100 percent observer coverage if fishing during the FAD closure period in 2009 as well as 100 percent for entire year in 2010 and 2011. CMM 2008-01 also established annual longline catch limits that would reduce bigeye tuna catches over a three-year period by 30 percent of the 2001-2004 baseline. Fresh fish longline fisheries that caught less than 5,000 mt per year were required to reduce longline landings of bigeye tuna by 10 percent in 2009. This provision effectively only

applied to the U.S.A., i.e., the Hawaii longline fishery, which was subject to a 10 percent reduction from 2004 catch, resulting in a catch limit for bigeye tuna of 3,763 mt.

Longline fisheries in the WCPO targeting bigeye tuna have reduced their catches by approximately 15-20 percent since the WCPFC agreed on conservation management measure 2008-01 (Pilling et al. 2013; WCPFC 2013b); however, the established catch limits in CMM 2013-01 represent a 41 percent reduction from the baseline limits established under CMM 2008-01. This is because several nations are not harvesting bigeye tuna up to their maximum quota (e.g. Japan). In the same period, catches of bigeye tuna by the purse seine fishery have increased by around 20 percent (WCPFC 2013b).

The WCPFC rolled-over several provisions of CMM 2008-01 in March 2012 as an interim measure for 2012. In December 2012, the WCPFC adopted a measure for 2013 that generally maintained longline limits for the several countries and removed the 2,000-mt limits for the SIDS and PTs (CMM 2012-01). In December 2013, the WCPFC adopted a multi-year measure (CMM 2013-01) that is more restrictive than CMM 2012-01, containing purse seine FAD closures and FAD set limits and longline bigeye tuna catch limits.

In the EPO, the IATTC amended Resolution C-12-01 on Tuna Conservation in 2013 as follows: Purse seine vessels with capacity class sizes 4-6 (more than 182-mt carrying capacity) are required to stop fishing in the EPO for a period of 62 days in 2011, 62 days in 2012, and 62 days in 2013. These closures shall be in one of two periods in each year as follows:

- 2011 – 29 July to 28 September, or from 18 November to 18 January 2015.
- 2012 – 29 July to 28 September, or from 18 November to 18 January 2016.
- 2013 – 29 July to 28 September, or from 18 November to 18 January 2017.

Notwithstanding the measures above, purse seine vessels capacity class 4 (182-272 mt carrying capacity) will be able to make one fishing trip of up to 30 days duration during the closure periods specified above, provided that any such vessel carries an observer. The IATTC also maintained a temporal closed area, termed “El Corralito”, which is the area of 96° W and 110° W and between 4° N and 3° S, near the Galapagos Islands, and is closed for one month, from September 29 to October 29.

The longline fleets of the distant water Asian fishing nations were provided the quotas listed in Table 35. Within the last decade, there has been a significant decline in longline catches for bigeye tuna in the EPO, most notably for Japan and Korea. For example, the 2011 bigeye tuna longline catch (25,216 mt) in the EPO has decreased by 75 percent since 1991’s record high EPO longline catch of 104,195 mt (WCPFC-SC8-2012/ST IP-1).

Table 35: IATTC catch limits for longline-caught bigeye tuna for Asian longline fleets fishing in EPO, 2011-2013.

Country	2011-2013 annual EPO longline bigeye tuna limit (mt)	2011 total combined EPO longline bigeye tuna catch (mt)
China	2,507	25,216
Japan	32,372	
Korea	11,947	
Chinese Taipei	7,555	

Other IATTC member nations are required to take actions to ensure that in years 2011-2013 that their longline bigeye tuna catch not exceed the greater of 500 mt or their respective catches of bigeye tuna in 2001. The U.S. longline catch limit for bigeye tuna in the EPO for vessels 24 m and longer for is 500 mt per year.

Collectively, it is intended that the measures by the WCPFC and IATTC will result in sufficient decrease in bigeye tuna fishing mortality on a Pacific-wide scale. However, it is uncertain if this will occur, in part because of uncertainty about the structure (e.g., stock mixing between WCPO and EPO) and productivity (e.g., recruitment levels) of the stock(s).

Bigeye tuna is being exploited as juveniles (primarily purse seine fisheries) and as adults (primarily longline fisheries), and further reductions in fishing mortality of bigeye tuna at all life stages is likely until the stock status improves. The 2011 stock assessment for bigeye tuna in the WCPO states that:

> "The current levels of fishing mortality and historical patterns in the mix of fishing gears indicates that bigeye [tuna] MSY has been reduced to less than half its levels prior to 1970 through harvest of small juveniles. Because of that and overfishing, considerable potential yield from the bigeye tuna stock is being lost. Based on these results, we conclude that MSY levels would rise if mortality of small fish were reduced which would allow greater overall yields to be sustainably obtained (Davies et al. 2011)."

Currently, there are suite of measures in the WCPFC that are applicable to North and South Pacific albacore tuna, North Pacific striped marlin, and to South Pacific swordfish (Table 2). Each of these measures includes exemptions for SIDS and PTs with respect to the development of their fisheries.

Future Actions

As described in section 3.2.1.1, the WCPFC adopted CMM 2013-01 that continued and expanded conservation measures from CMM 2012-01. In 2014, the WCPFC Science Committee is scheduled to conduct new stock assessments for skipjack, yellowfin, and bigeye tunas, which will inform future conservation and management measures in the WCPFC and USA. Balancing the interests between purse seine and longline fisheries in terms of fishing reductions are a key component of a new measure.

Section 3.2.2.1 describes recent action by the IATTC for management of bigeye tuna from 2014-2016 applicable to purse seine and longline fisheries.

4.2.1.2 External Factors

Five major exogenous factors were identified as having the potential to contribute to cumulative effects on pelagic target and non-target stocks:

- Fluctuations in the pelagic ocean environment focusing on regime shifts
- Pacific-wide fishing effort
- Ocean noise
- Marine debris
- Ocean productivity related to global climate change

Fluctuations in the Pelagic Ocean Environment
Catch rates of pelagic fish species fluctuate in a time and space in relation to environmental factors (e.g., temperature) that influence the horizontal and vertical distribution and movement patterns of fish. Cyclical fluctuations in the pelagic environment affect pelagic habitats and prey availability at high frequency (e.g., seasonal latitudinal extension of warm ocean waters) and low-frequency (e.g., El Niño Southern Oscillation-related longitudinal extension of warm ocean waters). Low or high levels of recruitment of pelagic fish species are also strongly related to fluctuations in the ocean environment.

The effects of such fluctuations on the catch rates of PMUS obscure the effects of the combined fishing effort from Pacific pelagic fisheries. During an El Niño, for example, the purse seine fishery for skipjack tuna shifts over 1,000 km from the western to central equatorial Pacific in response to physical and biological impacts on the pelagic ecosystem (Lehodey et al. 1997). Polovina and Woodworth-Jefcoats (2013) theorize that pelagic fisheries contribute to ecosystem shifts in size structures of fish beyond species harvested. A target sampling of fishes below the size at which they recruit to fisheries is required on a Pacific scale by the RFMOs to detect changes that catch-based indicators, like stock assessments, may underestimate (Polovina and Woodworth-Jefcoats 2013). Future ocean shifts are likely to cause changes in the abundance and distribution of pelagic fish resources, which could contribute to cumulative effects. For this reason, accurate and timely fisheries information is needed to produce stock assessments that allow fishery managers the ability to regulate harvests based on observed stock conditions.

Pacific-wide Catches of Bigeye Tuna
See section 3.2 for Pacific-wide catches of bigeye tuna.

Oceanic Noise Pollution
In the last 50 years, there have been significant increases in sound producing ocean activities such as commercial shipping, hydrocarbon exploration and research, military sonar and other defense related-actions (Hildebrand 2005). Ambient noise from shipping in the Pacific Ocean has doubled every decade for the last 40 years (McDonald et al. 2006). Commercially important fish stocks and marine mammals can be affected by noise pollution by making it more difficult to find food and mates, avoid predators, navigate, and communicate (Popper 2003). Studies of bluefin tuna in the Mediterranean suggest that noise pollution from shipping results in changes to

schooling behavior, which could impact migration (Sara et al. 2007). The effects of noise pollution on bigeye tuna and other target and non-targets stocks are unknown, but given the above information and depending on exposure duration and at what life stage, increases in oceanic noise levels could potentially have adverse impacts on target and non-target stocks.

Marine Debris

Derelict fishing gear such as drift-nets have the ability to ghost fish, i.e. continue to catch and kill fish and other animals long after they have been lost or discarded. The amount of derelict fishing gear in the Pacific has not been quantified nor has the amount fish species killed by ghost nets. Longline gear is not readily lost during normal fishing operations because the gear is equipped with radio transponder devices. In addition, Hawaii longline fishermen make efforts to prevent gear loss as well as participate in a voluntary derelict fishing net retrieval program based in Honolulu. Retrieved derelict nets are brought back to Honolulu Harbor and placed in a receptacle which is transported to Schnitzer Steel Corp. where the nets are cut up for incineration at Honolulu City and County's H-Power plant. Purse seine fisheries often used FADs to aggregate fish. While many of these FADs are equipped with radio transponders or GPS beacons to locate them, the FAD themselves are made of netting other loosely connect materials that have the potential to contribute to marine debris.

Ocean productivity related to global climate change

Using remotely-sensed chlorophyll concentrations from satellite observations, Polovina et al. (2008) have found that over the past decade primary productivity in the subtropical and transition zone has declined an average of 1.5 percent per year with about a 3 percent per year decline occurring at the southern limit of the North Pacific Transition Zone. The expansion of the low chlorophyll waters is consistent with global warming scenarios based on increased vertical stratification in the mid-latitudes.

Expanding oligotrophic[42] portions of the subtropical gyres in the world's oceans in time will lead to a reduction in chlorophyll density and carrying capacity in the larger subtropical gyres, thus affecting the abundance of target and non-target species. In general, it has been shown that large scale climate cycles can impact winds, currents, ocean mixing, temperature regimes, nutrient recharge, and affect the productivity of all trophic levels in the North Pacific Ocean (Polovina et al. 1994).

For example, a scientific study using an enhanced version of the spatial ecosystem and population dynamics model (SEAPODYM[43]) suggests that by the end of this century, ocean temperatures in the WCPO will increase to levels that may not support bigeye tuna populations in the WCPO.[44] Polovina and Woodworth-Jefcoats (2013) project the combined impacts of increased fishing effort and future climate change to be additive and will accelerate shift the ecosystem to a smaller size structure. In order to support the long-term sustainability of target

[42] Meaning waters where relatively little plant life or nutrients occur, but which are rich in dissolved oxygen.

[43] The model based on advection-diffusion-reaction equations explicitly predicts spatial dynamics of large pelagic predators, while taking into account data on several mid-trophic level components, oceanic primary productivity and physical environment.

[44] SEAPODYM working progress and applications to Pacific skipjack tuna population and fisheries WCPFC-SC7-2011/EB-WP 06 rev. 1

and non-target fish stocks, and taking in to account potential impacts from climate change, continued research, improved fishery data collection, and coordination with international organizations, will be important to facilitate adaptive fishery management.

4.2.1.3 Cumulative Effects

As described in section 4.1.1, the direct and indirect impact of the alternatives are expected to have minor to moderately negative (Alternative 1 and 3, and Sub-Alternative 4(a)) or minor to moderately positive (Alternatives 2 and 4, and Sub-Alternative 4(b)) impacts on the status of target and non-target stocks, including bigeye tuna, but none are expected to be substantial. U.S. fisheries including those of the Territories are sustainably managed and are operating consistent with internationally agreed upon conservation and management measures. Bigeye tuna is experiencing overfishing in the WCPO, but is not overfished. This action provides for NMFS-oversight of limited transfers of bigeye tuna catch limits through fishing agreements, while ensuring that the amount transferred does not exceed catch limits available to the U.S. and Territory longline fisheries. This management approach is also consistent with the Magnuson-Stevens Act in managing the bigeye tuna throughout the range of the species, taking into account stock status, and U.S. and Territory longline catches of bigeye tuna which do not affect the stock status (i.e., whether it is in an overfishing condition or not) and comprise a small fraction of the total WCPO bigeye tuna catch. Whereas the authority provided to the Territories in Section 113 allows for an unlimited amount of bigeye tuna to be assigned by the Territories under agreements with FEP-permitted vessels, this action would limit the amount available to be transferrable to 1,000 mt of bigeye tuna annually per Territory and thereby provide greater conservation and management of pelagic MUS.

NMFS anticipates that the Pelagics FEP fisheries, including the Hawaii deep-set longline fishery, would continue to operate largely unchanged in terms of fishing location, the number of vessels that deep-set fish, the number of hooks deployed, catch rates of target, non-target, bycatch species, depth of hooks, or deployment techniques in setting longline gear, with respect to baseline operations. This was observed in 2011 and 2012 when Territory agreements were authorized under the status quo (Section 113). Under this action, FEP-permitted vessels would only be allowed to operate under one Territory agreement at a time. Given this controlling measure, combined with the U.S. WCPO catch limit of 3,763 mt for bigeye tuna, and the current and expected levels of vessel participation, it is likely that the level of effort and associated catches would be within historical baseline levels.

Furthermore, the location of where most U.S. longline fishing effort for bigeye tuna is expected to occur under all Alternatives is an area in the central North Pacific with lower fishing mortality, as compared to the equatorial Pacific, which represents approximately 88 percent of fishing mortality on bigeye tuna in the WCPO (See Figure 12; WCPFC 2011). It is been shown that approximately 98 percent of Hawaii longline bigeye catch comes from north of 10° N, and outside the core equatorial zone where approximately 90 percent of fishing mortality on bigeye tuna occurs.

Bigeye tuna is considered a Pacific-wide stock that is managed and assessed separately by the WCPFC and IATTC. Bigeye tuna is subject to overfishing in the WCPO, but in the EPO, bigeye

tuna is not in an overfishing condition. In both the WCPO and EPO, bigeye tuna is not overfished. In the WCPO, bigeye tuna is harvested across a range of fishing gears, with primary impacts from longline and purse seine fisheries. Bigeye tuna in the WCPO has been experiencing overfishing since the 1990s. As an internationally managed species, the U.S. cannot end overfishing on bigeye tuna through unilateral actions. International cooperation within the WCPFC is ultimately required to end and prevent overfishing of bigeye tuna in the WCPO. However, this action represents a unilateral action to impose limits on otherwise unrestricted catches applicable to the Territories.

Although the WCPFC and IATTC both manage bigeye tuna, it is a single pan-Pacific stock with no evidence of stocks separation between eastern and western segments of the population. Reduction of fishing mortality in the EPO has been achieved largely through the wholesale reduction of longline fishing mortality, where catches have consistently been lower than IATTC recommended maxima. Given that this is a single stock with exchange between the EPO and WCPO, the reduction of fishing mortality in the EPO may have some benefits to the population as a whole through survival of recruits to reproductive age and spillover of recruits from the EPO to the WCPO. This is especially relevant to bigeye tuna fishing mortality in Regions 2 and 4, whereby the eastern boundaries of these regions adjoin the EPO. The impact of the improved stock condition of bigeye tuna in the EPO and its potentially positive impact to the WCPO stock, especially in the eastern portions of Regions 2 and 4 cannot be discounted and may be quantified in future Pacific-wide bigeye tuna stock assessments. This issue is relevant when evaluating the impact of the Hawaii longline fishery, which fishes predominately in Region 2, as well as in Region 4 and the EPO. Combined catches by the Hawaii longline fishery when fishing under the U.S. WCPO limit and a Territory agreement may be buffered by the healthy status of bigeye tuna in the adjacent EPO.

Catches of non-target species in the Hawaii longline fishery are driven by the fishing effort for bigeye tuna. If fishing effort for bigeye tuna increases, the catches of other target and non-target stocks would be expected to increase commensurate with the increases in fishing effort. The predicted level of fishing effort by the Territories and the Hawaii longline fishery under Alternative 4 is expected to result in catches of non-target species within historical baseline levels.

As described above, there are several exogenous factors that may be affecting target and non-target species, with the industrial scale purse seine and longline fisheries responsible for the largest impact on the sustainability of the stocks. The impacts analysis of the alternatives on bigeye tuna stocks was developed in consideration of all other sources of fishing mortality on the stock and the U.S. fisheries would continue to comply with applicable conservation and management measures that are developed by international fishery management organizations. Concerning bigeye tuna, the U.S. cannot end overfishing unilaterally and international cooperation within the WCPFC is needed to eliminate overfishing. As described above, and based on the outcome of TUMAS modeling, none of the alternatives would result in large adverse impacts to bigeye tuna or prevent management measures from succeeding in improving the status of bigeye tuna in the Pacific.

As the provisions of CMM 2012-01 and CMM 2013-01 provide the SIDS and Participating Territories essentially unlimited annual catches of bigeye tuna, there is potential for increased bigeye tuna catches by these countries either through vessel chartering or similar mechanisms including catch attribution programs. Vessel chartering is a common practice among WCPFC membership, principally between SIDS and DWFNs as mechanism for the SIDS to gain fishing capacity. There are no existing WCPFC conservation and management measures to restrict vessel chartering or catch assignment, which is believed to be occurring on various levels within the WCPO. The WCPFC conservation and management measure applicable to vessel chartering (CMM 2012-05) requires notifications of chartering to the WCPFC Secretariat; however, the list of vessels notified to be under charter is available to the public (see WCPFC 2013 (e)).

Alternatives 1, 3, and 4 may further exemplify how unused harvest limits for the SIDS and PTs can be realized as harvests by the other members. Such actions, if widely emulated, could cumulatively erode conservation efforts even while the individual contributions to increased mortality separately may not be substantial. Transfer of purse seine fishing effort is occurring within the WCPO among members of the PNA and longline catch transfers have occurred in the WCPFC, and other RFMO areas of competence such as IATTC in the eastern Pacific and ICCAT in the Atlantic, thus, there is international precedence for quota sharing. Among the alternatives that allow agreements (Alternatives 1, 3, and Sub-Alternative 4(a)), Alternative 4 with Sub-Alternative 4(b) would have the greatest amount of management oversight by allowing the Council to recommend and NMFS to specify catch or effort limits, and catch or effort transfer limits for the Territories. Alternative 2, while having the lowest potential impacts to target and non-target stocks, including bigeye tuna, would not provide additional opportunities for the Territories to develop their fisheries and better utilize their fishery resources. Thus, the key difference between this action and existing vessel chartering agreements in the WCPO is that this action limits how much bigeye tuna could be transferred under an agreement. Furthermore, this action does not set establish a precedence in which other WCPFC members will be compelled to follow.

With respect to U.S. negotiating positions and the need for further reductions in fishing mortality on bigeye tuna, this action does not substantially affect future U.S. negotiating positions in the WCPFC as it implements existing authorizations provided in Section 113, from which Territory agreements have occurred since 2011. In addition, this action establishes more restrictive measures than what is currently in place for the SIDS and PTs (e.g., 2,000-mt catch limits for bigeye tuna in each Territory and 1,000-mt limits on the transfer of bigeye tuna catch under agreements), which could support U.S. negotiating positions for more restrictive measures.

With regards to market effects and impacts to bigeye tuna and other pelagic MUS, the Hawaii market for fresh and frozen tuna is substantial and cannot be totally supplied with the current amount of domestic landings. The strict regulation of the annual catch limits for the Hawaii longline fishery has left the Hawaii market accessible for foreign imports. If the Hawaii based longline fishery reaches its annual catch limit any one year and is prohibited in fishing in the WCPO, as could occur under Alternative 2, it is believed that foreign imports will fill the market demand in Hawaii. The effect of strictly regulating the Hawaii based longline fleet is expected to represent the same or more amount of fishing for bigeye tuna by foreign interest to satisfy the Hawaii market. Because foreign longline fisheries are believed to be less monitored in terms of

target and non-target catches and landings and protected species interactions as compared to U.S. longline fisheries, this action maintains the U.S. production of bigeye tuna at optimal levels through the highly monitored, environmentally responsible Hawaii longline fishery.

Said differently, a pound of bigeye tuna caught by the Hawaii longline fishery is believed to be more environmentally friendly than a pound of bigeye tuna caught by a foreign longline fleet in regards to protected species interactions and non-target catches (e.g., retained shark bycatch). In addition, supporting the domestic supply of fresh tuna for the Hawaii seafood market is believed to make it less reliant on foreign tuna imports that are likely caught in equatorial regions with higher fishing mortality levels and in areas known for tuna spawning (e.g., Regions 3 and 4 of the 2011 stock assessment for bigeye tuna in the WCPO). As described earlier, 98 percent of the Hawaii longline catch of bigeye tuna comes from north of 10° N, and outside the core equatorial zone where approximately 90 percent of fishing mortality on bigeye tuna occurs.

4.2.2 Cumulative Effects to Protected Species

4.2.2.1 Sea Turtles

4.2.2.1.1 Past, Present, and Reasonably Foreseeable Future Management Actions

NMFS Listings Under the ESA
In the late 1970s, NMFS and the USFWS listed all five sea turtles species that occur in the U.S. EEZ as either threatened or endangered pursuant to the ESA (43 FR 32800). The ESA offers Federal protection to species that are displaying population trends that make them vulnerable to extinction.

Pelagics FEP Amendment Model Fishery and Sea Turtle Mitigation Measures
From 2001-2004, the Hawaii based shallow-set fishery was closed due to concerns related impacts on sea turtle populations. In 2004, the Council developed a suite of measures in an FEP amendment to reopen the Hawaii shallow-set swordfish longline fishery. Among the measures in the FEP amendment was a requirement by shallow setting longline vessels to use 18/0 or larger circle hooks and fish bait. This measure has reduced sea turtle interaction rates by 89 percent in comparison to historical interaction rates (Gilman et al. 2007). Deep hooking (thought to result in higher levels of sea turtle mortality) rates have also declined (Gilman et al. 2007). Prior to requiring the use of circle hooks and fish bait in the Hawaii longline shallow-set fishery, 51 percent of the sea turtles were believed to have been deeply hooked. Furthermore, the 2004 regulations instituted annual interaction limits on loggerhead (17) and leatherback (16) sea turtles, which if reached, close the fishery for the remainder of the calendar year. The interaction limit for loggerheads was raised to 46 in 2009 (leatherbacks remained at 16), then reduced back down to 17 and 16, respectively in 2011 as a result of litigation. In January 2012, NMFS completed a new biological opinion on the Hawaii shallow-set longline fishery and concluded that 34 annual interactions with North Pacific loggerheads and 26 annual interactions with leatherbacks will not jeopardize these populations (see 77 FR 60637). Figure 16 shows the significant reduction in sea turtle interactions in the Hawaii longline fisheries as a result of the 2001-2004 closure as well as reopening of the shallow-set fishery under strict sea turtle mitigation measures.

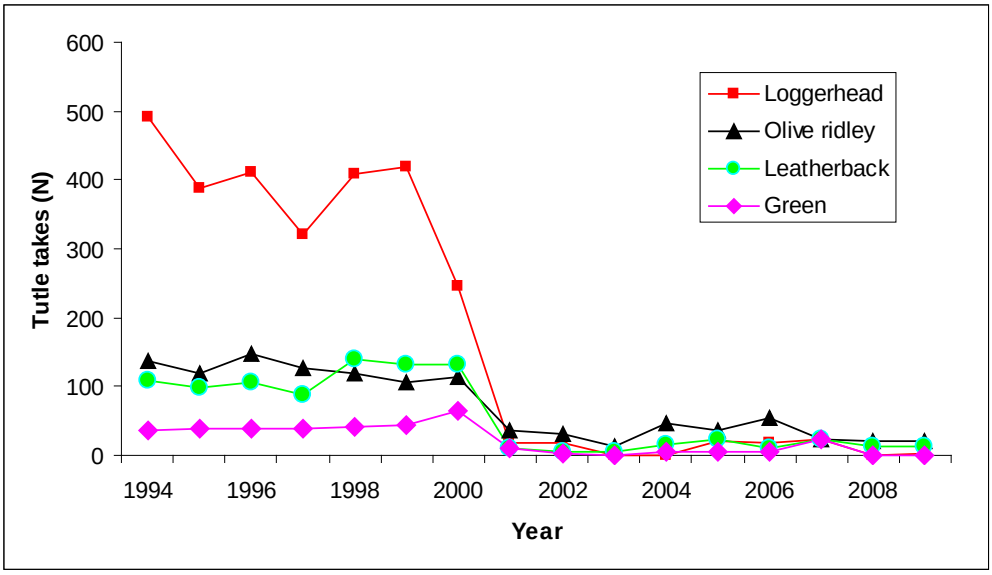

Figure 16: Estimated annual sea turtle interactions in the Hawaii longline fisheries (deep-set and shallow-set combined), 1994-2009.
Source: NMFS unpublished data

In 2009, the Council also recommended requiring American Samoa longline fishing vessels when fishing in the EEZ around American Samoa follow gear modifications to ensure that longline gear is fished at depth below 100 m. This measure is intended to reduce sea turtle interactions (primarily green sea turtles) with the longline fishery. Following the completion of a no-jeopardy biological opinion on September 16, 2010, NMFS implemented the Council's recommended regulations on this issue in 2011 (76 FR 52888). Since implementation, the fishery has had lower interaction rates with green sea turtles.

Council Sea Turtle Conservation Projects

The Pacific loggerhead and leatherback recovery plans identify several actions that can be taken to assist in recovering Pacific leatherback and loggerhead turtles (NMFS and USFWS 1998a; NMFS and USFWS 1998b). Among these activities are eliminating turtle and egg harvest, reducing nest predation by domestic and feral animals, protecting nesting beaches from erosion and human disturbance, collecting biological information on nesting turtle populations, educating local communities on the value of conserving sea turtles, and monitoring nesting activity to identify important nesting beaches (NMFS and USFWS 1998a; NMFS and USFWS 1998b). Both plans recognize that increasing hatchling production at nesting beaches is "[o]ne of the simplest means to enhance populations…" (NMFS and USFWS 1998a; NMFS and USFWS 1998b).

To that end, the Council has funded and partnered with several sea turtle conservation projects to assist in the long-term enhancement and recovery of loggerhead and leatherback sea turtles. Protection of nesting beaches in Japan and reducing bycatch and mortality in Baja California Mexico, for example, are specifically intended to benefit the loggerhead population that interacts with the fishery. Similarly, protecting nesting beaches and reducing mortality in Papua Barat Indonesia and Papua New Guinea are designed to benefit the leatherback populations that primarily interact with the fishery.

The Council's conservation projects are increasing hatchling production to varying degrees and reducing juvenile or adult mortality, and, consistent with their recovery plans, are making contributions to the recovery of loggerhead and leatherback turtles in the Pacific. It is generally accepted that only one turtle out of 1,000 eggs will reach adulthood. The Council's leatherback nesting beach conservation project in Wermon, Papua Indonesia is estimated to have conserved 397 adult leatherback turtles since 2004 (WPFMC 2009b). Such nesting beach projects in Papua Barat have been shown to produce over 10 times as many adult females for the same cost as the cost of protecting female sea turtles through current Hawaii shallow-set longline regulations aimed at reducing bycatch (Gjertsen 2008). Similarly, the Council's loggerhead nesting beach conservation project in Japan is estimated to have conserved 181 adult loggerhead turtles since 2004. In addition, in 2007, the Council's conservation project in Baja Sur, Mexico has resulted in several highline fishermen agreeing to not fish within the high density sea turtle area with gillnets and longline gear. It is estimated that approximately 700-900 loggerheads may be spared per year because of this agreement (Peckham, Pro Peninsula, pers. comm., December 2007).

As such, these important conservation accomplishments are assisting in fulfilling the goals of each ESA turtle recovery plan. Indeed, the applicable sea turtle recovery plans explain that increases in hatchling survival "enhance populations," and recognize such increases as important steps to achieving recovery (NMFS and USFWS 1998a; NMFS and USFWS 1998b). Based on the successful results of the projects, the Council's conservation projects are likely contributing positively to cumulative impacts on the loggerhead and leatherback populations.

Transferred Effects of Regulatory Regimes

An important aspect of past and present regulatory regimes is that of transferred effects. Transferred effects are indirect effects that may occur outside of the managed area as a result of management actions within the managed area. Adverse transferred effects may occur as a result of management actions intended to reduce adverse impacts on protected or managed species in a discrete fishery, but actually promote and increase adverse impacts on other populations. Transferred effects may affect the ultimate balance of environmental impacts, unintentionally driving the system in the opposite direction from the intent of the management measures when taken and evaluated in isolation. Beneficial transferred effects may also occur. For example, gear innovations and management approaches demonstrated to be effective in one fishery, might be transferred to another fishery and help to promote appropriate management of that resource. To this end, the Council has sponsored the International Fishers Forums series to spread effective gear technology around the world.

It is believed that adverse transferred effects resulted from the 2001-2004 closure of the Hawaii shallow-set longline fishery, and the current highly restrictive annual sea turtle hard caps, increased reliance on imported swordfish supplies from areas with potentially higher protected species interactions. After comparing bycatch rates, Rausser et al. (2008) found that the 2001 closure had paradoxically resulted in substantially greater sea turtle bycatch suggesting a significant adverse impact on sea turtle populations. Recognizing limitations in data for foreign fishery bycatch, Rausser et al. (2008) conservatively estimated a turtle bycatch rate per 1,000 hooks of 2.35 in Ecuador, 1.8 in Panama, 0.0031 in New Zealand, and 0.0613 in Vietnam. Compared to the fishery's bycatch rate of 0.1738 pre-2004 regulations, Rausser et al. (2008)

concluded that the 2001 fishery closure led to a net increase of 1,835 interactions and 660 turtle mortalities per year.[45] Assuming that, absent a closure, the fishery would have operated during that time under the types of gear and operational restrictions now in place (catching just 0.019 turtles per 1,000 hooks[46]), the closure resulted in a net increase of 2,237 interactions and 805 turtle mortalities per year (Rausser et al. 2008). As documented by Rausser et al. (2008) and Sarmiento (2006), the paradoxical result of such regulatory restrictions imposed in the interest of sea turtle conservation is, conservatively, hundreds of additional sea turtle mortalities per year.

More recently, Chan & Pan (2012) found strong spillover (market transfer and/or production displacement) effects from regulation of the Hawaii shallow-set longline fishery for swordfish, resulting in more sea turtle bycatch from foreign fisheries as Hawaii swordfish production declined. Conversely, Chan & Pan concluded that the expansion of the Hawaii-based shallow-set fishery would result in a positive spillover effect for turtles. Specifically, Chan & Pan projected a beneficial effect when the Hawaii shallow-set longline fishery produces 5,461 mt of swordfish and there is a one-to-one displacement of foreign fishery swordfish production serving U.S. markets, which results in proportionately fewer sea turtle interactions (Chan and Pan 2011). Chan & Pan further conclude that the expansion of the Hawaii-based shallow-set fishery to 5500 sets, with its historical contribution to the U.S. market, is likely to cause a reduction in imports from less turtle-friendly swordfish fisheries, thereby decreasing the overall sea turtle bycatch associated with U.S. consumption of swordfish (Chan & Pan 2011).

4.2.2.1.2 External Factors

Existing threats that are common to all species of sea turtles include:

- human use and consumption- legal and illegal harvest of adults, juveniles and/or eggs
- sea turtle nesting and marine environments, including directed takes, predation, and coastal habitat development
- marine debris (entanglement and ingestion)
- incidental capture in fisheries
- fluctuations in the ocean environment
- climate change

Human Use and Consumption

Globally, sea turtles have been exploited for their meat, eggs, shell, leather, and oil for centuries. Archaeological evidence suggests both over fishing that lead to decimation of localized populations as well as possible evidence of implemented conservation measures (Frazier 2003, Woodrom-Luna 2003a *in* WPRFMC 2004 Woodrom-Luna 2003b, Lutcavage et al. 1997, McCoy 1997, Nietschmann 1973). The oldest archaeological evidence of uses of turtles by human comes from the Arabian Peninsula dating about 5000 B.C. (Frazier 2003). The increase in global trade and money-based economies may have helped shape sea turtle consumption such that communities who previously used sea turtles for subsistence might now trade and sell sea turtles and their by-products for financial gain (Balazs 1995, Campbell 2003, Nietschmann 1979).

[45] Rausser et al. (2008) assumed a mortality rate for foreign fleets similar to that assumed for the Hawaii fishery prior to the 2004 regulations, when in fact they are likely higher where turtles are often kept as food.

[46] The WCPFC has adopted this rate as the minimum interaction rate for shallow-set fisheries operating in the WCPO, above which they have to conduct mitigation measures such as circle hooks and fish bait.

Sea Turtle Nesting and Marine Environments
The degradation of nesting habitats due to coastal development poses a serious and detrimental impact to sea turtles (Lutcavage et al. 1997, Spotila et al. 1996). The global impact to turtles, other than in a few isolated cases, remains predominantly unquantified. Nesting beach threats are brought about through habitat degradation from urban development, agriculture activities, timber harvest, mining, pollution, beach armoring, sand mining, and vehicular traffic on beaches, artificial lighting and direct impacts through human presence (Mitchell and Klemens 2000). Additional anthropogenic near shore threats, other than fishery impacts, also include dredging activities and boat strikes.

Beach armoring consists of hardening structures (concrete sea walls, wooden walls, rock revetments, and sandbag structure) meant to protect coastlines from erosion; however, it also results in the elimination of nesting habitat (Schroeder et al. 2000, Mosier and Witherington 2002). Artificial lighting disrupts critical adult nesting behavior and the nocturnal sea-finding behavior of hatchlings (Lutcavage et al. 1997).

Pollution, Marine Debris, and Entanglement
Sea turtles can achieve life spans longer than 50 years and thus have a potential to bio-accumulate heavy metals and pesticides (Lutcavage et al. 1997). Pollution and contaminate effects are difficult to quantify; however, chronic pollution from industry, agriculture and urban runoff are known to negatively impact sea turtles (Lutcavage et al. 1997). Pollutants, which may function to compromise a turtle's immune system, have been found in eggs, gonads, fat liver, muscle, scutes, and tissues of turtles, and pollutants are further implicated in disease expression such as fibropapilloma (Seminoff et al. 1999, Work and Balazs 1998, Ceron et al. 2000, Sakai et al. 1995, Sakai et al. 2000).

Reports have documented that marine pollution by plastic debris, tar balls, heavy metals and persistent organochlorine compounds are of great concern and may play a role in declining populations of sea turtles (Bjorndal et al. 1994, Carr 1987, Musick et al. 1995). Plastics are the most abundant type of anthropogenic debris found on beaches and in the oceans (Lutcavage et al. 1997). Balazs (1985) documented 79 cases of ingested plastics and 60 cases of entanglement in marine debris by sea turtles. Published reports of debris ingestion exist for all sea turtle species in all life stages. However, the dependence of pelagic juveniles upon convergence zones, where floating debris concentrates, and their omnivore foraging strategy leave pelagic turtles most susceptible to debris ingestion (Lutcavage et al. 1997, Witherington 2002).

Pollution and marine debris on beaches can cause physical obstructions and prevent beach access by adults or inhibit hatchlings from reaching the sea (Sarti et al. 1996). Numerous reports also exist implicating both ingested plastics and entanglement in the death of turtles (Balazs 1985, Chatto 1995, Bjorndal et al. 1994, Wallace 1985, Almengor et al. 1994, Mrosovsky 1981). Small quantities of ingested debris can kill turtles by obstructing the gut (Bjorndal et al. 1994), and entanglement in marine debris or derelict fishing gear can result in reduced mobility, making a turtle unable to feed, breathe, or flee from predators (Balazs 1985). Derelict fishing gear, in particular monofilament line, is one of the most commonly encountered anthropogenic debris items that entangle turtles and may account for 68 percent of all entanglement cases (NRC 1990,

Lutcavage et al. 1997). Trailing debris may trap turtles between rocks or ledges resulting in death from drowning, constrict the neck and/or flippers, amputate limbs, and consequently lead to death from infection (Lutcavage et al. 1997, Balazs 1985).

Fluctuations in the Ocean Environment

Ocean climate fluctuations that change the habitat quality or the prey availability of sea turtles have the potential to affect their short or long-term distribution and abundance. Changes in oceanographic conditions may also alter rates of incidental takes of sea turtles in commercial fisheries. For example, sea turtles are known to follow temperature and chlorophyll fronts that may also be areas where fisheries are concentrated, and the overlap of fishing effort and foraging animals may result in increased interactions (NMFS 2000). The magnitude of potential effects is uncertain but this factor could contribute to cumulative effects on sea turtles.

Global Climate Change and Increasing Sea Surface Temperatures

Climate change may affect sea turtles in the following manner: 1) changes in hatchling sex ratios as a species that exhibits temperature-dependent sex determination; 2) loss of nesting beach habitat due to sea level rise; 3) changes in nesting behavior that correlate with fluctuations in sea surface temperature; and 4) alterations to foraging habitats and prey abundance resulting from global climate change. It is not possible to predict what specific impacts will occur to affect sea turtles; thus continued research will be needed track the status of sea turtle populations to monitor nesting success, migration and foraging habits, and on the impacts of fisheries on sea turtles.

Incidental Takes of Sea Turtles in Other Fisheries

The incidental mortality of all species of marine turtles in commercial fishing operations has long been recognized as a serious threat to the stability of those populations (NMFS and USFWS 1998a, 1998b, 1998c, 1998d, 1998e; National Research Council, 1990). In some instances, the effect of fishery mortality has a higher impact on population stability than many other sources of mortality (e.g., extensive egg harvest, nesting habitat destruction) because fisheries impact larger size/age classes of sea turtles. The effect of mortality in this size/age class is particularly damaging, as these turtles have some of the highest value to the population in terms of reproductive potential (Crouse et al. 1987; Crowder et al. 1994). Larger turtles not yet mature have survived many years of selective pressures but have not yet begun to support the population by reproducing themselves. Thus, while anthropogenic mortality may occur at many size/age classes in marine turtle population, it has been demonstrated that a relatively small anthropogenic mortality at these larger size/age classes will drive a population to extinction - despite almost complete protection of eggs and nesting females on the nesting beaches (Heppell et al. 1996).

None of the alternatives, including the preferred, would result in substantial changes to western Pacific pelagic longline fisheries. Therefore, NMFS and the Council do not anticipate substantial impacts to sea turtles.

4.2.2.2 Marine Mammals

4.2.2.2.1 Past, Present, and Reasonably Foreseeable Future Management Actions

The Marine Mammal Protection Act (MMPA) requires FEP-regulated fisheries be evaluated by NMFS for impacts on marine mammals and be designated as Category I, II, or III (with Category

III having the lowest impact). The fishery classification criteria consist of a two-tiered, stock-specific approach that first addresses the total impact of all fisheries on each marine mammal stock, and then addresses the impact of individual fisheries on each stock. Under existing regulations (50 CFR 229.4-5), to lawfully incidentally take a marine mammal, all fishers participating in Category I or II fisheries must register under the Marine Mammal Authorization Program (MMAP), obtain an Authorization Certificate, carry an observer if requested by NMFS, and comply with any applicable take reduction plans. All commercial fishers, regardless of their fishery category, must report to NMFS any interactions with marine mammals.

The Hawaii longline fishery (deep-set and shallow-set) was previously listed as a single Category I fishery, primarily due to interactions between the deep-set (tuna) fishery and false killer whales (*Pseudorca crassidens*) within EEZ waters around the Hawaiian Islands. Dolphins and false killer whales are also known to take bait and catches from longline and bottomfish fishing lines, most often without becoming hooked or entangled. The Hawaii longline fishery is in compliance with the MMPA in that it is subject to observer coverage, participants must obtain an Authorization Certificate and report any interactions, and the fishery operates under a Take Reduction Plan for false killer whales.

NMFS determined in its List of Fisheries for 2009 (73 FR 73032, December 1, 2008) that the Hawaii deep-set and shallow–set longline fisheries are considered as separate fisheries, with each to be categorized independently based on its characteristics and interactions with marine mammals. The deep-set fishery (which has a history of interacting with false killer whales and exceeding the stock's potential biological removal (PBR) level) is a Category I fishery. The shallow-set fishery is a Category II fishery. Both fisheries are included in the scope of the False Killer Whale Take Reduction Plan; however, the measures implemented mainly address take reduction in the Hawaii deep-set fishery. A final rule for the Take Reduction Plan was published in November, 2012. The measures affect the operation of the fishery and include gear requirements (weak circle hooks and strong leaders), longline prohibited areas, training and certification in marine mammal handling and release, captains' supervision of marine mammal handling and release, and posting of NMFS-approved placards on longline vessels. The rule also recommends research and data collection programs and revises the boundaries of the longline prohibited area around the MHI to be consistent with the prohibited area established under the FKWTRP regulations. The Take Reduction Plan will not affect NMFS' or the Council's ability to manage Territory catch or effort limits and agreements nor change the outcome of this action.

The American Samoa longline fishery has been Category II since the 2010 LOF (74 FR 58859, November 16, 2009) by analogy to the Hawaii longline fisheries and its interactions with rough-toothed dolphins and false killer whales. The Hawaii shortline fishery is also listed as Category II by analogy to the Hawaii longline fisheries and anecdotal reports of interactions with "blackfish." Several high seas fisheries in the western Pacific region are classified as Category II, and all other fisheries in the region are classified as Category III fisheries (see the 2012 LOF, 76 FR 73912, November 29, 2011, for further information).

Some marine mammals (e.g., Hawaiian monk seals, humpback whales, other large whales) occurring in the western Pacific region are also protected under the ESA, and NMFS must ensure that fisheries managed by the Council are not likely to jeopardize the continued existence and

recovery of any threatened or endangered species or result in adverse impacts on the critical habitat of such species. The current NMFS BiOps have concluded that no fisheries managed by the Council are likely to jeopardize the continued existence and recovery of any ESA-listed marine mammal species or result in the destruction or adverse modification of designated critical habitat. NMFS issued a 3-year permit for incidental take of endangered Central North Pacific humpback whales in the Hawaii longline fisheries on May 28, 2010, based, in part, on a determination that mortality and serious injury of humpback whales incidental to the fishing operations would have a negligible impact on the stock (75 FR 29984). On June 3, 2013, NMFS reinitiated consultation on the Hawaii deep-set longline fishery in response to the listing of the MHI insular false killer whale DPS as endangered, and based on a single interaction with a sperm whale.

Future Actions

Through data collected from observer programs and other sources, the Council and NMFS will continue to monitor interactions between managed fisheries and marine mammals. NMFS scientists in association with other researchers will continue to collect biological samples to refine stock definitions as well as conduct surveys to monitor populations. The Council and NMFS will continue to conduct workshops with participation from fishermen to develop mitigation methods as appropriate, and NMFS will continue to conduct mandatory annual protected species workshops for all longline permit holders that teach how to identify marine mammals and how to reduce and mitigate interactions. As noted above, NMFS recently published a False Killer Whale Take Reduction Plan in late 2012 to address incidental serious injuries and mortalities of false killer whales in the Hawaii longline fisheries. NMFS will monitor the effectiveness of the Plan and, if necessary, amend the Plan to ensure its take reduction goals are achieved.

None of the alternatives, including the preferred, would result in substantial changes to western Pacific pelagic longline fisheries. Therefore, NMFS and the Council do not anticipate substantial impacts to marine mammals.

4.2.2.3 Seabirds

4.2.2.3.1 Past, Present, and Reasonably Foreseeable Future Management Actions

Prior to 1999, the shallow-set fishery was estimated to interact with around 2,000 albatross (black-footed and Laysan) per year. The short-tailed albatross, which is listed as endangered under the ESA, is thought to forage in areas where the shallow-set fishery operates; however, no interactions between the short-tailed albatross and the Hawaii longline fleet have ever been reported or observed. In 2002, the Council amended the Pelagics FEP to require Hawaii longline vessels to use known seabird mitigation measures that were expected to significantly reduce seabird interaction rates. These measures include blue-dyed bait, night-setting, line shooters, and weighted branch lines. In 2005, the Council amended the Pelagics FEP to allow longline vessels to side-set in lieu of most required Alternative measures (Figure 17).

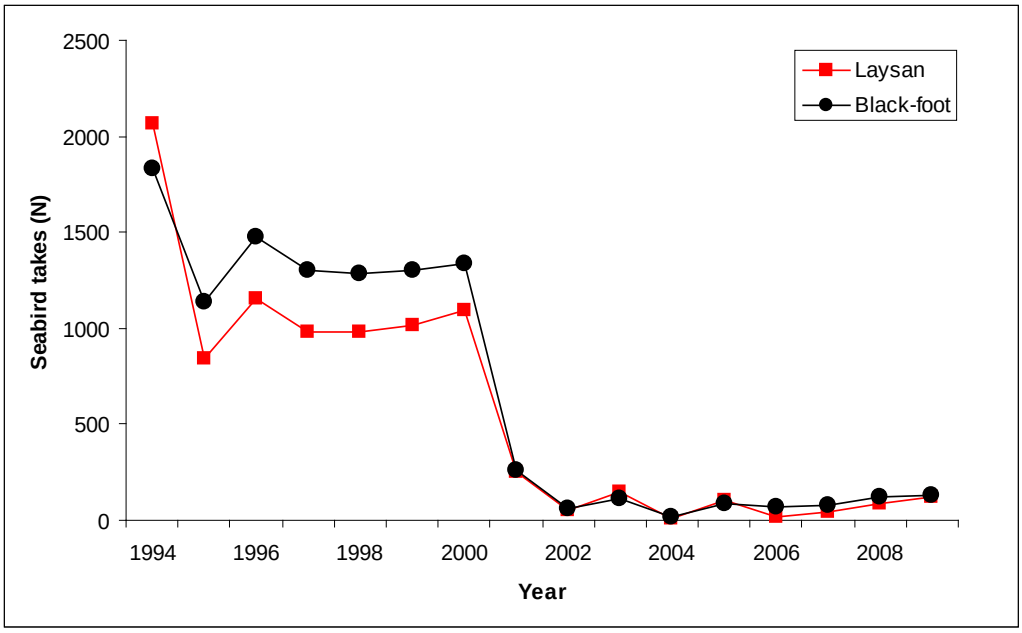

Figure 17: Annual estimated number of interactions between the Hawaii longline fisheries (deep-set and shallow-set) and Laysan and black-footed albatrosses.
Source: NMFS unpublished data

The introduction of the above regulations in the Hawaii longline fishery reduced the seabird interaction rate by 67 percent on deep-sets (Gilman et al. 2008). The shallow-set fishery typically sets at night and hauls during the day; therefore, most of the interactions occur when fishermen retrieve the gear and birds are actively feeding. The 2011 shallow-set fishery interacted with 49 Laysan albatrosses and 19 black-footed albatrosses and 78 percent of these seabirds were released injured and alive. In the 2011 deep-set fishery observers documented interactions with 32 Laysan albatrosses, 13 black-footed albatrosses, and three sooty shearwaters; four percent of seabirds were released injured and alive.

In August 2012, the USFWS issued a special purpose permit to NMFS under the authority of the Migratory Bird Treaty Act and 50 CFR § 21.27. The 3-year permit authorizes the Hawaii-based shallow set longline fishery to incidentally interact with migratory seabirds, primarily Laysan and black-footed albatrosses. The permit continues the current management regime of the fishery, including the seabird deterrence regulations currently required by NMFS regulations and the 2012 USFWS BiOp (USFWS 2012) referenced above, with no changes to the operation of the fishery during the permit period (see 77 FR 50153). Compliance with the terms of the permit would be considered in the decision to renew any future permit.

Regardless of which alternative is selected, the Council and NMFS will continue to monitor seabird interactions with managed fisheries, and take appropriate action as necessary.

4.2.2.3.2 External Factors

Albatross populations in the North Pacific Ocean live in an environment that has been substantially affected by anthropogenic factors, some of which have been mitigated by conservation and management measures. Major activities of the past that are part of the existing baseline include the intensive collection of short-tail albatross feathers in Japan during the early 20 century; the Battle of Midway during World War II and subsequent U.S. military use of Midway Island; and Asian high-seas drift net fisheries during the 1980s.

Degradation of Albatross Nesting Habitats
Overall, negative human impacts to albatross nesting habitats are abating in Japan and the NWHI. Currently active breeding colonies for the short-tailed albatross in Japan and the major nesting colonies of the black-footed and Laysan albatrosses in the NWHI are part of government refuges managed for the conservation of wildlife. Thus, human access and associated disturbance are limited. Due to management changes at Midway Atoll National Wildlife Refuge, air traffic and visitor use are considerably reduced, diminishing the threats to seabirds from air strikes and ecotourism. Cruise boats occasionally land visitors at Midway and the airfield is maintained as an emergency landing site, so there is still potential for visitor-related and aircraft-related impacts.

Exposure to lead and PCBs remain hazards to seabirds at the decommissioned military base in the Midway Island National Wildlife Refuge and the decommissioned LORAN station at Tern Island, French Frigate Shoals. Despite previous lead remediation (1994-1997) on Midway, Laysan albatross chicks continue to be exposed to substantially elevated levels of lead from the ingestion of lead-based paint from deteriorating buildings. This represents a serious health threat based on several reports of increased morbidity and mortality of Laysan albatross chicks nesting in the vicinity of buildings. The death of Laysan albatross chicks in a species of low productivity impedes efforts to conserve this species (Finkelstein et al. 2003). The U.S. Fish and Wildlife Service (USFWS) is currently attempting mitigate the lead paint problem. The potential of Midway Atoll NWR to serve as a nesting colony for short-tailed albatross, through either natural colonization or propagation efforts remains unknown (USFWS 2000).

Continued Exposure to Environmental Contaminants, Especially PCBs
Black-footed and Laysan albatrosses from the North Pacific Ocean contain higher levels of organochlorine residues (polychlorinated dibenzo-p-dioxins, PCDDS; polycholorinated dibenzofurans, PCDFs; and polychlorinated biphenyls, coplanar PCBs) than albatrosses in the South Pacific Ocean. Black-footed albatross have 3-4 times more mercury and organochlorines than Laysan albatross (Finkelstein et al. 2006). Residue levels in albatrosses from the remote North Pacific Ocean far from point sources of pollution are comparable to or higher than those in terrestrial and coastal birds from contaminated areas in developed nations. The long lives of albatrosses and ingestion of plastic resin pellets that account for a high percentage of marine debris in some areas of the ocean are plausible explanations for accumulation of these persistent contaminants in albatrosses (Tanabe et al. 2004). Over the long term, high levels of PCBs may negatively affect the health of North Pacific Ocean albatross populations.

Continued Exposure to Concentrations of Small Plastic Debris in the North Pacific Ocean
Studies in the last 25 years have documented the prevalence of plastic in the diets of many seabird species in the North Pacific Ocean. Plastics may be consumed directly because particles resemble prey items or, indirectly, by eating prey attached to plastics or with plastics in their gut. In turn, adult seabirds may pass plastics on to chicks by regurgitation.

Studies of the distribution and abundance of small plastic particles in the North Pacific Ocean report that pelagic plastic is most abundant in the central subtropical and western North Pacific Ocean. User plastics, small, weathered remnants of larger manufactured items that are discarded or lost at sea by fishing vessels and shipping traffic, are the predominant type of plastic ingested by seabirds in the central North Pacific Ocean (Day and Shaw 1987). Currents and convergences of the region concentrate marine debris at levels that appear higher than for any other oceanic regions of the world and leading to some of the highest global incidence of plastic ingestion in central North Pacific Ocean seabirds (Robards et al. 1997).

Available evidence suggests that plastics are damaging to seabirds when they are consumed in sufficient quantities to obstruct the passage of food or cause stomach ulcers, through bioaccumulation of polychlorinated biphenyls (PCBs), toxic effects of hydrocarbons, diminished feeding stimulus, reduced fat deposition, lowered steroid hormone levels and delayed reproduction. However, acute effects of plastic ingestion are rarely observed and a search for correlations between plastic load and health indices for wild populations of seabirds has been generally unsuccessful in producing any more than indirect evidence of chronic health effects. Spear et al. (1995) is the only investigation to show a statistically significant negative correlation between plastic loads and seabird body weight.

Incidental Seabird Mortality in Non-FEP Regulated Longline Fisheries
Black-footed and Laysan albatross, and occasionally short-tailed albatross, are incidentally captured in Alaskan demersal longline fisheries. NMFS published a final rule on January 13, 2004, to revise regulations requiring seabird avoidance measures in hook-and-line fisheries of the Bering Sea and Aleutian Islands management area and Gulf of Alaska, and in the Pacific Ocean halibut fishery in U.S. Convention waters off Alaska. This action is intended to improve the current requirements and further mitigate interactions with the short-tailed albatross and other species of seabirds in hook-and-line fisheries in and off Alaska (69 FR 1930, Jan. 13, 2004). Reducing incidental seabird catch in U.S. fisheries alone will not significantly reduce longline fisheries as a source of mortality to North Pacific albatross populations. The Hawaii longline fleet is a small component of total pelagic longline fishing effort in the North Pacific Ocean. Pelagic longline fishing effort by Asian fleets continues to expand in the North Pacific Ocean. Some of these fleets are known to set gear using “shallow” swordfish and “mixed” tuna/billfish methods (Bartram and Kaneko 2004) that have levels of interactions with seabirds 40-70 times higher than deep-set methods (Cousins et al. 2000). For example, since 1997, fishing by the Taiwan freezer longline fleet targeting albacore tuna has been increasing in waters north of the Hawaiian Islands. In 2000, effort by this fleet between 25° and 40° N and between 180° and 140° W exceeded 6 million hooks (Wang et al. 2002).

The National Research Institute of Far Seas Fisheries of Japan’s Fisheries Research Agency has initiated scientific activities to develop, evaluate and improve various kinds of seabird interaction

avoidance methods. Of the many measures tested in Japan, blue-dyed bait has proven to be the most effective in reducing visibility of baits and in preventing bait-taking by seabirds. Japan's National Plan of Action for Seabirds requires longline vessels operating north of 20° N in the North Pacific Ocean to adopt at least one interaction avoidance measure to avoid interactions with seabirds. Longline vessels that operate within 20 miles of Torishima Island, the major breeding island of the short-tailed albatross, are required to adopt two or more seabird interaction avoidance measures (Kiyota et al. 2003).

The U.S. is implementing a National Plan of Action to reduce the incidental catch of seabirds in U.S. fisheries. Other than New Zealand, Japan and the U.S., few national governments are engaged in policy-making, research, monitoring and enforcement to reduce incidental seabird catches by fishing fleets under their flags. Negative effects on seabird populations remain high because the majority of North Pacific longline fishing continues without the use of seabird interaction avoidance measures.

Global climate change and seabirds

The effects of climate change on the three species of albatrosses are uncertain at this time. However, climate change does have the potential to affect both breeding and non-breeding phases of albatross life history through direct and indirect effects.

The most obvious consequence of global warming is sea level rise. About 99 percent of Laysan albatrosses and 96 percent of black-footed albatrosses breed in the Northwestern Hawaii Islands (NWHI) (Naughton et al. 2007). If sea levels rise, the amount of land area for nesting will be greatly reduced as described by Baker et al. (2006). Albatrosses are known for high breeding site fidelity. Given high site fidelity and the geographic isolation of these colonies, it is unlikely that these two species of albatrosses could easily relocate their breeding sites. The populations at these colonies have been monitored for at least 50 years (Naughton et al. 2007) and will continue to be monitored so changes in the number of breeding pairs would likely be detected. The third species of management concern because it has a potential to interact with longline fisheries is the ESA-listed short-tailed albatross, would likely be little affected by sea level rise (Naughton et al 2008). Its main breeding colony at Torishima (30° 28' 48" N Latitude and 140° 18' 22" E longitude) is relatively high in elevation (394 m/1,293 ft) and has steep topography.[47] These characteristics would logically minimize the potential for sea level rise to reduce the amount of area available for nesting. In addition to the potential for sea level rise, climate change may affect foraging success. Changes in sea level and availability of suitable nesting habitat would also be detected by the USFWS, which manages the albatross colonies. Ongoing monitoring would allow wildlife and fishery managers to respond to any new adverse impacts to seabird populations. For these reasons, regardless of which Alternative is selected, the longline fisheries are expected to continue to be sustainable and impacts on seabirds would be addressed through future management actions. For this reason, none of the alternatives would interact with impacts of climate change on albatrosses, to result in a large and adverse cumulative effect.

It is known that short-term (1-3 years) climate changes such as El Niño-Southern Oscillation can severely affect some seabird populations. These changes in weather can be closely correlated with reduced adult survival and breeding success in some seabird species due to reduced

[47] http://www.volcano.si.edu/world/volcano.cfm?vnum=0804-09, accessed on 7/26/08.

foraging success (WGSE 2008, Schreiber 2002). However, these changes may benefit other species (WGSE 2008). Seabird populations have evolved to survive these short-term changes. However, it is hypothesized that longer term changes in weather could have much more deleterious effects on some seabird populations (WGSE 2008, Schreiber 2002).

In addition to sea level rise, climate change could affect seabirds in the following three ways. First, it could cause changes to the prey base reducing or eliminating primary prey items from the environment. This would affect both adult survival and breeding success. Second, climate change has the possibility of causing seabirds to change their breeding periods and cause temporal mis-synchronization with usual prey items during critical chick rearing periods (WGSE 2008). Finally, climate change may cause oligotrophic tropical and sub-tropical water to expand reducing primary productivity that is the base of oceanic food webs (Polovina et al. 2008). Expansion of these poorly productive areas potentially higher energetic costs for seabirds as they would need to increase foraging effort in nutrient poor waters or fly further distances to more productive waters.

The trophic effects of climate change on North Pacific albatrosses are unclear at this point. The three species breed in tropical and subtropical areas, but they travel great distances to temperate and cold temperate waters to forage. Albatross distributions tend to be close to nesting colonies during the breeding seasons and closer to subtropical-temperate oceanic transition zones and continental shelves during non-breeding periods (Naughton et al. 2007; Naughton et al. 2008). It is possible that in the future, climate change could induce food web regime changes affecting albatrosses. However, the nature of these effects is unclear. Currently, there have been no wide spread population declines seen for any of the three North Pacific albatross species. One black-footed albatross colony at Laysan Island has seen slight declines, but there is no evidence that it is tied to climate change (Naughton et al. 2007; Naughton et al. 2008). The ESA-listed short-tailed albatross has seen a steady increase in its numbers since 1947 (Naughton et al. 2008).

In summary, it is not possible to predict with specificity the impact of future climate change on seabirds. However, these effects would be considered in future management of the shallow-set longline fishery. Research will continue to track the status of seabird colonies, populations, nesting success, migration and foraging habits, and on the impacts of fisheries on seabirds. Information from the Hawaii shallow-set longline fishery will continue to be collected and analyzed through observer reports, and fishery participant's logbook accounts of interactions with seabirds. If there were changes to the status of seabirds or the fishery interactions with seabirds, the Council and NMFS would work to analyze management options and potentially implement new fishery regulations that will help ensure the fishery is sustainable. In the case of the listed short-tailed albatross, if there were to be changes to the status of this species or to the fishery's interaction with it, NMFS would reinitiate consultation to ensure the fishery considers the impacts to this listed species. Therefore, the potential impacts of climate change on seabirds has been considered and will continue to be part of the environment affecting seabirds and the longline fishery that must be addressed through adaptive management regardless of which alternative is implemented.

None of the alternatives, including the preferred, would result in substantial changes to western Pacific pelagic longline fisheries. Therefore, NMFS and the Council do not anticipate substantial impacts to seabirds.

4.2.2.4 Cumulative Effects

As previously described, the Council and NMFS have taken significant steps to reduce sea turtle and seabird interactions within several FEP managed fisheries, and ongoing work is being conducted to further reduce interactions. FEP managed fisheries are being held as the benchmark (WCPFC Science Committee 2009 Report) for successful sea turtle, and seabird interaction reductions, and the successes of the Council and NMFS' work are being transferred to other fleets in the region. In addition, NMFS published a final rule for the False Killer Whale Take Reduction Plan, as required under the MMPA, to reduce false killer whale interactions in the Hawaii deep-set and shallow-set longline fisheries (77 FR 71260, November 29, 2012). Exogenous factors continue to be the biggest threat to protected species but implementing the preferred Alternatives is not expected to increase interactions with protected species beyond authorized levels. Even though U.S. and Territory longline fisheries interact with protected species on a rare basis, it is believed that U.S. vessels have a significantly lower negative impact on protected species when compared with less regulated foreign vessels due to the use of proven measures to avoid and reduce fisheries interactions with protected species.

Regardless of the Alternatives selected, including the no-action Alternatives, all U.S. longline vessels will continue to be subject to strict measures to avoid and reduce protected species interactions and to reduce the severity of interactions when they do occur. Impacts to protected species under all of the action Alternatives will be similar. The levels of interactions that are authorized in each fishery do consider the estimated impacts on the same species by all fisheries where the domestic fishery operates, as well as cumulative effects. Cumulative impacts of the U.S. fleets have been considered and authorized in the BiOps, and determinations of impacts to MMPA-protected species to a lesser extent, that apply to the domestic longline and other pelagic fisheries in the western Pacific region.

4.2.3 Cumulative Effects to Fishery Participants and Communities

4.2.3.1 Past, Present, and Reasonably Foreseeable Future Actions

The 1996 reauthorization of the Magnuson-Stevens Act required that the Council identify fishing communities under its jurisdiction. A fishing community, as defined by the Magnuson-Stevens Act, means "a community which is substantially dependent or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes vessel owners, operators, and crew and Unites States fish processors that are based in such a community" (16 U.S.C. § 1802). The Council has identified American Samoa, CNMI, Guam, and each of the inhabited Hawaiian Islands as fishing communities affected by this action.

In accordance with the Magnuson-Stevens Act, the Council and NMFS will continue to assess the impact of management actions on fishery participants and fishing communities, and where

possible, minimize negative effects while developing appropriate measures for the conservation and management of fishery resources.

4.2.3.2 External Factors

There are a number of wide-ranging factors (that change over time) that have the potential to affect fishing participants as well as fishing communities. Current factors may include, but are not limited to, high fuel costs, high costs of other equipment and supplies, increased seafood imports, and restricted access to traditional fishing grounds. High fuel and materials/supply costs affect fishing participants by increasing the costs to go fishing. The effect is that fishery participants reduce the number of fishing trips, switch to less fuel-intensive fisheries, or simply do not go fishing at all. Some longline fishing in the western Pacific has shown contraction in recent years, with an example being longline fishing on small vessels in the American Samoa longline fishery.

The amount of imported seafood is also increasing, and where the U.S. now imports nearly 85 percent of consumed seafood.[48] Increased seafood imports are significant as the level of imports relates to market competition, where a glut of foreign fish products can flood the market and lower ex-vessel prices for U.S. fishermen. Once market channels are lost to imported seafood products it may also be hard for fishery participants to regain those channels. As described previously, the Territories face significant barriers to developing responsible longline fisheries and include lack of infrastructure, transportation, and access to markets.

In addition, a reliance on foreign imports by the U.S. Territories is believed to impact local food security. At a broader level, a recent study by the Great Britain's Royal Institute of International Affairs (Ambler-Edwards et al. 2009) has identified seven fundamental issues, which affect food production and food security. These are as follows:

1. Rapidly rising world population (population growth rates in the western Pacific region range from 1-7%)
2. Nutrition transition, i.e., a shift from traditional staples to processed foods high in sugars, oils, and fats
3. The rising costs of energy (oil, gas, electricity)
4. Limited availability of agricultural land (especially critical on small islands)
5. Increasing demands for water for agricultural and food production
6. Climate change
7. Labor and urban drift

All of these seven fundamentals are especially critical to the small island archipelagos that comprise the Western Pacific Region. The development of domestic sustainable fisheries production in the Western Pacific region would help to mitigate the impacts of most of these fundamental issues by providing increased revenues for communities and developing fisheries that meet domestic consumption needs. Alternatives 1, 3, and 4 would promote potential opportunities to develop fisheries in the Territories that could help offset other factors that are affecting Territory fishing communities.

[48] http://www.fishwatch.gov/farmed_seafood/index.htm

With regards to the Hawaii fishing communities, which also face the issues described for Territory fisheries such as rising operational costs and increasing seafood imports, Alternatives 1, 3, and 4 would provide the Hawaii longline fishery the opportunity to fish year around in the WCPO through agreements with Territories. The Hawaii longline fishery is the largest producer of fresh fish in the State of Hawaii and is an important supplier of quality seafood that supports Hawaii's tourism economy and local seafood market. Alternative 2, which would not allow Territory agreements with Hawaii longline participants, may lead to more foreign imports of bigeye tuna and other pelagic species to fill any market gaps in the Hawaii and U.S. seafood market that would result from a more restricted Hawaii longline fishery.

4.2.3.3 Cumulative Effects

Regardless of which Alternative is selected, western Pacific pelagic fisheries will continue to be managed sustainably. None of the alternatives is expected to result in a large change to the fisheries in terms of area fished, effort, harvests, or protected species interactions.

Alternative 1 allows for the opportunity for the Territories to enter into fishing agreements with FEP-permitted vessels through 2013, but would not allow the Council to recommend and NMFS to specify any catch or effort limits or allocation limits for pelagic MUS. Alternative 2 would not allow Territories to make fishing agreements with FEP-permitted vessels, and would not allow the Council to recommend and NMFS to specify any catch or effort limits for pelagic MUS. Both Alternatives 1 and 2 do not provide long-term stability for fishery participants. Alternative 3, while allowing fishing agreements to occur, would provide minor to moderate benefits to fishery participants and provide some payments to the Sustainable Fisheries Fund, does not provide for enhanced conservation and management oversight, which could result in instability in western Pacific fisheries. Alternative 4 and Sub-Alternative 4(b) are expected to result in the greatest short and long-term benefit to fishery participants by providing the most intensive conservation and management oversight of fishing agreements, managing Territorial catches of bigeye tuna, and long-term stability in the commercial pelagic fisheries. Such stability is expected to result in the lowest amount of cumulative impacts of external stressors on fishing participants and communities, of all of the alternatives, while allowing for the sustainable harvest of bigeye tuna and other pelagic MUS consistent with WCPFC decisions, the Magnuson-Stevens Act, and other applicable laws.

4.3 Environmental Justice

On February 11, 1994, President William Clinton issued Executive Order 12898 (E.O. 12898), "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." E.O. 12898 provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." E.O. 12898 also provides for agencies to collect, maintain, and analyze information on patterns of subsistence consumption of fish, vegetation, or wildlife. That agency action may also affect subsistence patterns of consumption and indicate the potential for disproportionately high and adverse human health or environmental effects on low-income populations, and minority populations. A memorandum by President Clinton, which accompanied E.O. 12898, made it clear that environmental justice should be considered when conducting NEPA analyses by stating the following:

> "Each Federal agency should analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA."[49]

In addition to Hawaii's indigenous and minority population, the American Samoa, CNMI, and Guam-based pelagic fisheries have participants representing a variety of ethnicities that would fall under the minority provisions of the Executive Order. None of the Alternatives are expected to have large impacts to the environment that would result in a disproportionately large and adverse effect on minority or low-income populations. Alternatives 1, 3, and 4 could provide a mechanism to allow Territory agreements to support fisheries development in the Territories, which would positively benefit fishing communities in the Territories, which are comprised of members of minority or low-income populations.

Under Alternative 4, NMFS would approve a process for the Council and NMFS to review and for NMFS to approve an agreement; and for the Council to recommend and NMFS to specify total annual Territorial limits and limits as to how much of the quota that the Territories may assign. Further, NMFS would specify a limit of 2,000 mt of bigeye tuna for Territories for 2014, and would limit to 1,000 mt the amount that the Territories could assign. The preferred Alternative would not result in any large changes to the fishery or to participation in the fishery by any groups. The ability of the Council and NMFS to review and approve agreements, and to review and recommend catch or effort and transfer limits are all expected to result in long term sustainability of the western Pacific pelagic longline fisheries, and further, would not result in a large and adverse environmental impact that would have a disproportional effects on members of environmental justice communities.

Finally, this management action would not affect subsistence fishing in the Territories.

[49] Memorandum from the President to the Heads of Departments and Agencies. Comprehensive Presidential Documents No. 279 (February 11, 1994).

Chapter 5: Consistency with the Magnuson-Stevens Act and Other Laws

5.1 Consistency with National Standards

Section 301 of the Magnuson-Stevens Act requires that regulations implementing any FEP or FEP amendment be consistent with the 10 national standards (NS) listed below.

National Standard 1 *states that conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.*

This action establishes a management framework and uniform region-wide process consistent with WCPFC conservation and management decisions to administer the U.S. Participating Territories' use, assignment, allocation, and management of catch limits of pelagic MUS, or fishing effort limits through agreements with U.S. vessels permitted under the Pelagics FEP. In addition, this action allows the Council to recommend and NMFS to specify catch or effort limits in the absence of WCPFC limits or additional or more restrictive limits than the WCPFC for conservation and management purposes.

The management framework would allow the limited transfer of HMS quota between U.S. fisheries and U.S. Participating Territories through the implementation of specifications of annual catch or effort limits applicable to each of the Territories and annual specifications of maximum transferable limits for Territory agreements. The establishment of a management framework and associated specifications would help prevent overfishing consistent with the conservation needs of the stock as identified in relevant WCPFC conservation and management measures and the Magnuson-Stevens Act, while maximizing the opportunity for harvesting allotted quotas to U.S. fishermen and U.S. Participating Territories. In exchange for the limited opportunity to fish against a Territory's quota, the fishery would make monetary contributions to the Sustainable Fisheries Fund, which would be used to support fisheries development projects identified in the Marine Conservation Plans of the Territories. The framework provides that at least annually, the Council shall review and recommend an annual catch or effort limit for each US participating territory, of which a portion may be made available for allocation under a specified fishing agreement. After considering the best scientific and commercial information available and the conservation needs of the stock, the Regional Administrator would either approve or disapprove the Council's recommendation. In the event of the Regional Administrator's disapproval, no specified fishing agreements would be approved for the fishing year covered by that action.

In addition to establishing the management framework, this action also includes (for 2014) specifications of annual 2,000-mt longline catch limits for bigeye tuna and, as part of that limit, 1,000-mt transferable catch limits for bigeye tuna applicable to each Territory. Although WCPFC does not impose an annual longline limit for bigeye tuna for the U.S. Participating Territories, this action establishes a maximum limit on bigeye tuna catch of 2,000 mt per territory. This action also provides some conservation benefits over the baseline conditions established by Section 113 of CFCAA, which does not limit the amount of HMS quota that may be transferred under Participating Territory agreements. Both limits are subject to annual review

and specification by the Council and NMFS, which facilitates adaptive management and appropriate consideration of the impact of the limits on bigeye tuna stock status.

The United States cannot end bigeye overfishing unilaterally. The Magnuson-Stevens Act exempts stocks including bigeye tuna that are managed under international agreements from the ACL requirement. In the final rule amending National Standard 1 guidelines, NMFS concluded that the intent of MSRA is to "not unfairly penalize U.S. fishermen for overfishing which is occurring predominantly at the international level", and that "applying ACL requirements to U.S. fishermen on just the U.S. portion of the catch or quota, while other nations fished without such additional measures, would not lead to ending overfishing and could disadvantage U.S. fishermen…" 74 FR 3178, 3199 (January 16, 2009). Accordingly, the appropriate inquiry is whether this action to allow the limited transfer of quota among U.S. fisheries and U.S Participating Territories is consistent with the objectives of international decisions to prevent and end overfishing.

WCPFC CMM 2013-01 establishes the objective of eliminating bigeye tuna overfishing by 2017. This action is consistent with this objective. Based on historical operation under Section 113, the Council and NMFS anticipate that up to 1,000 mt of bigeye tuna would be assigned under Territory agreements in any one year and catches by Hawaii and Territory longline fisheries, when combined with U.S. WCPO longline limit for bigeye tuna of 3,763 mt per year (which will be reduced by 11 percent by 2017 to 3,345 mt) would result in F/F_{MSY} of 1.014 by 2017, which is consistent with the objectives of CMM 2013-01. Furthermore, the fractional overage above 1.0 of the projected F/F_{MSY} level if 3,000 mt of bigeye tuna (1.028) was transferred under Territory agreements when added to the U.S. limit of 3,763 mt plus the 2010 fishing conditions falls within the acceptable range for determining that overfishing would not be occurring. Accordingly, this action has negligible impacts on bigeye tuna in terms of overfishing and overfished reference points projected into the future, and in combination with international measures adopted by the WCPFC to eliminate overfishing on bigeye tuna within the WCPO. Therefore, this action is not expected to interfere with the elimination of overfishing under the objectives identified in CMM 2013-01 (see section 4.1.1 and Appendix D for more information).

As a result of stricter measures adopted by the WCPFC in CMM 2013-01 under a phased approach through 2017, bigeye tuna overfishing is anticipated to be eliminated. As shown in the TUMAS projections used in this analysis, the amount of bigeye tuna catch expected under this action (3,673 mt + 1,000 mt), in combination with the fishing conditions that will be resultant from WCPFC conservation and management measures through 2017, will prevent bigeye tuna overfishing under the recent average recruitment scenario. Although the long-term average recruitment scenario identifies continued overfishing under all Alternatives, section 4.1.1 explains that recent average recruitment is believed to be a better representation of current and future recruitment trends, and accordingly greater emphasis is placed on recent average recruitment associated projections to evaluate impacts from the alternatives to future bigeye tuna stock status. Moreover, should future stock assessments and fishing effort data indicate a deterioration of the stock's status, this information will be evaluated in the Council's annual recommendation and NMFS' final action, including the NEPA documentation supporting that action. If the best available information indicates that approval of Territory limits or transferrable limits will interfere with the accomplishment of international conservation and management

objectives for the stock, or otherwise violates the National Standards, then NMFS may disapprove those limits and no fishing agreements will be accepted for that fishing year.

The current WCPFC Conservation and Management Measure for tropical tuna stocks (CMM 2013-01), adopted in December 2013, limits members that harvested less than 2,000 mt of bigeye tuna in 2004 to no more than 2,000 mt for each of the years 2014 through 2017. However, paragraph 7 of CMM 2013-01 does not establish an individual limit on the amount of bigeye tuna that may be harvested annually in the Convention Area by Small Island Developing States and Participating Territories, including American Samoa, Guam, and the CNMI. NMFS and the Council, however, believe it is important that the paragraph 7 exemption not apply to U.S. Participating Territories, since bigeye tuna is currently subject to overfishing. Therefore, NMFS proposes to establish 2,000-mt limits for the U.S. Participating Territories, which are more conservative than what is agreed to for the U.S. Participating Territories by the WCPFC under CMM 2013-01, and thus helps constrain overall bigeye tuna mortality. Furthermore, under the status quo, catches of bigeye tuna by the Territories, including the amount transferable under Territory agreements, are not subject to limits. In order to restrict potential contributions to bigeye tuna fishing mortality from Territory agreements, this action also specifies annual transferable limits of 1,000 mt of bigeye tuna for each Territory with approved agreements with FEP-permitted vessels. The 2,000-mt limits, in conjunction with the 1,000-mt limits that may be allocated under specified fishing agreements (see below), will help ensure stock sustainability under this action.

Consistent with the Findings and Policies of the Magnuson-Stevens Act (section 2 “Findings” para. 10; section 2 “Policy” para. 7) and CMM 2013-07 (Special Requirements of SIDS and PTs) the Council acknowledges that the Territories should be afforded the opportunity to develop their fisheries like other PTs and SIDS within the WCPFC. However, the status of bigeye tuna requires the establishment of appropriate limits, which under the status quo do not exist. This action is necessary to cap the potential contribution to bigeye tuna fishing mortality by Territory fisheries, which include FEP-permitted vessels when operating under a Territory agreement as authorized to under Section 113. This action establishes a stricter management regime than currently exists for SIDS and PTs under WCPFC’s CMMs; therefore, this action offers a model that other SIDS and PTs may emulate domestically to help prevent overfishing of bigeye tuna, while also providing some ability for development of their fisheries.

Longline fisheries in the WCPO targeting bigeye tuna have reduced their catches by approximately 15-20 percent since the WCPFC agreed on conservation and management measure 2008-01 (Pilling et al. 2013; WCPFC 2013b). In the same period, catches of bigeye tuna by the purse seine fishery have increased by around 20 percent (WCPFC 2013b). As articulated in the 2011 WCPO bigeye tuna stock assessment, analysis of current levels of fishing mortality and historical patterns in the mix of fishing gears indicates that MSY has been reduced to less than half its levels prior to 1970 through harvest of small juveniles. Because of that and overfishing, considerable potential yield from the bigeye tuna stock is being lost (approx. 75%), and further, MSY levels would rise if mortality of small fish were reduced which would allow greater overall yields to be sustainably obtained (Davies et al. 2011). The 2011 stock assessment and Scientific Committee reports note that addressing bigeye tuna overfishing requires a significant reduction in the use of FADs in the purse seine fishery, which would reduce the

incidental juvenile bigeye tuna catch in the WCPO purse seine fishery. If this occurs, MSY values for bigeye tuna would increase, and the ability to achieve optimal yield on a continuing basis under current levels of longline and purse seine fishing effort would be enhanced. In CMM 2013-01, the WCPFC has adopted stricter measures to reduce purse seine fishing effort on FADs as well as reduce longline catch limits for bigeye tuna, than what is provided under CMM 2012-01. Following a phased approach through 2017 identified in CMM 2013-01, the WCPFC is expected to take additional measure to eliminate bigeye tuna overfishing should they become necessary.

The Council and NMFS will continue to monitor the stock condition of the other target and non-target species on an annual basis and will take appropriate conservation action as required and necessary. For example, with regard to striped marlin, the western and central North Pacific stock is experiencing overfishing and is overfished, the annual catch of striped marlin is not expected to increase or exceed the established WCPFC agreed limit applicable to U.S. longline fisheries, nor increase beyond current harvest levels under this action. In the future, if catch of striped marlin is anticipated to exceed any WCPFC management measures, the Council may consider fishery management measures that reduce or maintain catch of this species at levels recommended by the WCPFC. In addition, it is likely the Council will consider recommending future management measures to the Secretary to reduce overfishing and rebuild the stock.

This action does not establish an annual catch limit (ACL) under section 303(a)(15) of the Magnuson-Stevens Act. Section 303(a)(15) applies unless "otherwise provided for under an international agreement in which the United States participates. Pub. Law 109-479 § 104(b). Pelagic highly migratory species fall under the international exception to ACLs.

National Standard 2 *states that conservation and management measures shall be based upon the best scientific information available.*

This action is consistent with NS2 because the FEP amendment utilizes the best scientific information available from NMFS, WCPFC, and other scientific groups (See Chapters 3 and 4, Appendix C, and Appendix D) to describe the affected human environment and potential impacts of the Alternatives. The WCPFC 2011 stock assessment for bigeye tuna has been subject to extensive peer review. In addition, the FEP amendment has undergone review with, and included input from subject matter experts by the Council's staff and advisory groups, and NMFS' PIRO and PIFSC. Finally, the Council acknowledges that this action is based on projections of future stock status and future fishing effort that involve some degree of uncertainty. Where different information inputs produce different results, such as the impacts of this action under the TUMAS model, the analysis identifies and explains the weaknesses and any gaps in the information. Moreover, this action employs precautionary management measures to take into account uncertainty in future outcomes. Specifically, annual limits and transferrable limits will require annual review and recommendations by the Council, with action by NMFS supported by the appropriate level of NEPA. Any recommendation that is determined to be inconsistent with international conservation and management measures addressing overfishing will be subject to disapproval.

National Standard 3 *states that, to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.*

This action is consistent with NS3 because it would allow the Council, NMFS, and, to a limited extent, the Territories to manage pelagic MUS in the WCPO and throughout their range. This includes bigeye tuna and any other pelagic MUS to which catch or effort limits may apply as agreed to by the WCPFC or as recommended by the Council and specified by NMFS in the absence of adequate conservation and management measures for pelagic MUS.

National Standard 4 *states that conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.*

This action is consistent with NS4 as it does not discriminate between residents of different States. Although it is possible that only Hawaii longline permit holders would enter into an agreement with a Territory, all fishermen that have a Pelagics FEP permit are eligible to enter into Territorial agreements including fishermen from American Samoa, Guam, and the CNMI. In addition, Pelagics FEP permits are available to all U.S. citizens and nationals, with the exception of the American Samoa longline permit, which is subject to additional eligibility criteria relating to historical participation in the fishery

National Standard 5 *states that conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.*

This action is consistent with NS5 as it considers an efficient, near-term way for the Territories to conduct responsible fisheries development and to access available pelagic stocks for the net benefit of the Nation, consistent with the conservation needs of affected fishery stocks. This action also allows the U.S. to more efficiently make use of fishery resources, whereby the opportunity to enter into agreements with FEP-permitted vessels for purposes of responsible fisheries development would allow the Territories to developed infrastructure and capacity to participate in the WCPO tuna fishery, which by all accounts, is the largest tuna fishery globally.

National Standard 6 *states that conservation and management action shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources and catches.*

This action is consistent with NS6 as it considers variation in status of stocks and contingencies in regional fisheries and impacts of such fisheries on the spatial distribution of bigeye tuna and other pelagic stocks. The highly migratory species (HMS) that are targeted by and available to Pelagics FEP fisheries are internationally managed by regional fishery management organizations (RFMOs) that consider fishery resources, sources of mortality, and total regional catch in order to make recommendations for domestic fishery management. These organizations

consider the necessary changes to sustainably manage region-wide stocks, consider changes in fishery dynamics, and potential responses to fishery management actions. This action includes a process to allow for annual adjustment of Territory catch or effort and Territory transfer limits in response to RFMO conservation and management agreements for HMS that are applicable to the U.S. Participating Territories. In addition, the process allows the Council to recommend and NMFS to specify limits in the absence of specific RFMO conservation and management agreements.

National Standard 7 *states that conservation and management measures shall, where practicable, minimize costs, and avoid unnecessary duplication.*

This action is consistent with NS7 because it does not create duplicative measures on the regulated fishing community. This action allows vessels under Territory agreements the option to fish a limited amount of transferrable quota in preferred areas and markets, without having to fish in less accessible areas, for example, in the EPO if NMFS prohibits fishing for bigeye tuna in the WCPO. In addition, Territories are not required to enter into agreements with U.S. vessels, so mandatory administrative costs would not occur over taking no-action.

National Standard 8 *states that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.*

This action provides positive benefits to the fishing communities of the Territories and Hawaii as discussed in Chapter 4. This action does not result in adverse economic impacts on the fishing communities of the Territories, but on the contrary, promotes responsible fisheries development with the objective of stimulating long-term economic growth and stability as well as supporting local food security, consistent with the conservation needs of the stock. The action is also consistent with the Findings and Policies of the Magnuson-Stevens Act (section 2 “Findings” para. 10; section 2 “Policy” para. 7), which recognizes the importance of fisheries to the Territories in terms of economic growth and the need to ensure that Territory fisheries are properly developed, conserved, and managed. Furthermore, Hawaii and other U.S. markets would benefit from maintained or increased supply of sustainably caught bigeye tuna and other pelagic species from U.S. vessels.

National Standard 9 *states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided minimize the mortality of such bycatch.*

This action does not authorize any new fisheries with unknown bycatch levels. The measures are similar to the current fishery and so increased bycatch rates are not expected. Pelagics FEP fisheries would continue to be monitored and information would include bycatch, discards, and interactions. Monitoring the fishery would allow NMFS and the Council to develop management measures as necessary to respond to potential needs to reduce bycatch and mortality of bycatch. Vessels authorized to fish under Territory agreements would still be required to submit logbooks,

carry observers when requested by NMFS, as well as VMS. In addition, FEP-permitted vessels are required to follow strict protected species mitigation measures that reduce interactions with these species.

This action supports fisheries development in the Territories that may reduce bycatch. For example, in the American Samoa longline fishery that targets albacore for local canneries, large yellowfin and bigeye tunas have been documented as bycatch due to a historical lack of local markets for export of these species. Recently, a new market has emerged in American Samoa that has the ability to export large fresh/frozen bigeye and yellowfin tunas, and other pelagic species; however, in order to take advantage of this opportunity, the existing fleet requires upgrades (e.g., ice machines) and fresh fish handling training. As this action would help facilitate fisheries development such as vessel upgrades and training, this action may lead to a decrease in bycatch in the American Samoa longline fishery.

National Standard 10 *states that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.*

This action is consistent with NS10 because it supports fisheries development in the Territories that potentially involves upgrading vessels that would likely be safer than existing vessels. In addition, this action supports safety-at-sea for the Hawaii longline fishery by allowing fishery participants to enter into Territory agreements to fish in the WCPO, which otherwise could be restricted if limits for pelagic MUS are reached. This is especially important for small vessels in the Hawaii longline fishery that, if the U.S. WCPO limit is reached, their only option to fish for bigeye tuna would be in the EPO, which is of a greater distance from Hawaii. Furthermore, November and December, which were the months affected by the closure of the bigeye tuna, typically experience strong storm activity in the North Pacific.

5.2 National Environmental Policy Act

The FEP amendment covering changes for the management of the western Pacific pelagic fisheries, which are managed under the Council's Pelagics FEP, includes an EA that has been written and organized in a way that meets the requirements of NEPA. NMFS used this document to select an alternative to implement and to determine whether the action as described in section 1.7 would have the potential to result in significant environmental impacts that would then require the preparation of an environmental impact statement.

Purpose and Need for Action
The purpose and need for this action are in section 1.6.

Alternatives Considered
The alternatives considered for this action are described in detail in Chapter 2, including alternatives initially considered but rejected from detailed consideration.

Affected Environment
The affected environment for this action, including a description of the fisheries, and an overview of the current management is provided as background in Chapter 3. Detailed statistics of affected fisheries are also included in Appendix D.

Impacts of the Alternatives
The expected impacts of the alternatives on the environment are in Chapter 4. The chapter begins with a description of the potential and most likely fishery outcomes and then describes impacts to target and non-target fish species including bycatch, protected species, habitats, fishing communities, and cumulative effects, including climate change impacts, and potential Environmental Justice impacts. Other topics include impacts to administration, enforcement, and safety at sea.

The fisheries under the Pelagics FEP do not have an adverse effect on objects or places of historical, cultural, or scientific importance because no such places or objects are known to exist in the action area. The fisheries do not have substantial impacts to unique areas, including park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. Longline fishing does not occur in marine protected areas, marine sanctuaries, or marine monuments. None of the alternatives are likely to change the manner or location in which the pelagic longline fisheries would affect such resources, so this action is not expected to have any impacts on such resources.

This action is not likely to affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural or historical resources because no such resources have been identified in the areas affected by commercial longline fishing.

Pelagics FEP fisheries are not known to spread or introduce alien species, and no change would occur that would result in a spread of alien species. Although landing requirements could be made under this action (Alternative 4), the Council and NMFS do not expect this to occur in the near future. Therefore, this action is not expected to result in spreading alien species among western Pacific areas.

This action is not expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration. Alternative 4 is selected for implementation. Any future recommendations recommended by the Council that would result in an impact to the environment that has not been considered in a previous environmental impact assessment, would undergo separate environmental review before it could be specified by NMFS. The selection of a catch limit in this action would not preclude different catch or effort limit specifications in the future.

The impacts of this action are not expected to be highly uncertain or involve unique or unknown risks. Western Pacific pelagic fisheries operate in accordance with the approved Fishery Ecosystem Plans and regulations that help ensure fisheries are managed sustainably. This action is expected to result in a continuation of current fisheries, and provide additional assurances that fishing under Territory fishing agreements remains sustainable. This action will result in a

continuation of ongoing fishery performance review and management and adds an additional annual review and specification of Territory catch or effort limits and transfer limits by the Council and NMFS. Because western Pacific pelagic fisheries are closely monitored, and this action will result in a continuation of the ongoing level of sustainable fishery and includes additional review of the sustainability of pelagic fisheries under transfer agreements, the environmental impacts are not likely to be highly uncertain or involve unique or unknown risks.

This action does not threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment. This action is consistent with all applicable federal laws and other requirements for environmental protections, including compliance with the ESA, MMPA, Coastal Zone Management Act, and NEPA.

Coordination with other agencies
Staff from the Council and NMFS developed this EA. The draft was coordinated with various federal and local government agencies that are represented on the Council. Specifically, agencies that participated in the deliberations and development of the 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
- Hawaii Coastal Zone Management Program
- National Oceanic and Atmospheric Administration
- Northern Mariana Islands Department of Land and Natural Resources, Division of Fish and Wildlife
- U.S. Coast Guard
- U.S. Fish and Wildlife Service

Coordination with the Public
Section 1.2 describes the public review process for this action, including how NMFS solicited public comments and how the public can obtain copies of relevant documents.

5.3 Executive Order 12866

To meet the requirements of Executive Order 12866 (E.O. 12866), of September 30, 1993 (Regulatory Planning and Review), NMFS requires that a Regulatory Impact Review (RIR) be prepared for all regulatory actions that are of public interest. This review provides an overview of the problem, policy objectives, and anticipated impacts of regulatory actions, 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.

In accordance with E.O. 12866, the following is set forth: (1) The action Alternatives are not expected to have an annual effect on the economy of more than $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety; or state, local or tribal governments or communities; (2) The action Alternatives are not likely to create any serious inconsistencies or otherwise interfere with any actions taken or planned by another agency; (3) The action Alternatives are not likely to

materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; (4) The action Alternatives is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order. Based on these findings, the action Alternatives are determined to not be significant under E.O. 12866. An RIR is in Appendix A.

5.4 Administrative Procedure Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II) which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it becomes effective, with rare exceptions. NMFS requested public comments on Amendment 7 and draft EA for 60 days, and on the proposed rule and proposed specifications for 45 days. This amendment complies with the provisions of the APA through the Council's extensive use of public meetings, requests for comments, and consideration of comments. After NMFS announces the final rule in the *Federal Register*, there is a 30-day delay before the final rule becomes effective.

5.5 Coastal Zone Management Act

The principal objective of the Coastal Zone Management Act (CZMA) is to encourage and assist states in developing coastal management programs, to coordinate state activities, and to safeguard regional and national interests in the coastal zone. Section307(c) of the CZMA requires that any Federal activity affecting the land or water uses or natural resources of a state's coastal zone be consistent with that state's approved coastal management program, to the maximum extent practicable.

NMFS finds that, as described in the impact review above, none of the action alternatives would substantially change western Pacific longline fishing activity, therefore; this action would not have large changes to the land or water uses or natural resources of the coastal zone of American Samoa, CNMI, Guam, or Hawaii. Regardless of which alternative is selected, our analysis found that all of the western Pacific fisheries would continue to be sustainably managed. NMFS submitted a copy of this document to the appropriate state government agencies in American Samoa, CNMI, Guam, and Hawaii for review and concurrence with the finding that all of the alternatives and sub-alternatives, including the preferred alternatives are consistent, to the maximum extent practicable, with the respective CZMA programs and that the regulations would not result in changes to the way western Pacific pelagic fisheries affect the land, water uses, or natural resources of the coastal zone or to residents' uses of marine resources in the coastal zone of these areas. Only the State of Hawaii replied and did not have comments on this action.

5.6 Information Quality Act

Pursuant to section 515 of Public Law 106-554 (IQA), NMFS conducted a pre-dissemination review of Amendment 7 and the combined proposed rule and proposed specifications, and the pre-dissemination review and documentation form is available in their office.

5.7 Paperwork Reduction Act

This action contains a collection-of-information requirement subject to review and approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act (PRA). The public reporting burden for a specified fishing agreement is estimated to average six hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection information. NMFS solicited public comments regarding: whether this collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; the accuracy of the burden estimate; ways to enhance the quality, utility, and clarity of the information to be collected; and ways to minimize the burden of the collection of information, including through the use of automated collection techniques or other forms of information technology. NMFS received no comments related to the collection-of-information requirement in the proposed rule.

5.8 Regulatory Flexibility Act

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

The final rule directly affects fishermen federally permitted under the Pelagics FEP. These fisheries are characterized as small entities, as defined in section 601 of the Regulatory Flexibility Act. NMFS believes that all businesses operating as commercial fishing vessels in the territories and Hawaii would be considered small entities.

This FEP amendment will most likely provide U.S. vessels under the Pelagics FEP an opportunity to fish under Territory catch or effort limits, through Territorial fishing agreements. For 2014, under this action, additional bigeye tuna could be provided from the Territories to U.S. vessels through fishing agreements. Based on historical effort and prior Territory fishing agreements under Section 113, it is likely that future agreements could allocate up to 1,000 mt of bigeye tuna harvested by U.S. vessels to the Territories.

All vessels having the potential to participate in Pelagics FEP-permitted fisheries are considered to be small entities under the current Small Business Administration definition of small finfish fish-harvesting businesses, that is, their gross receipts do not exceed $19.0 million (79 FR 37398, June 20, 2012). NMFS has determined that implementing Alternative 4 and Sub-Alternative 4(b) and amending the regulations in accordance with the provisions of the regulations would not likely have a significant adverse economic impact on a substantial number of small entities.

NMFS does not expected this action to have significant impacts to small entities because none of the alternatives is expected to change the manner in which fisheries managed under the Pelagics FEP are currently conducted (i.e., area fished, number of vessels engaging in longline fishing, the number of trips taken per year, number of hooks set per vessel during a trip, depth of hooks, or deployment techniques in setting longline gear). As a result of this certification, an initial regulatory flexibility analysis is not required and none has been prepared.

For these reasons, NMFS requested that the Department of Commerce Chief Counsel for Regulation certify to the Small Business Administration that this rule and specifications would not have a significant economic impact on a substantial number of small entities.

Chapter 6: Draft Proposed Regulations

For the reasons set out in the preamble, NMFS proposes to amend 50 CFR parts 300 and 665 as follows:

PART 300--INTERNATIONAL FISHERIES REGULATIONS

1. The authority citation for part 300 continues to read as follows:

Authority: 16 U.S.C. 6901 et seq.

2. In § 300.224, remove paragraphs (d)(3) and (g), and revise paragraphs (d), (d)(1), (d)(2), and (f)(1)(iv) to read as follows:

§ 300.224 Longline fishing restrictions.

* * * * *

(d) Exception for bigeye tuna caught by vessels included in specified fishing agreements under § 665.819(c) of this title. Bigeye tuna caught by a vessel that is included in a specified fishing agreement under § 665.819(c) of this title will be attributed to the longline fishery of American Samoa, Guam, or the the Northern Mariana Islands, according to the terms of the agreement to the extent the agreement is consistent with § 665.819(c) of this title and other applicable laws, and will not be counted against the limit, provided that:

(1) The start date specified in § 665.819(c)(9)(i) of this title has occurred or passed; and

(2) NMFS has not made a determination under § 665.819(c)(9)(iii) of this title that the catch of bigeye tuna exceeds the limit allocated to the territory that is a party to the agreement.

(3) [Removed]

* * * * *

(f) * * *

(1) * * *

(iv) Bigeye tuna caught by longline gear may be retained on board, transshipped, and/or landed if they were caught by a vessel that is included in a specified fishing agreement under § 665.819(c) of this title, if the agreement provides for bigeye tuna to be attributed to the longline fishery of American Samoa, Guam, or the Northern Mariana Islands, provided that:

(A) The start date specified in § 665.819(c)(9)(i) of this title has occurred or passed; and

(B) NMFS has not made a determination under § 665.819(c)(9)(iii) of this title that the catch of bigeye tuna exceeds the limit allocated to the territory that is a party to the agreement.

* * * * *

(g) [Removed]

PART 665--FISHERIES IN THE WESTERN PACIFIC

3. The authority citation for part 665 continues to read as follows:

Authority: 16 U.S.C. 1801 et seq.

4. In § 665.800, add new definitions of “Effective date,” “U.S. participating territory,” and “WCPFC” in alphabetical order to read as follows:

§ 665.800 Definitions.

* * * * *

Effective date means the date upon which the Regional Administrator provides written notice to the authorized official or designated representative of the U.S. participating territory that a specified fishing agreement meets the requirements of this section.

* * * * *

U.S. participating territory means a U.S. participating territory to the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central

Pacific Ocean (including any annexes, amendments, or protocols that are in force, or have come into force, for the United States), and includes American Samoa, Guam, and the Northern Mariana Islands.

* * * * *

WCPFC means the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean, including its employees and contractors.

* * * * *

5. In § 665.802, add paragraphs (o) and (p) to read as follows:

§ 665.802 Prohibitions.

* * * * *

(o) Use a fishing vessel to retain on board, transship, or land pelagic MUS captured by longline gear in the WCPFC Convention Area, as defined in § 300.211 of this title, in violation of any restriction announced in accordance with 50 CFR 665.819(d)(2).

* * * * *

6. In 50 CFR part 665, add new section § 665.819 to read as follows:

§ 665.819 Territorial catch and fishing effort limits.

(a) General.

(1) Notwithstanding § 665.4 of this part, if the WCPFC agrees to a catch or fishing effort limit for a stock of western Pacific pelagic MUS that is applicable to a U.S. participating territory, the Regional Administrator may specify an annual or multi-year catch or fishing effort limit for a U.S. participating territory, as recommended by the Council, not to exceed the WCPFC adopted limit. The Regional Administrator may authorize such U.S. participating territory to allocate a portion, as recommended by the Council, of the specified catch or fishing effort limit to a fishing vessel or vessels holding a valid permit issued under § 665.801 of this part through a specified fishing agreement pursuant to paragraph (c) of this section.

(2) If the WCPFC does not agree to a catch or fishing effort limit for a stock of western Pacific pelagic MUS applicable to a U.S. participating territory, the Council may recommend that the Regional Administrator specify such a limit that is consistent with the Pelagics FEP, other provisions of the Magnuson-Stevens Act, and other applicable laws. The Council may also recommend that the Regional Administrator authorize a U.S. participating territory to allocate a portion of a specified catch or fishing effort limit to a fishing vessel or vessels holding valid permits issued under § 665.801 of this part through a specified fishing agreement pursuant to paragraph (c) of this section.

(3) The Council shall review any existing or proposed catch or fishing effort limit specification and portion available for allocation at least annually to ensure consistency with the Pelagics FEP, Magnuson-Stevens Act, WCPFC decisions, and other applicable laws. At least annually, the Council shall recommend to the Regional Administrator whether such catch or fishing effort limit specification or portion available for allocation should be approved for the next fishing year.

(4) The Regional Administrator shall review any Council recommendation pursuant to paragraph (a) of this subpart and, if determined to be consistent with the Pelagics FEP, Magnuson-Stevens Act, WCPFC decisions, and other applicable laws, shall approve such recommendation. If disapproved, the Regional Administrator will provide the Council with a written explanation of the reasons for disapproval. If a catch or fishing effort limit specification or allocation limit is disapproved, or if the Council recommends and NMFS approves no catch or

fishing effort limit specification or allocation limit, no specified fishing agreements as described in paragraph (c) will be accepted for the fishing year covered by such action.

(b) Procedures and timing.

(1) After receiving a Council recommendation for a catch or fishing effort limit specification, or portion available for allocation, the Regional Administrator will evaluate the recommendation for consistency with the Pelagics FEP, other provisions of the Magnuson-Stevens Act, and other applicable laws.

(2) The Regional Administrator will publish in the Federal Register a notice and request for public comment of the proposed catch or fishing effort limit specification and any portion of the limit that may be allocated to a fishing vessel or vessels holding a valid permit issued under § 665.801.

(3) The Regional Administrator will publish in the Federal Register, and will use other reasonable methods to notify permit holders, a notice of the final catch or fishing effort limit specification and portion of the limit that may be allocated to a fishing vessel or vessels holding valid permits issued under § 665.801. The final specification of a catch or fishing effort limit will also announce the deadline for submitting a specified fishing agreement for review as described in paragraph (c) of this section. The deadline will be no earlier than 30 days after the publication date of the Federal Register notice that specifies the final catch or fishing effort limit and the portion of the limit that may be allocated through a specified fishing agreement.

(c) Specified fishing agreements. A specified fishing agreement means an agreement between a U.S. participating territory and the owner or a designated representative of a fishing vessel or vessels holding a valid permit issued under § 665.801 of this part. An agreement provides access to an identified portion of a catch or fishing effort limit and may not exceed the amount specified for the territory and made available for allocation pursuant to paragraph (a) of this section. The identified portion of a catch or fishing effort limit in an agreement must account for recent and anticipated harvest on the stock or stock complex or fishing effort, and any other valid agreements with the territory during the same year not to exceed the territory's catch or fishing effort limit or allocation limit.

(1) An authorized official or designated representative of a U.S. participating territory may submit a complete specified fishing agreement to the Council for review. A complete specified fishing agreement must meet the following requirements:

(i) Identify the vessel(s) to which the fishing agreement applies, along with documentation that such vessel(s) possesses a valid permit issued under § 665.801;

(ii) Identify the amount (weight) of western Pacific pelagic MUS to which the fishing agreement applies, if applicable;

(iii) Identify the amount of fishing effort to which the fishing agreement applies, if applicable;

(iv) Be signed by an authorized official of the applicable U.S. participating territory, or designated representative;

(v) Be signed by each vessel owner or designated representative; and

(vi) Satisfy either (A) or (B) below:

(A) Require the identified vessels to land or offload catch in the ports of the U.S. participating territory to which the fishing agreement applies; or

(B) Specify the amount of monetary contributions that each vessel owner in the agreement, or his or her designated representative, will deposit into the Western Pacific Sustainable Fisheries Fund;

(vi) Be consistent with the Pelagics FEP and implementing regulations, the Magnuson-Stevens Act, and other applicable laws; and

(vii) Shall not confer any right of compensation to any party enforceable against the United States should action under such agreement be prohibited or limited by NMFS pursuant to its authority under Magnuson-Stevens Act, or other applicable laws.

(2) Council Review. The Council, through its Executive Director, will review a submitted specified fishing agreement to ensure that it is consistent with paragraph (1) of this section. The Council will advise the authorized official or designated representative of the U.S. participating territory to which the agreement applies of any inconsistency and provide an opportunity to modify the agreement, as appropriate. The Council will transmit the complete specified fishing agreement to the Regional Administrator for review.

(3) Agency review.

(i) Upon receipt of a specified fishing agreement from the Council, the Regional Administrator will consider such agreement for consistency with paragraph (1) of this section, the Pelagics FEP and implementing regulations, the Magnuson-Stevens Act, and other applicable laws.

(ii) Within 30 calendar days of receipt of the fishing agreement from the Council, the Regional Administrator will provide the authorized official or designated representative of the U.S. participating territory to which the agreement applies and the signatory vessel owners or their representatives with written notice of whether the agreement meets the requirements of this section. The Regional Administrator will reject an agreement for any of the following reasons:

(A) The agreement fails to meet the criteria specified in this subpart;

(B) The applicant has failed to disclose material information;

(C) The applicant has made a material false statement related to the specified fishing agreement;

(D) The agreement is inconsistent with the Pelagics FEP, implementing regulations, the Magnuson-Stevens Act, or other applicable laws; or

(E) The agreement includes a vessel identified in another valid specified fishing agreement.

(iii) The Regional Administrator, in consultation with the Council, may recommend that specified fishing agreements include such additional terms and conditions as are necessary to ensure consistency with the Pelagics FEP and implementing regulations, the Magnuson-Stevens Act, and other applicable laws.

(iv) The U.S. participating territory must notify NMFS and the Council in writing of any changes in the identity of fishing vessels to which the specified fishing agreement applies within 72 hours of the change.

(v) Upon written notice that a specified fishing agreement fails to meet the requirements of this section, the Regional Administrator may provide the U.S. participating territory an opportunity to modify the fishing agreement within the time period prescribed in the notice. Such opportunity to modify the agreement may not exceed 30 days following the date of written notice. The U.S. participating territory may resubmit the agreement according to subparagraph (c)(1).

(vi) The absence of the Regional Administrator's written notice within the time period specified in subparagraph (3)(ii) or, if applicable, within the extended time period specified in subparagraph (3)(v) shall operate as the Regional Administrator's finding that the fishing agreement meets the requirements of this section.

(4) Transfer. Specified fishing agreements authorized under this section are not transferable or assignable, except as allowed pursuant to subparagraph (3)(iv).

(5) A vessel shall not be identified in more than one valid specified fishing agreement at a time.

(6) Revocation and suspension. The Regional Administrator, in consultation with the Council, may at any time revoke or suspend attribution under a specified fishing agreement upon the determination that either: operation under the agreement would violate the requirements of the Pelagics FEP or implementing regulations, the Magnuson-Stevens Act, or other applicable laws; or the U.S. participating territory fails to notify NMFS and the Council in writing of any changes in the identity of fishing vessels to which the specified fishing agreement applies within 72 hours of the change.

(7) Cancellation. The U.S. participating territory and the vessel owner(s), or designated representative(s), that are party to a specified fishing agreement must notify the Regional Administrator in writing within 72 hours after an agreement is cancelled or no longer valid. A valid notice of cancellation shall require the signatures of both parties to the agreement. All catch or fishing effort attributions under the agreement shall cease upon the written date of a valid notice of cancellation.

(8) Appeals. An authorized official or designated representative of a U.S. participating territory and/or signatory vessel owners or their representatives may appeal the granting, denial, conditioning, or suspension of a specified fishing agreement affecting their interests to the Regional Administrator in accordance with the permit appeals procedures set forth in 665.801(o) of this subpart.

(9) Catch or fishing effort attribution procedures.

(i) For vessels identified in a valid specified fishing agreement that are subject to the U.S. bigeye tuna limit and fishing restrictions set forth in 50 CFR 300 Subpart O, NMFS will attribute catch made by such vessels to the applicable U.S. participating territory starting seven days before the date NMFS projects the annual U.S. bigeye tuna limit to be reached, or upon the effective date of the agreement, whichever is later.

(ii) For U.S. fishing vessels identified in a valid specified fishing agreement that are subject to catch or fishing effort limits and fishing restrictions set forth in this subpart, NMFS will attribute catch or fishing effort to the applicable U.S. participating territory starting seven days before the date NMFS projects the limit to be reached, or upon the effective date of the agreement, whichever is later.

(iii) If NMFS determines catch or fishing effort made by fishing vessels identified in a specified fishing agreement exceeds the allocated limit, NMFS will attribute any overage of the limit back to the U.S. or Pacific island fishery to which the vessel(s) is registered and permitted in accordance with the regulations set forth in 50 CFR 300 Subpart O and other applicable laws.

(d) Accountability measures.

(1) NMFS will monitor catch and fishing effort with respect to any territorial catch or fishing effort limit, including the amount of a limit allocated to vessels identified in a valid specified fishing agreement, using data submitted in logbooks and other information. When NMFS projects a territorial catch or fishing effort limit or allocated limit to be reached, the Regional Administrator shall publish notification to that effect in the Federal Register at least seven days before the limit will be reached and shall use other reasonable means to notify permit holders.

(2) The notice will include an advisement that fishing for the applicable pelagic MUS stock or stock complex, or fishing effort, will be restricted on a specific date. The restriction may include, but is not limited to, a prohibition on retention, closure of a fishery, closure of specific areas, or other catch or fishing effort restrictions. The restriction will remain in effect until the end of the fishing year.

(e) Disbursement of contributions from the Sustainable Fisheries Fund.

(1) NMFS shall make available to the Western Pacific Fishery Management Council monetary contributions, made to the Fund pursuant to a specified fishing agreement, in the following order of priority:

(i) Project(s) identified in an approved Marine Conservation Plan (16 U.S.C. § 1824) of a U.S. participating territory that is a party to a valid specified fishing agreement, pursuant to § 665.819(c); and

(ii) In the case of two or more valid specified fishing agreements in a fishing year, the projects listed in an approved Marine Conservation Plan applicable to the territory with the earliest valid agreement will be funded first.

(2) At least seven calendar days prior to the disbursement of any funds, the Council shall provide in writing to NMFS a list identifying the order of priority of the projects in an approved Marine Conservation Plan that are to be funded. The Council may thereafter revise this list.

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Appendix A- Regulatory Impact Review

Amendment 7 to the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region

Regarding the Use and Assignment of Catch and Effort Limits of Pelagic Management Unit Species by the U.S. Pacific Island Territories And Specification of Annual Bigeye Tuna Catch Limits for the U.S. Pacific Island Territories

1.0 Introduction

To comply with Executive Order 12866 (E.O. 12866), the National Marine Fisheries Service (NMFS) requires that a Regulatory Impact Review (RIR) be prepared for all regulatory actions that are of public interest. The regulatory philosophy of E.O. 12866 is reflected in the following statement:

> *In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory Alternatives, including the Alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among Alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages, distributive impacts; and equity), unless a statue requires another regulatory approach.*

This RIR is for management measures contained in Amendment 7 to the Fisheries Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region (Pelagics FEP) and implementing regulations. This amendment establishes a process for assigning Territorial catch or effort limit to certain U.S. vessels and describes the terms, conditions, and process for U.S. vessels to enter into a specified fishing agreement with a Territory, as directed by Congress through Section 113(a) of the Consolidated and Further Continuing Appropriation Act of 2012. This action also establishes catch limits and specify transferable catch limits for bigeye tuna in the U.S. Participating Territories.

2.0 Purpose, Need for Action, and Objective

Consistent with the provisions of Section 113 and international and domestic conservation and management requirements, this action would establish a management framework and uniform

region-wide process to administer the U.S. Participating Territories' use, assignment, allocation, and management of catch limits of pelagic MUS, or fishing effort limits, through agreements with U.S. vessels permitted under the Pelagics FEP, for the purpose of responsibly developing Territory fisheries. The need for the action is to ensure that Section 113 agreements are implemented and managed consistent with the conservation requirements of the Convention, WCPFC conservation and management measures (e.g. CMM 2012-01, CMM 2013-01, CMM 2012-05), and consistent with the Magnuson-Stevens Act, to prevent overfishing, to ensure the sustainability of affected fish stocks, and, to the extent possible, given stock status, to provide for achieving optimum yield (OY) on a continuing basis. Action is also needed to assist the Territories to improve opportunities for responsible fishing through supporting projects identified in approved Marine Conservation Plans (MCPs).

Since 2009, Western and Central Pacific Fisheries Commission (WCPFC) has established annual catch and effort limits for several pelagic MUS caught by longline fisheries of the U.S. and the territories, which include American Samoa, Guam, and the Commonwealth of Northern Mariana Islands (CNMI). Under the WCPFC Implementation Act (16 U.S.C. 6901 et seq.), NMFS implemented the U.S. annual bigeye tuna catch limit (U.S. bigeye tuna limit) of 3,763 metric tons (mt) for each fishing year from 2009 to 2014 for the Hawaii longline fishery (December 7, 2009, 74 FR 63999; August 27, 2012, 77 FR 51709; and September 23, 2013, 78 FR 58240). This limit generally applies only to the Hawaii-based longline fishery, which is comprised of two distinct fisheries: the deep-set fishery that targets bigeye tuna and the shallow-set fishery that targets swordfish but retains many pelagic species including bigeye tuna. The U.S. bigeye tuna limit currently does not apply to longline fisheries of American Samoa, Guam, and CNMI. NMFS monitors the catch of all pelagic species by each longline fishery and attributes the catch to the fisheries of the U.S. or the respective territory. If the U.S. bigeye tuna limit is reached, the harvest of bigeye tuna in the WCPO by the Hawaii longline fishery is prohibited through the remainder of the year, with certain exceptions.

Section 113 of the Consolidated and Further Continuing Appropriation Act of 2012, as extended through the end of 2013 by Section 110 of the Consolidated and Further Appropriations Act of 2013, authorized U.S. Participating Territories of the Western and Central Pacific Fisheries Commission (American Samoa, Northern Mariana Islands, and Guam) to use, assign, allocate, and manage their catch and effort limits for highly migratory fish stocks through agreements with U.S. vessels permitted under the plan. Section 113 also directed the Western Pacific Fishery Management Council (Council) to amend its Pelagics FEP to allow agreements similar to those authorized by Section 113 to continue.

The purpose of this action is to implement the Council's recommendations as directed by and consistent with Section 113, including the terms, conditions, and process for U.S vessels to enter into a fishing agreement with a territory. The U.S. Participating Territories of American Samoa, Guam, and CNMI would be allowed to enter into specified fishing agreements with U.S. fishing vessels permitted under the Pelagics FEP and allocate to those vessels, a specified portion of such limit, as determined by NMFS and the Council. In addition to proposing the framework through which specified fishing agreements could occur, this action would implement initial specifications for 2014, specifically an annual longline bigeye tuna catch limit of 2,000 mt for

each territory, as well as allowing each territory to allocate up to 1,000 mt of that limit to U.S. longline fishing vessels.

3.0 Description of Fisheries

Chapter 3 of the environmental assessment (EA) provides an overview of the pelagic fisheries of the Territories and Hawaii. These include the American Samoa longline and troll fishery (Section 3.3.1), Commonwealth of Northern Mariana Islands pelagic fisheries (Section 3.3.2); Guam pelagic fisheries (Section 3.3.3); Hawaii longline, troll and handline fisheries (Section 3.3.4); and the WCPO Purse Seine Fisheries (Section 3.4). Section 3.3.5 presents specific information on U.S. longline catches of bigeye tuna in the Pacific. Appendix C presents more detailed information on these fisheries such as recent landings information, time series of catch, catch per unit of effort, and number of fishing vessels.

4.0 Description of Alternatives Considered

Alternative 1: - No action / Status quo - Manage Territory Limits Consistent with Existing Provisions of Section 113

Under this alternative, the Council would not amend the Pelagics FEP and Section 113 agreements would continue to apply to the U.S. and Territories as currently authorized in 2013 under the CFCAA. Alternative 1 is explained more fully in Section 2.1 of the EA, but basically this alternative covers No-action as it applies to 2013, since Section 113 applies through the end of the year.

Under the No-action Alternative, the Territories could harvest the amount of pelagic MUS as agreed upon by WCPFC. For 2013, under current catch limits and Section 113, the Territories can harvest an unlimited amount of bigeye tuna and transfer an unlimited amount to eligible U.S. vessels permitted under the Pelagics FEP through agreements managed by NMFS as was the case for 2011-2013. There would be no mechanism for the Council to recommend or for NMFS to specify an annual catch or effort limit for the Territories and Territory agreements would not be subject to transfer limits.

Alternative 2: Section 113 Ends

Alternative 2 is explained more fully in Section 2.2 of the EA. Briefly, Alternative 2 projects that Congress would not extend Section 113 provisions beyond 2013.

If Section 113 is not extended by Congress and NMFS does not implement Council recommendation to amend the Pelagics FEP to allow Territorial fishing agreements similar to those authorized by Section 113, then U.S. vessels would not be allowed to enter into agreements, which would allow pelagic MUS caught by those vessels to be attributed to a Territory that is party to the agreement. Instead, those U.S. vessels would operate under conditions similar to 2009 and 2010 fishing years, in which the fishery reached the limit for

bigeye tuna before the year's end. In addition, under current catch limits, the Territories could harvest an unlimited amount of bigeye tuna. There would be no mechanism for the Council to recommend or for NMFS to specify an annual catch or effort limit for the Territories.

Alternative 3: Amend the FEP to Establish a Process that is Identical to the Provisions of Section 113

Alternative 3 would implement the provisions of Section 113 through an amendment to the Pelagics FEP. Under this Alternative, the Federal action would establish a process in the Pelagics FEP that would be identical Alternative 1, except that the process would extend beyond December 31, 2013, and would not require Congressional action in order to remain in force. There would be no mechanism established for the Council to recommend or for NMFS to specify an annual catch or effort limit for the Territories. There would also be no limit to the amount of catch the Territories could transfer to other FEP-permitted vessels. In the future, however, under this Alternative, any catch or effort limits for highly migratory species (HMS) (e.g., bigeye tuna catch limit) agreed to by the WCPFC that are applicable to the Territories would apply to the Territories. Section 2.3 provides more detail on Alternative 3.

Alternative 4 (Council Preferred Alternative): Amend the FEP to Establish a Management Framework Consistent with Section 113, and Establish a Process for NMFS to Specify Territory Catch Limits and Assignable Limits Under Qualifying Agreements

Under this alternative, the Pelagics FEP would be amended to establish a process that is similar to Section 113 and would include a process to specify annual Territory catch or effort limits and transferable catch or effort limits for pelagic MUS. As with Alternatives 1 and 3, the Territories would be allowed to enter into agreements with FEP-permitted vessel for the use, assignment, allocation, and management of catch and effort limits agreed to by WCPFC that are applicable to FEP pelagic MUS; or other limits as recommended by the Council and specified by NMFS. The Council could use the established process to recommend annual Territory catch or effort limits as well as Territory agreement limits, and NMFS could use the process in making annual specifications. Catch or effort limits could be established even if the WCPFC does not agree to Territory/SIDS limits.

Like Alternatives 1 and 3, NMFS would begin attributing catch of pelagic species by U.S. vessels to the Participating Territory for which there is an agreement seven days before the date the U.S. catch limit is projected to be reached or 14 days after receiving a copy of the agreement, whichever date is later. This would allow fishing vessels that are not part of agreements to continue fishing as is currently occurring. The process to monitor the catch limit and to inform the date after which catch would be assigned in accordance with agreements to a Territory is already established in existing regulations (77 FR 51719; 50 CFR § 300.224). However, the Council's amendment would replace the existing process described 50 CFR § 300.224 in regards to Territory fishing agreements. As with the other alternatives, monitoring and attributing catch under Territory agreements would continue under the Council's amendment.

Unlike Alternatives 1 and 3, Alternative 4 would also prescribe that agreements must include either: 1) the requirement that payments in support of an agreement be deposited in the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in a

territory's MCP pursuant to Magnuson-Stevens Act section 204; or 2) that agreements include landing requirements into the Territory under the agreement. Alternatives 1 and 3 do not include option 2), which would provide more flexibility to the Territories and fishery participants when developing agreements and examining benefits to the parties involved in the agreement without increasing impacts to the stocks involved.

Under Alternative 4, the following management framework and process would be established:

(1) Annual Catch or Effort Limit Specification: At least annually, the Council would review the catch limits agreed to by the Commission, and after considering the status of HMS stocks, the needs of fishing communities dependent upon the particular fishery resource, and any other relevant conservation and management factors, would recommend to the Regional Administrator, as appropriate, total catch or effort limits for each Territory, including the amount of pelagic species catch or effort each U.S. participating territory may transfer to vessels in specified fishing agreements for the subsequent calendar year.

(2) Authority to transfer: The Territories would be authorized by NMFS to transfer a portion of a specified catch limit of Pelagic MUS to vessels permitted under the Pelagics FEP through a Territory agreement approved by the Council and NMFS.

(3) Maximum transferable catch limits: After considering the catch or effort limits of Pelagic MUS provided to the Territories by the WCPFC, the conservation status of the fishery resource, and the needs of fishing communities dependent on the particular fishery resource, the Council would recommend an annual level of transferable catch or effort limit for each Territory, and any other terms and conditions applicable to a Territory agreement. NMFS would review the Council's recommendation, and if found consistent with the Pelagics FEP and other applicable law, NMFS would specify and announce the annual Pelagic MUS transfer limits applicable to each of the Territories in the *Federal Register*.

(4) Territory agreement criteria: To be a valid Territory agreement, NMFS would require the agreement between the Territory and the U.S. longline vessels to satisfy either criteria (i) or criteria (ii) below:

(iii) Contain no requirements regarding where such vessels must fish or land their catch, and deposits under the agreement are made to the Western Pacific Sustainable Fisheries Fund in material support of fisheries development projects identified in a Territory's MCP adopted pursuant to Magnuson-Stevens Act section 204. The funding of such agreements authorized under this Pelagics FEP amendment shall be of a sufficient amount to substantially contribute to MCP fisheries development objectives; or

(iv) Provide a landing requirement to offload catch in the ports of the Territory for which the agreement exists.[50]

[50] Section 113(a) states that "agreements shall impose no requirements regarding where such vessels must fish or land their catch and shall be funded by deposits to the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in a Territory's Marine Conservation Plan and adopted pursuant to section 204 of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act;16 U.S.C.

The decision on whether to utilize i) or ii) would be left to the Territories in negotiation with the interested U.S. longline vessels.

(5) Approval of Territory agreements: Territory agreements would be submitted to the Council and NMFS for review. If the Council, through the Executive Director, finds the specified fishing agreements are complete and consistent with the Pelagics FEP, implementing regulations, and other applicable law, it would transmit them with a written recommendation to the Regional Administrator. The NMFS Regional Administrator would determine if the agreement complies with the Pelagics FEP and applicable laws. The agreement would be effective for purposes of catch attribution (see (f) below) within 30 days of submission unless the Regional Administrator provides written notice to each party that an agreement fails to comply with the FEP, implementing regulations, or applicable law. The Regional Administrator may provide the parties to the agreement, or their designated representatives, an opportunity to modify the fishing agreement.

(6) Catch attribution: For the purposes of annual reporting to the WCPFC, NMFS would attribute catches made under an effective Territory agreement to the applicable Territory. NMFS would continue to monitor the U.S. catch limit and attribute catch consistent with 50 CFR § 300.224 and WCPFC reporting requirements.

Agreements under Alternative 4 would support responsible fisheries development in the Territories by providing funds for approved MCPs. The Council and NMFS have not identified specific projects, and development of those projects is not part of the action under this sub-alternative and would be evaluated separately when projects are identified.

Sub-Alternatives for the specification of total annual longline catch limits and transferable limits for bigeye tuna for the Territories

The following sub-alternatives to Alternative 4 apply to the specification of annual longline catch limits for bigeye tuna for the Territories and limits on the annual amount a Territory may transfer under an agreement with eligible FEP-permitted vessels.

Sub-Alternative 4(a): No-action / Status quo

Under Sub-Alternative 4(a) to Alternative 4, no total annual longline bigeye tuna limits would be established for Territories nor would there be limits on the amount a Territory could transfer under an approved agreement.

The expected fishery outcome of this sub-alternative is that the Territory longline fisheries would not be subject to catch limits for bigeye tuna in 2014 and beyond, other than those that could be

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1824)." The Council recommended that as an Alternative to contributing funding in support of MCP fisheries development projects, an agreement may provide a landing requirement to offload catch in the ports of the Territory for which the agreement exists. It is expected that these agreements may provide direct benefits to the local economy in lieu of payment to the Western Pacific Sustainable Fisheries Fund.

agreed to by the WCPFC. Under this sub-alternative, Territories would also not be subject to limits on the amount of bigeye tuna they could transfer to FEP-permitted vessels.

Sub-Alternative 4(b): Specify 2,000-mt total annual longline catch limits and 1,000-mt transferable catch limits for bigeye tuna per Territory (Council Preferred Sub-Alternative)

Under Sub-Alternative 4(b), the first specifications established under the framework provided in the Council's preferred Alternative 4 would be an annual longline catch limit for bigeye tuna of 2,000 mt for each Territory. Sub-Alternative 4(b) also limits the annual amount of bigeye tuna that may be transferred under a Territory agreement to 1,000 mt per Territory, which would be part of, and not in addition to, each Territory's 2,000-mt limit. This action does not implement other catch or fishing effort limit specifications.

The expected fishery outcome of this sub-alternative is that the Territory longline fisheries would be subject to 2,000-mt catch limits for bigeye tuna for each Territory, until the limit is changed pursuant to the process described in Alternative 4, which includes annual review by the Council. The catch limit is currently more restrictive than those agreed to by the WCPFC for PTs/SIDS, and is intended to restrain overall bigeye tuna mortality by U.S. fisheries operating under agreements.

Under this sub-alternative, the Territories would also be subject to limits on the amount of bigeye tuna they may transfer to FEP-permitted longline vessels. The limit would be 1,000 mt for each Territory. The WCPFC has not agreed to any limits on the attribution of catch under charter agreements or similar mechanisms.

The 1,000-mt bigeye tuna transfer limit would provide a buffer between catches by Territory longline fisheries and catch transferred under Territory agreements with FEP-permitted longline vessels.

5.0 Description of Economic Impacts of Each Alternative

5.1 Impact to Fisheries and Fishing Communities

This section will provide a general overview of the economic impacts of the Alternatives. Chapter 4 of the EA provides greater detail.

Hawaii-based longline fishery participants have been restricted under U.S. bigeye tuna limit of 3,763 mt in the WCPO since 2009. Alternatives 3 and 4, as well as Alternative 1, provide the potential for Hawaii-based longline fishery participants to continue landing bigeye tuna throughout the year as they did under 2011 and 2012 Territorial agreements with American Samoa. Aside from U.S. longline vessels catching bigeye tuna, WCPFC currently does not apply limits to vessels permitted under the Pelagics FEP, therefore the discussion of direct and indirect economic impacts will focus largely on bigeye tuna catch and its associated fisheries.

Under Alternative 1, the Territories are authorized under Section 113 to enter into agreements with FEP-permitted vessels to transfer catch or effort limits until the end of 2013. Longline fisheries in the territories would not face catch or effort limits, nor would there be limits to the amount of bigeye tuna or other HMS catch that could be transferred to U.S. vessels under fishing agreements. Alternative 3 would extend the Section 113 provisions beyond 2013, while Alternative 4 would extend provisions very similar to Section 113, except that Territories and fishing agreements would be subject to catch or effort limits and fishing agreements would be able to offer the additional option of allowing landings by U.S. vessels in Territories to be attributed to the Territories. Alternative 4 also considers two sub-alternatives regarding initial specification of 2014 bigeye tuna catch limits. Alternative 2, which specifically considers the impact of taking no action beyond 2013, would yield impacts similar to 2009 and 2010, when the U.S. longline vessels reached bigeye tuna catch limits and were required to stop landing bigeye tuna before the end of the year.

Presumably, Territories and U.S. vessels would enter into a Section 113 fishing agreement once again in 2013 (under Alternative 1), which did occur in 2013 with CNMI and Hawaii-based vessels, and after 2013 (under Alternatives 3 and 4) if entering into the agreement were mutually beneficial and all conditions are met, as had been the case for 2011 and 2012. U.S. vessels would provide a payment to the Sustainable Fishing Fund, which would be used to implement projects identified in a Territory's MCP, in exchange for the option of attributing bigeye tuna and other HMS landings made by U.S. vessels to the Territory that is party to the agreement under the three Alternatives. It is unlikely in the near term that fishing agreements would call for Territory landing requirements, which is an option under Alternative 4. Fishing agreements would directly enable those U.S. vessels that enter into the agreement to land more tuna throughout the year and reduce the likelihood of an early closure of the longline fishery targeting bigeye tuna in the WCPO. Dual permitted vessels would gain a smaller benefit to entering into fishing agreements compared with U.S. vessels that only possess Hawaii limited entry permits. Without the agreement, dual permitted vessels can still attribute landings caught outside of the EEZ surrounding Hawaii to American Samoa, but with the agreements, these vessels would be able to attribute landings caught within the EEZ surrounding Hawaii to the Territory through which these vessels have a fishing agreement. The fishing agreements would also indirectly benefit U.S. longline vessels that are not part of the agreement (a very small portion of the U.S. longline fishing fleet), by increasing the likelihood that they would be able to fish for the greater portion of the year, because once the agreement goes into effect, the signatories to the agreement could begin attributing catch to Territories, allowing a greater portion of the remaining U.S. bigeye tuna catch to go to those few vessels that are not part of the agreement.

In 2011, 3,565 mt were caught under the U.S. bigeye tuna limit with an additional 628 mt of bigeye tuna landed by Hawaii longline fishermen and attributed to American Samoa under Section 113 fishing agreement. For 2012, those numbers were 3,654 mt and 771 mt respectively. Total bigeye tuna landings attributed to American Samoa, which include landings made by longline vessels operating out of Pago Pago, dual permitted vessels, and U.S. vessels operating under the Section 113 fishing agreement with American Samoa, totaled 1,264 mt and 1,505 mt in 2011 and 2012 respectively. Under Alternatives 1 and 3, these levels of landings by U.S. and American Samoa based vessels are likely to continue, only through 2013 for Alternative 1, and 2013 and beyond under Alternative 3. The amount attributed to American Samoa through these

three vessel categories, could feasibly increase at some point and even exceed 2,000 mt if the Hawaii market for bigeye tuna expands, or if American Samoa longline fishery begins to target more bigeye tuna. The same would be true for Alternative 4 and Sub-Alternative 4(a). Under the Council's preferred alternatives, Alternative 4 and Sub-Alternative 4(b), the amount attributed to American Samoa through all fishing agreement could not exceed 1,000 mt, and the total amount attributed to American Samoa could not exceed 2,000 mt. Therefore, under the Council's preferred alternatives, U.S. vessels would need to develop a fishing agreement with another Territory if they wish to attribute more than 1,000 mt to Territories. It is unlikely that the 2,000-mt limit under Sub-Alternative 4(b) would hinder fishing activity in the Territories in the foreseeable future. Very little bigeye tuna, and small amounts of other pelagic fish, are caught in Guam or CNMI, so the 2,000-mt limit would not limit longline fishing activities based in those areas. Longline fishing activity in American Samoa and around Guam and CNMI is not expected to increase; therefore, bigeye tuna catch should remain below the limits assigned to each territory in the foreseeable future.

Under Alternative 2, Hawaii-based longline fishermen would face direct adverse effects in 2014 and beyond, through lower earnings from WCPO caught bigeye tuna, relative to taking action under Alternatives 3 and 4. This is because they run a high likelihood of reaching the WCPFC catch limit for bigeye tuna each year (based on 2009 and 2010 fishing year, prior to the enactment of Section 113 fishing agreements). These fishermen could fish in the EPO, however, travel to those areas is more costly and landings not as fresh as those caught in the WCPO.

Fishermen operating non Hawaii-based longline vessels may see indirect adverse impacts from Alternatives 1 (in 2013), 3, or 4. During times when the Hawaii-based longline fishermen cannot land bigeye tuna, Hawaii small boat non-longline vessels or dual-permitted vessels that land bigeye tuna in Hawaii can expect to earn higher prices for bigeye tuna. These vessels can also help offset the reduction in supply of bigeye tuna to consumers and markets, but only partially. Consumers in Hawaii are likely to benefit from Alternatives 1 (in 2013), 3, or 4, due to the reduced likelihood of being affected by the fishery closure. When bigeye tuna supply is constrained, as when Hawaii longline vessels are prohibited from landing bigeye tuna, consumers pay higher prices and/or resort to buying smaller or less fresh bigeye tuna, or choosing to buy less preferable species of fish. Businesses that sell gear and supplies to Hawaii-based longline vessels might also see minor positive benefits from Alternatives 1, 3, or 4. These businesses might lose some revenue during fishery closure, but these impacts, would be offset by potential increase in fishing activity by other vessels that can target bigeye tuna. These indirect effects would extend to pelagic fisheries that catch other species of HMS, if WCPFC calls for catch limits for these other HMS. It is unlikely that implementing Sub-Alternative 4(b), which specifies territorial catch and attribution limits, would change these indirect impacts to bigeye tuna relative to Sub-Alternative 4(a) in the foreseeable future, since it is highly unlikely that the Hawaii-based longline fishery would exhaust the 1,000 mt catch limit for each of the three territories.

Alternatives 1, 3, and 4 would provide benefits to fishing communities in Territories through funding generated through fishing agreements, which could go towards fishery improvement projects identified in a Territory's MCP. Examples of projects that could be funded include

infrastructure and facilities improvements, vessel upgrades, increased vessel capacity, and/or fishermen training programs.

5.2 Impacts to Government

Alternatives 1 and 2 would have lower costs associated with administration and enforcement for 2014 and beyond, compared with Alternatives 3 and 4. The costs would be similar for 2013 among Alternatives 1, 3, and 4. Action Alternatives 3 and 4 both call for monitoring catch made by U.S. vessels operating in the WCPO, including those caught by U.S. vessels being attributed to Territories, as well as catch made by dual permit vessels and longline vessels operating out of the Territories beyond 2013. Alternative 4 combined with 4(b) would result in even higher monitoring and administrative costs as a result of the Territorial and attribution limits. NMFS estimates that implementing Alternative 4 and Sub-alternative 4(b) may require one new full time employee for each Territory and an additional half time employee to work with the increased data management at PIFSC. By comparison, Alternatives 1 and 3 may require an additional half-time employee, and those costs would end at the end of 2013 under Alternative 1. Section 4.1.5 of the EA provides additional details regarding these costs that might result under the four Alternatives.

6.0 Skills Necessary to Meet Compliance Requirements

No special skills beyond the ability to read and write in English would be required to continue to fill out the necessary permit applications and logbooks, which are already required.

7.0 Identification of Duplicating, Overlapping, and Conflicting Federal Rules

To the extent practicable, it has been determined that there are no federal rules that may duplicate, overlap, or conflict with this action.

8.0 Impacts of the Preferred Alternatives on National Costs and Benefits

Due to limited data availability, as well our limited understanding of the biological, economic, and social linkages of pelagic fisheries in the western Pacific and associated economic sectors, it is difficult to predict how fishery participants and other stakeholders would respond to the preferred Alternatives and how production operations and markets would be affected. Because of this, it would be difficult to predict how the total future stream of national benefits and costs (to both producers and consumers) would be affected. However, this action is anticipated to have positive net national benefits as it enables Territories to attribute otherwise unused allowable catch, to entities (parties to catch attribution agreements) that are willing to meet the requirements to participate in these agreements, while providing funds to Western Pacific Sustainable Fisheries Fund to support fisheries development projects in which a Territory agreements applies (and under Alternative 4, potentially allows landing of pelagic species into the territory).

The agreement between the American Samoa Government and HLA provided funds to support fisheries development projects, ideally in American Samoa, while allowing the Hawaii longline fishery to continue fishing. As a result, closure of the fishery would be avoided, and supply of bigeye tuna to consumers and dealers in Hawaii would be maintained throughout the year.

9.0 Determination of Significance Under E.O. 12866

In accordance with EO 12866, NMFS has made the following determination:
(1) this rule is not likely to have an annual effect on the economy of more $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;
(2) this rule is not likely to create any serious inconsistencies or otherwise interfere with any action taken or planned by another agency;
(3) this rule is not likely to materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; and
(4) this rule is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order.

Based on these determinations, the rule is not considered by NMFS to be a “significant regulatory action for the purposes of E.O. 12866.

Appendix B- Section 113, Consolidated and Further Continuing Appropriation Act

Sec. 113. (a) The U.S. Participating Territories of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean ('Commission') are each authorized to use, assign, allocate, and manage catch limits of highly migratory fish stocks, or fishing effort limits, agreed to by the Commission through arrangements with U.S. vessels with permits issued under the Pelagic Fishery Management Plan of the Western Pacific Region. Vessels under such arrangements are integral to the domestic fisheries of the U.S. Participating Territories provided that such arrangements shall impose no requirements regarding where such vessels must fish or land their catch and shall be funded by deposits to the Western Pacific Sustainable Fisheries Fund in support of fisheries development projects identified in a Territory's MCP and adopted pursuant to section 204 of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1824). The Secretary of Commerce shall attribute catches made by vessels operating under such arrangements to the U.S. Participating Territories for the purposes of annual reporting to the Commission.

(b) The Western Pacific Regional Fisheries Management Council--

(1) is authorized to accept and deposit into the Western Pacific Sustainable Fisheries Fund funding for arrangements pursuant to subsection (a);

(2) shall use amounts deposited under paragraph (1) that are attributable to a particular U.S. Participating Territory only for implementation of that Territory's MCP adopted pursuant to section 204 of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1824); and

(3) shall recommend an amendment to the Pelagic Fishery Management Plan for the Western Pacific Region, and associated regulations, to implement this section.

(c) Subsection (a) shall remain in effect until the earlier of December 31, 2012, or such time as--

(1) the Western Pacific Regional Fishery Management Council recommends an amendment to the Pelagic Fishery Management Plan for the Western Pacific Region, and implementing regulations, to the Secretary of Commerce that authorize use, assignment, allocation, and management of catch limits of highly migratory fish stocks, or fishing effort limits, established by the Commission and applicable to U.S. Participating Territories;

(2) the Secretary of Commerce approves the amendment as recommended; and

(3) such implementing regulations become effective.

This title may be cited as the 'Department of Commerce Appropriations Act, 2012'.

Appendix C- Description of Western Pacific Pelagic Fisheries[51]

1.0 American Samoa

Up until the late 1990s, most pelagic fish landed in American Samoa came from troll fishing. However, in 1995, small-scale longline fishing began in American Samoa following training initiated by the Secretariat of the Pacific Community (Chapman 1998). Until the year 2000, most of the longline activity in American Samoa was conducted from small *alia* catamarans powered by outboard motors and with longline gear. After 2002, the number of *alias* in the fishery began to decline from a peak of around 37 vessels to just a single vessel operating in 2011. Over the same period, the fleet of conventional monohull longline vessels expanded to where there were between 20-30 vessels fishing each year.

Longline vessels operating from American Samoa primarily target albacore, which is sold to directly to StarKist, the one remaining tuna cannery in Pago Pago. In September 2009, the Chicken-of-the-Sea cannery closed resulting in a loss of approximately 25 percent of the Territory's workforce, which has significantly impacted ancillary businesses, American Samoa Government, and the overall economy. In 2010, the fishing company and tuna supplier, Tri-Marine acquired the Chicken-of-the-Sea cannery in American Samoa, and developed a new company, Samoa Tuna Processors, to process and export fresh tuna by air freight for the premium tuna markets in both Japan and the United States mainland. The company also plans to rehabilitate the tuna canning facilities and conduct canning operations and to construct a new fresh fish processing facility to service the local longline fishery.

A summary of pelagic fishery landings in American Samoa during 2011 is given in Table C-1.

[51] This appendix describes 2011 fisheries statistics, because at the time of writing 2012 information was still in draft form and not yet published in the 2012 Pelagics Annual Report of the Western Pacific Region.

Table C-1: American Samoa 2011 estimated commercial landings, value and average price by pelagic species

Species	Longline			Troll/Non-Longline		
	Pounds	Value($)	Price/ LB	Pounds	Value($)	Price/ LB
Skipjack tuna	243,178	$243,583	$1.00	18,342	$45,269	$2.47
Albacore tuna	5,094,253	$5,094,253	$1.00	0	$0	
Yellowfin tuna	1,191,645	$1,195,628	$1.00	11,633	$29,083	$2.50
Kawakawa	0	$0		220	$547	$2.48
Bigeye tuna	377,871	$377,871	$1.00	0	$0	
Tunas (unknown)	0	$0		1,526	$3,815	$2.50
TUNAS SUBTOTALS	6,906,947	$6,911,335	$1.00	31,722	$78,714	$2.48
Mahimahi	19,327	$19,327	$1.00	609	$1,522	$2.50
Black marlin	2,468	$2,717	$1.10	0	$0	
Blue marlin	6,182	$6,182	$1.00	0	$0	
Wahoo	278,228	$282,001	$1.01	55	$100	$1.83
Sharks (all)	0	$0		169	$85	$0.50
Swordfish	2,893	$7,732	$2.67	0	$0	
Sailfish	5,982	$5,982	$1.00	72	$181	$2.50
Oilfish	0	$0		270	$675	$2.50
NON-TUNA PMUS SUBTOTALS	315,081	$323,942	$1.03	1,176	$2,563	$2.18
Barracudas	807	$2,219	$2.75	759	$2,072	$2.73
Rainbow runner	0	$0		86	$253	$2.93
Dogtooth tuna	0	$0		292	$755	$2.59
OTHER PELAGICS SUBTOTALS	807	$2,219	$2.75	1,138	$3,080	$2.71
TOTAL PELAGICS	**7,222,836**	**$7,237,496**	**$1.00**	**34,035**	**$84,357**	**$2.48**

Source: WPRFMC unpublished data

1.1 Troll Fishery

Small-scale troll fishing in coastal waters has been conducted for many years from *alia* and other small fishing craft. Trolling regularly occurs closer to the islands of American Samoa, at different times, and targets different depths than longline fishing. Skipjack and yellowfin tunas are the primary species caught. Some of the catch is sold to stores, restaurants, and local residents. Catch is also donated for family functions. A summary of the commercial troll catch from 1982-2011 in American Samoa is given in Table C-2.

Table C-2: Summary of American Samoa commercial troll fishery catch and effort, 1982-2011.

Year	Troll vessels (n)	Mahi- mahi	Wahoo	Blue marlin	Sailfish	Skipjack tuna	Yellowfin tuna	Other Pelagic	Total
1982	22	777	114	315	127	15,877	7,038	2,154	26,402
1983	35	1,443	632	1,083	74	58,997	19,789	14,273	96,291
1984	50	1,844	1,777	6,097	989	117,693	58,704	53,997	241,101
1985	47	8,011	2,678	2,574	2,744	38,902	38,586	49,705	143,200
1986	49	10,542	2,282	4,327	294	139,421	51,439	10,347	218,652
1987	32	3,049	1,395	265	1,187	116,436	27,451	6,793	156,576
1988	42	6,736	1,962	10,217	394	153,905	48,319	11,316	232,849
1989	43	3,171	1,476	10,592	758	118,997	51,890	12,299	199,183
1990	36	3,166	1,332	4,336	0	53,376	25,172	7,901	95,283
1991	27	2,094	14,629	7,202	0	42,462	28,192	5,930	100,509
1992	26	2,325	3,904	4,807	0	69,901	23,916	5,494	110,347
1993	33	4,000	5,977	6,545	218	25,356	18,180	4,333	64,609
1994	40	9,086	7,261	18,661	1,561	136,762	49,415	20,295	243,041
1995	41	8,393	12,625	21,272	2,751	168,389	54,139	10,877	278,446
1996	37	5,022	4,398	7,866	1,444	53,092	37,049	12,443	121,314
1997	32	3,623	2,074	5,379	0	30,430	21,679	6,958	70,143
1998	24	843	487	1,592	314	14,822	6,762	3,182	28,002
1999	36	2,193	685	590	184	35,171	11,566	2,722	53,111
2000	19	66	140	623	0	15,660	4,892	3,446	24,827
2001	19	786	588	0	0	15,169	5,572	7,353	29,468
2002	16	680	351	0	0	10,839	11,793	3,357	27,020
2003	20	1,434	612	1,344	0	19,464	6,953	3,371	33,178
2004	18	458	535	0	31	20,469	5,827	3,040	30,360
2005	9	155	709	300	253	9,041	6,597	1,460	18,515
2006	9	1,165	517	0	0	9,963	7,535	6,755	25,935
2007	19	690	729	207	17	11,373	8,209	2,030	23,255
2008	17	888	164	0	151	16,303	19,983	3,149	40,638
2009	10	113	0	0	0	2,775	2,775	4,587	10,250
2010	7	0	64	0	0	2,043	2,052	741	4,900
2011	10	609	55	0	0	19,559	12,088	775	33,086
Mean	27.50	2,778	2,338	3,873	449	51,421	22,452	9,369	96,345
Percent of mean		2.88%	2.43%	4.02%	0.47%	53.37%	23.30%	9.72%	100.00%

Source: WPRFMC 2012 and unpublished data.

Participation in the troll fishery was highest in the mid-1980s with almost 50 vessels landing troll caught fish (Figure C-1). The decline in troll fishing preceded the advent of the longline fishery,

but the expansion of longlining in the mid-1990s was marked by a major decline in vessels using trolling gear to a record low of 7 vessels in 2010 (Table 2). Troll catches were much higher prior to 2000, which is the year the longline fishery expansion began. The peak year for the troll fishery was 1995, when catches exceeded 278,000 pounds. Catches since 2000 have been on a declining trend, reaching their lowest ever in 2010, with just under 5,000 pounds landed (Figure C-2). In 2011, 10 troll vessels landed 33,086 lbs of pelagic fish.

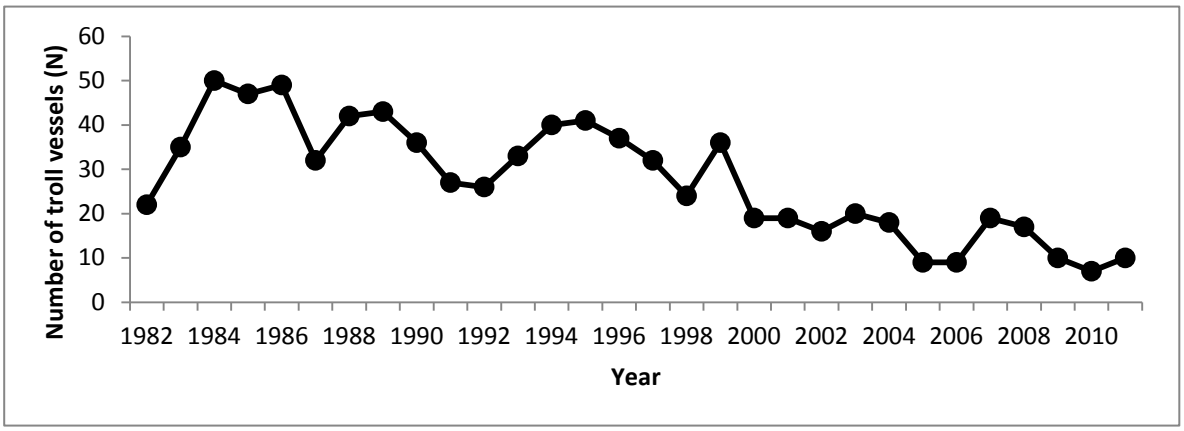

Figure C-1: Time series of annual numbers of vessels using troll gear in American Samoa.
Source: WPRFMC (2012) and unpublished data.

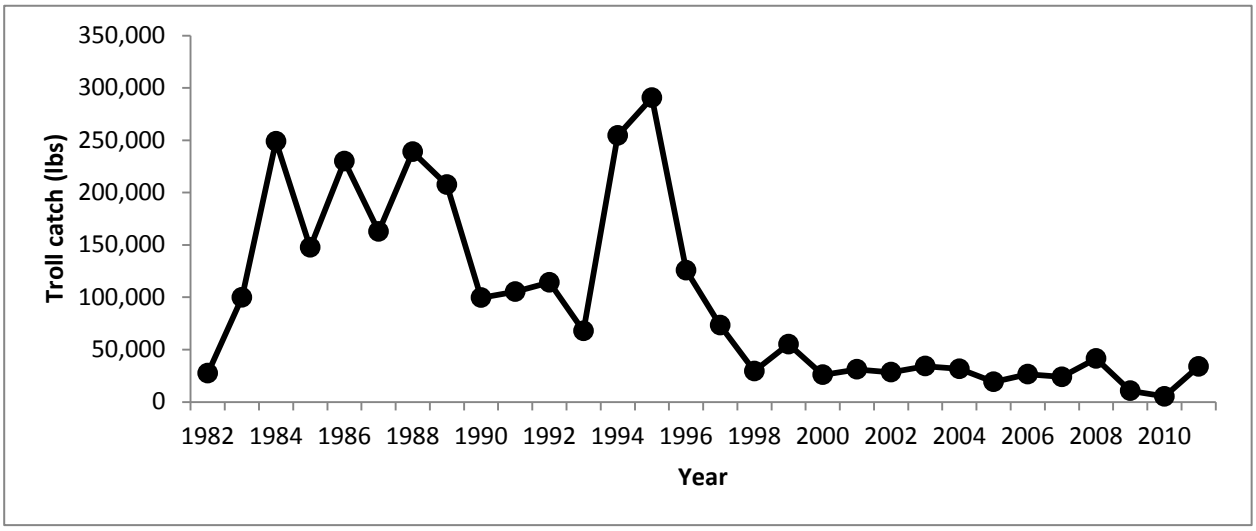

Figure C-2: Time series of total catch by the American Samoa troll fishery.
Source: WPRFMC (2012) and unpublished data.

Trolling catch rates have varied since 1982 from between 17 and 50 lb per troll hour, and an overall mean of about 28 lb per troll hour (Figure 3). The catch per unit of effort (CPUE) trend is driven primarily by skipjack, which varied between 8 and 26 lb/troll-hour and a mean of 14 lb per troll hour. Yellowfin catch rates have generally been lower than the skipjack CPUE, varying between 3 and 25 lb per troll hour, and a mean of about 8 lb per troll hour. Most recently, after 2004, the CPUE of yellowfin and skipjack tunas have been similar.

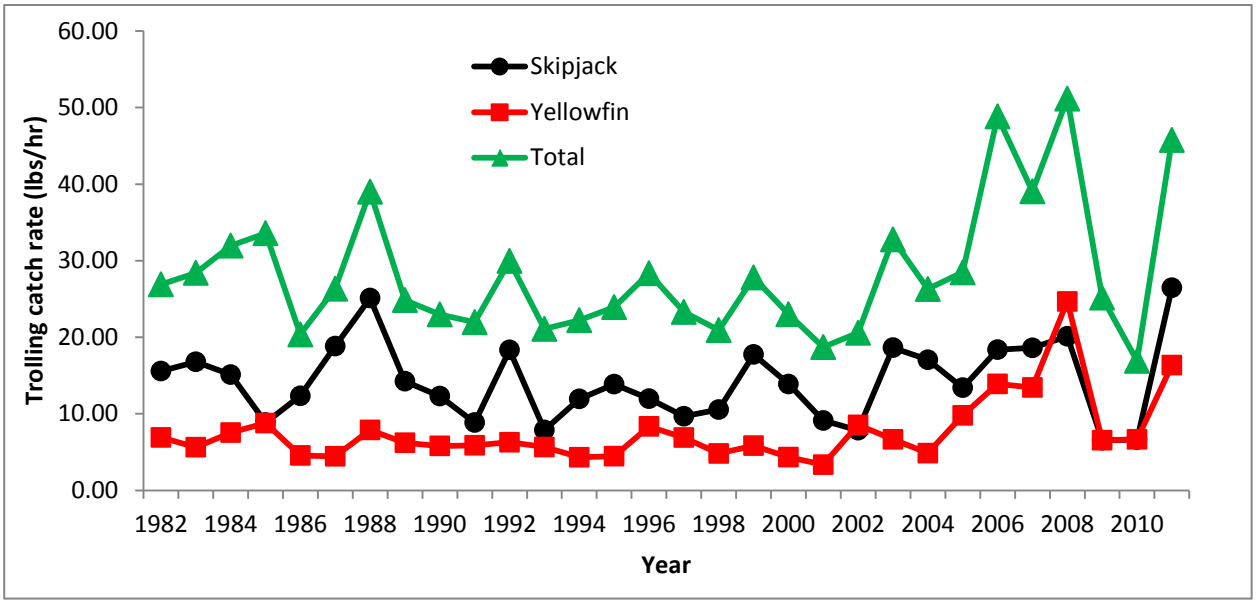

Figure C-3: Time series of catch per unit of effort of all pelagic species, skipjack tuna and yellowfin tuna for the American Samoa troll fishery
Source WPRFMC (2012) and unpublished data

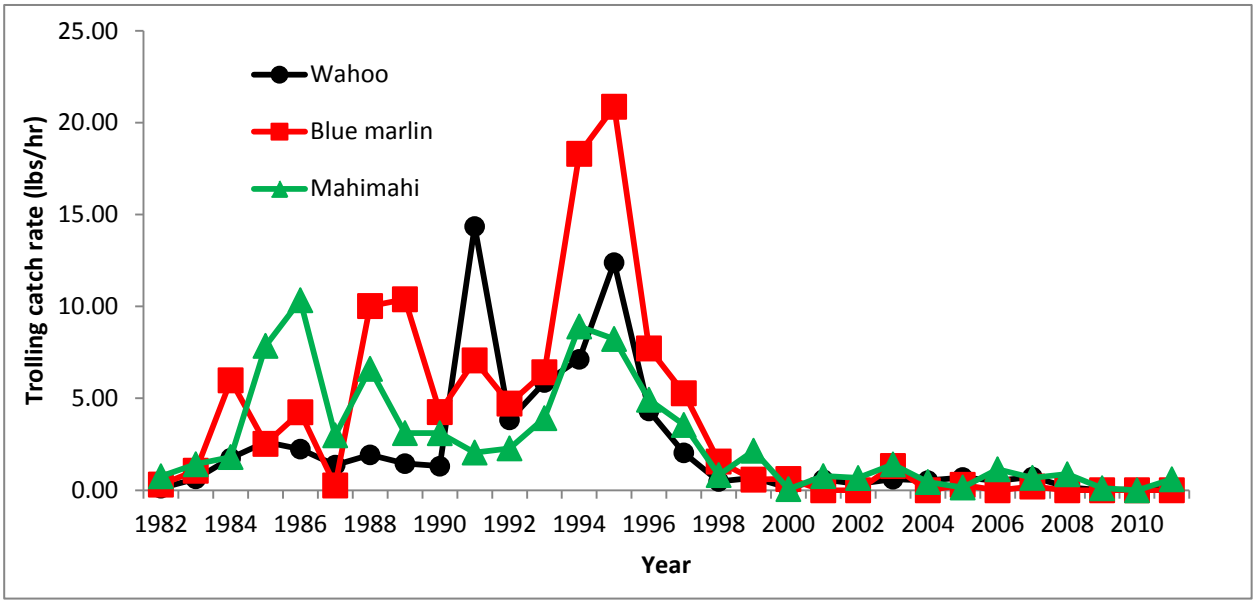

Figure C-4: Time series of catch per unit of effort of mahimahi, wahoo and blue marlin for the American Samoa troll fishery
Source: WPRFMC (2012) and unpublished data.

Catch rates of wahoo, mahimahi and blue marlin show two distinct trends (Figure C-4), generally increasing up to mid-1990s when the troll fishery was at its peak and then declines to near zero levels after 1997. This latter trend is likely an artifact from the expansions of the creel survey data and the low participation rate in the troll fishery after the mid-1990s. Even with much lower

levels of troll fishing after the mid-1990s, commonly caught species continue to be well represented in the creel surveys, as opposed to wahoo, mahimahi and blue marlin which are caught much less frequently and hence under-represented in the creel surveys and in the expanded estimates.

1.2 Longline Fishery

The American Samoa longline fishery began to expand rapidly after the year 2000 with the influx of large (≥ 50 ft overall length) conventional monohull vessels similar to the type used in the Hawaii-based longline fisheries. These vessels were larger, had a greater range, and were able to set more hooks per trip than the average alia vessel. Albacore (*Thunnus alalunga*) is the target species in the longline fishery with depth distribution ranging from surface down to at least 380 m. Vessels over 50 feet can set 1,500 - 4,000 hooks per day and have a greater fishing range and capacity for storing fish (8–40 metric tons) as compared with small-scale vessels. Larger vessels are also outfitted with hydraulically powered reels to set and haul fishing gear, and with modern electronic equipment for navigation, communications, and fish finding. Most vessels are presently being operated to freeze albacore onboard.

In 2001-2002, while the Council developed the 3-50 nm large vessel area closures around American Samoa to reduce the potential for gear conflicts between small- and large-scale fishing sectors, American Samoa's active longline fleet increased from 21 mostly small, alia-type vessels to 75 vessels of a variety of sizes with American Samoans mostly owning small vessels and non-American Samoans mostly owning large vessels (WPRFMC 2003). The rapid expansion of longline fishing effort within the EEZ waters around American Samoa prompted the Council to develop a limited entry system for the American Samoa pelagic longline fishery.

The purpose of the limited entry system was to: (1) avoid a "boom and bust" cycle of fishery development that could disrupt community participation in the American Samoa small-scale pelagic fishery; (2) establish a framework to adjust regulations for the American Samoa-based longline fishery; (3) reduce the potential for fishing gear conflicts in the EEZ around American Samoa; (4) maintain local catch rates of albacore tuna at economically viable levels; and (5) provide an opportunity for substantial participation by indigenous islanders in the large vessel sector of the fishery. The limited entry program's regulations were implemented on August 1, 2005 (70 FR 29646, May 24, 2005).

- Class A Permits— ≤ 40 ft
- Class B Permits— 40.1 to 50 ft
- Class C Permits— 50.1 to 70 ft
- Class D Permits— > 70 ft

In developing the American Samoa longline limited entry program, the Council identified 138 individuals who owned a longline vessel at any time prior to March 21, 2002 with 93 individuals owning Class A size vessels, nine owning Class B size vessels, 15 owning Class C size vessels and 21 owning Class D size vessels (WPRFMC 2003). However, upon initiation of the initial permit application and issuance process, only 60 initial permits were approved and issued by NMFS. Of these 60 permits, with fewer than 30 percent of potential Class A size vessel owners

applied for and received permits in comparison to 56 percent of Class B, 75 percent of Class C, and 100 percent of Class D size vessel owners (Table C-3).

Table C-3: Longline Vessels Prior to Permit Program and Initial Permit Allocation.

Class Sizes	Number of Vessels in 2002	Initial Permits Issued
A (≤ 40 ft)	93	22
B (40.1 ft to 50 ft)	9	5
C (50.1 ft to 70 ft)	15	12
D (> 70 ft)	21	21

Source: NMFS PIRO.

The American Samoa limited entry program is designed to maximize American Samoan participation in the fishery. Further, the limited entry program was established with the intent that the pioneer alia fishermen may be able to upgrade to larger conventional monohull vessels and thus increase benefits from the fishery. However, it appears that active participation in the smaller scale alia longline fishery is limited to a single vessel. As a result, the Council is currently considering options to revitalize the longline fishing fleet in order to maintain the important economic contributions this sector makes to the local economy (Bartram & Kaneko 2009).

A summary of the longline fishing effort (in millions of hooks) and catch is given in Table C-4. There were 23 large longliners operating in 2011, and 19 vessels operating in the first quarter of 2012 (NMFS PIFSC unpublished data). After 2000, when the fishery was still dominated by *alia* vessels, catches rose markedly from about 2 million pounds to about 16 million pounds in 2002. Catches have been variable but continue to be dominated by albacore tuna. The fishery peaked again in 2007 at 14 million pounds but declined thereafter to about half this total or 7 million pounds in 2011 (Figure C-5). Albacore forms almost 80 percent of landings, followed by yellowfin (10%), bigeye (3.6%), wahoo (3.5%) and skipjack (3.2%). Bigeye landings between 2002 and 2011 ranged from about 275,000 pounds to 535,000 pounds (124-243 mt) (WPRFMC unpublished data).

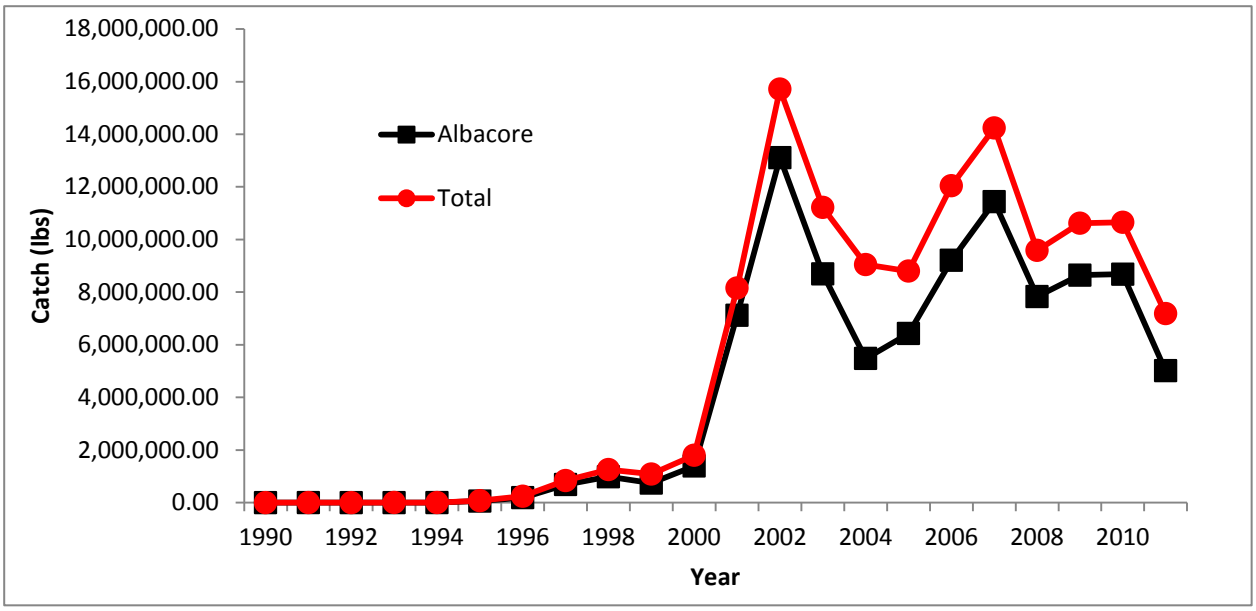

Figure C-5: Time series of catches by the American Samoa longline fishery.
Source: WPRFMC (2012) and unpublished data.

The fishery continues to operate mostly in the U.S. EEZ around American Samoa and in a high seas pocket to the northeast of American Samoa (Figure C-6). Some vessels also have access agreements with the Cook Islands, and occasionally other neighboring countries.

Around 12 American Samoa longline permit holders also hold Hawaii longline permits. NMFS attributes bigeye tuna landings into Hawaii from the dual permitted vessels to American Samoa.

Table C-4: Catch and fishing effort for the American Samoa longline fishery, 1990- 2011.

Year		Catch (lbs)									
	hooks set (x 1000)	Mahi mahi	Wahoo	Blue marlin	Sailfish	Skipjack tuna	Yellowfin tuna	Bigeye tuna	Albacore	Swordfish	Total
1990		0	0	0	0	0	0	0	0		0
1991		61	0	61	0	345	262	0	1,730		2,459
1992		0	0	0	0	0	0	0	0		0
1993		212	1,227	212	618	533	2,632	708	315		6,457
1994		101	0	101	0	103	1,716	0	1,609		3,630
1995		2,373	1,642	2,373	3,078	160	4,052	2,191	58,949		74,818
1996	99	5,395	3,570	5,395	3,130	438	25,662	8,701	190,269	893	243,453
1997	419	33,412	15,807	33,412	6,921	2,546	48,589	8,808	689,397	701	839,593
1998	773	33,484	40,439	33,484	7,191	40,625	92,528	22,291	983,560	3,716	1,257,318
1999	916	35,779	48,181	35,779	7,391	56,014	139,496	19,211	743,038	2,259	1,087,148
2000	1,334	42,857	47,330	42,857	2,257	32,153	190,564	47,710	1,394,011	2,056	1,801,795
2001	5795	87,037	114,219	87,037	5,498	149,565	413,999	165,755	7,120,245	13,091	8,156,446
2002	13,095	84,603	362,689	84,603	6,932	538,700	1,060,315	436,280	13,109,695	32,710	15,716,527
2003	14,165	81,022	431,531	81,022	6,268	264,414	1,096,218	534,903	8,693,212	32,231	11,220,821
2004	11,741	42,718	475,032	42,718	4,598	519,129	1,959,674	502,541	5,480,841	20,195	9,047,446
2005	11,128	53,078	487,394	53,078	4,959	312,055	1,151,375	293,605	6,429,023	16,491	8,801,058
2006	14,262	48,705	630,329	48,705	12,933	470,166	1,095,952	443,042	9,210,565	83,615	12,044,012
2007	17,551	31,415	436,921	31,415	2,167	365,220	1,396,331	509,385	11,438,307	28,287	14,239,448
2008	14,444	28,069	299,481	28,069	1,931	359,568	749,825	274,482	7,831,590	14,889	9,587,904
2009	15,074	36,799	305,835	36,799	4,184	343,586	866,522	353,779	8,644,528	27,615	10,619,647
2010	13,174	18,049	289,545	18,049	3,404	245,572	981,258	392,896	8,680,579	24,816	10,654,168
2011	10,767	21,260	278,228	21,260	6,820	242,595	1,186,777	384,615	5,016,181	26,979	7,184,715
Mean	9,406	31,201	194,064	31,201	4,104	179,249	566,534	200,041	4,350,802	20,659	5,572,221
Percent of mean		0.56%	3.48%	0.56%	0.07%	3.22%	10.17%	3.59%	78.08%	0.37%	100.00%

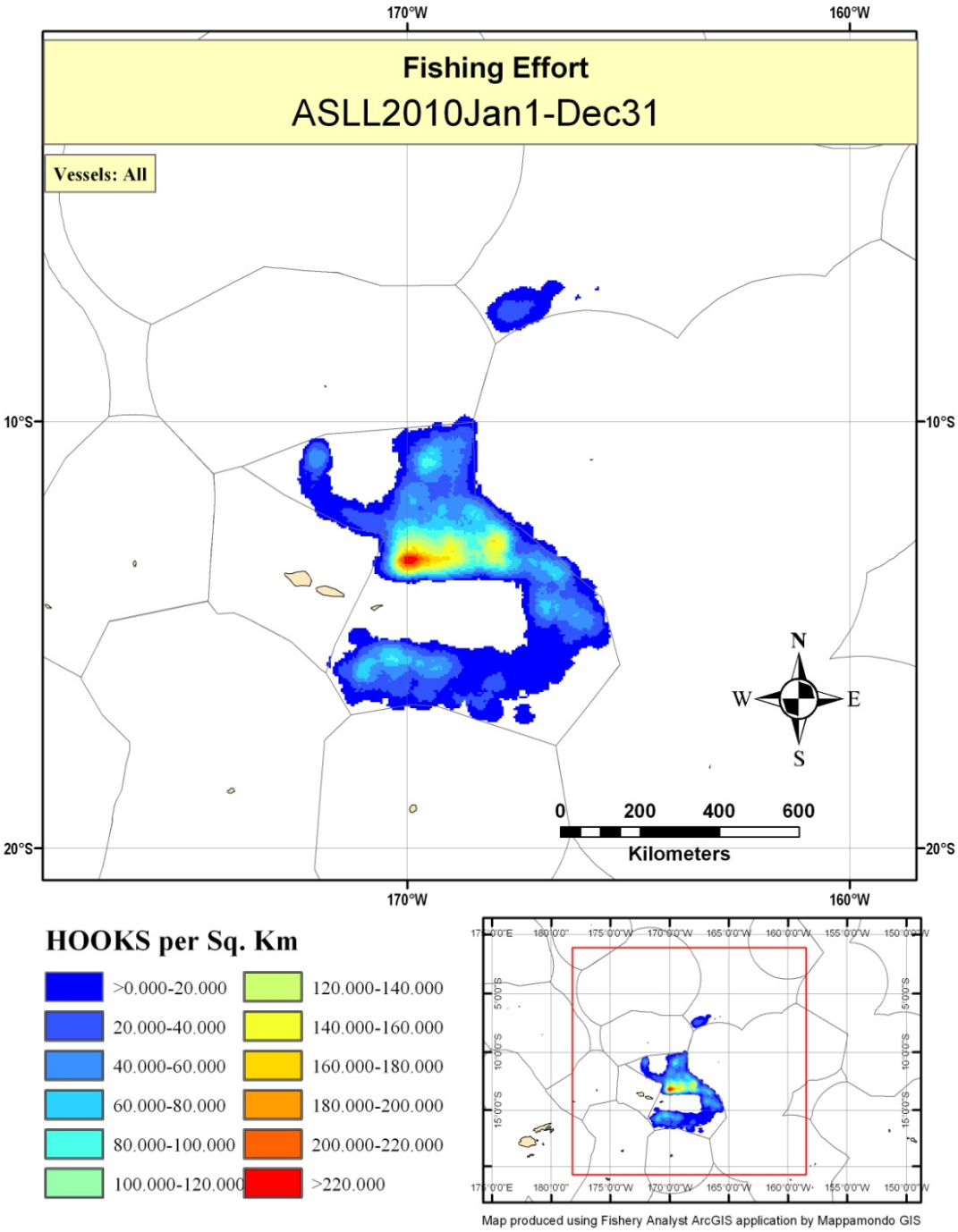

Figure C-6: Distribution of fishing effort within and beyond the U.S. EEZ around American Samoa in 2010.
Source: NMFS Pacific Islands Fisheries Science Center.
Note: Some fishing effort may not be shown due to NMFS confidentiality protocols.

Expressing the CPUE trends for the American Samoa longline fishery is problematic in that the fishery initially comprised few monohull vessels and many alia catamarans[52]. After the year 2000, the number of alia declined markedly from 37 in 2000 to 1 by 2011. Figure C-7 shows the time series of the aggregate CPUE from all longliners from 2002 onwards, when large conventional monohull longliners were the predominant fishing vessel used in the fishery. Albacore CPUE declined from around 25 fish per 1,000 hooks in 2002, varying from around 12-18 fish per 1,000 hooks thereafter. Skipjack tuna CPUE show a declining trend from a 2002 high of 5 fish per 1,000 hooks, to about 2 fish per 1,000 hooks in recent years. Yellowfin tuna CPUE has been variable, with a peak in 2004 of about 3 fish/1000 hooks and a low of about 1 fish/1,000-hooks in 2008. The bigeye tuna CPUE trajectory is similar to that of yellowfin, with a peak in 2004 of about 1 fish per 1,000 hooks, and a low of 0.5 fish per 1,000 hooks in 2008.

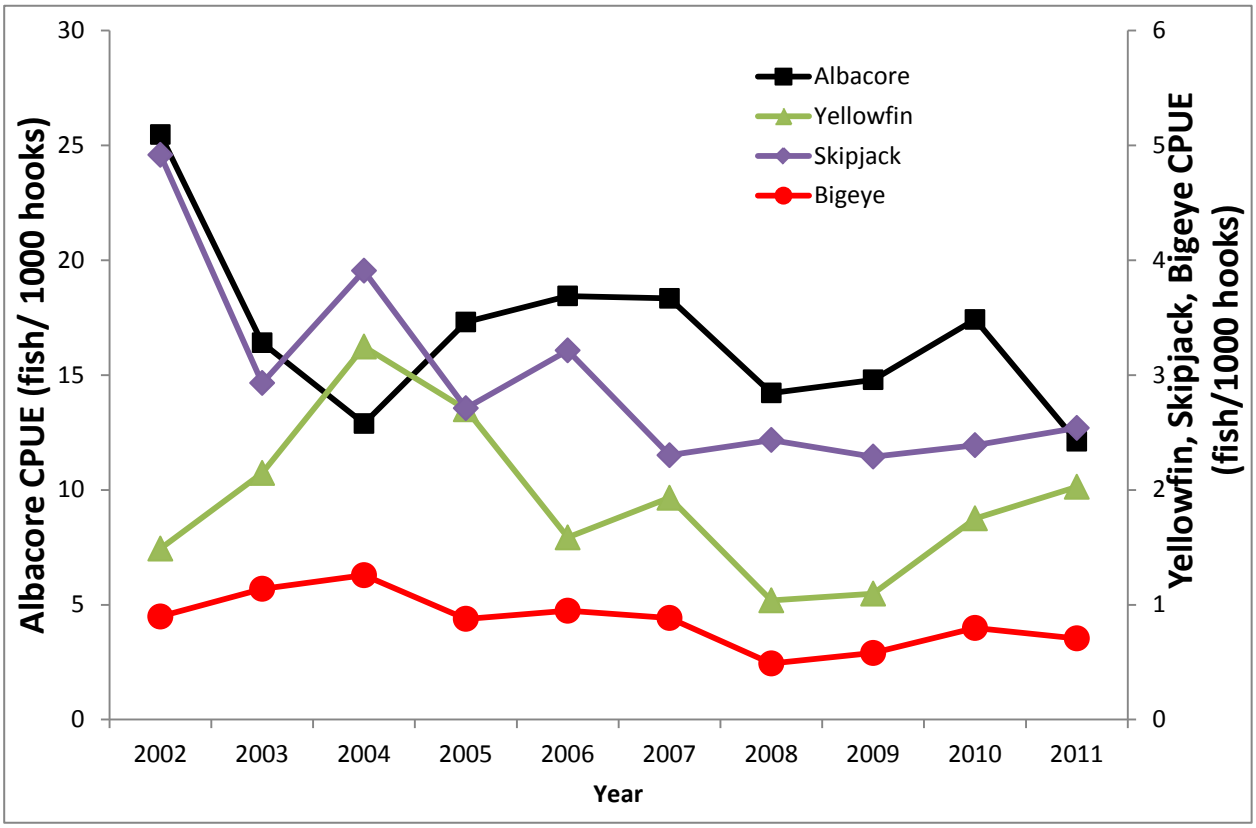

Figure C-7: CPUE time series for the American Samoa longline fishery.

The CPUEs for non-tuna pelagic species, including sharks, is shown in Figure C-8. Sharks and mahimahi CPUEs have exhibited a declining trend since 2002. Wahoo CPUE has been variable, peaking in 2004 at about 1.6 fish per 1,000 hooks and a low in 2008 of 0.8 fish per 1,000 hooks. The wahoo CPUE trend is similar to that of bigeye and yellowfin tunas. Billfish CPUE has shown little variation ranging between 0.3 and 0.5 fish per 1,000 hooks between 2002 and 2011.

[52] The CPUE values are sums of the longline logbook catch (number of fish kept+released) from the longline logs for the two types of longline vessels in Samoa, alias and monohulls, divided by the total number of hooks set by each type of vessel.

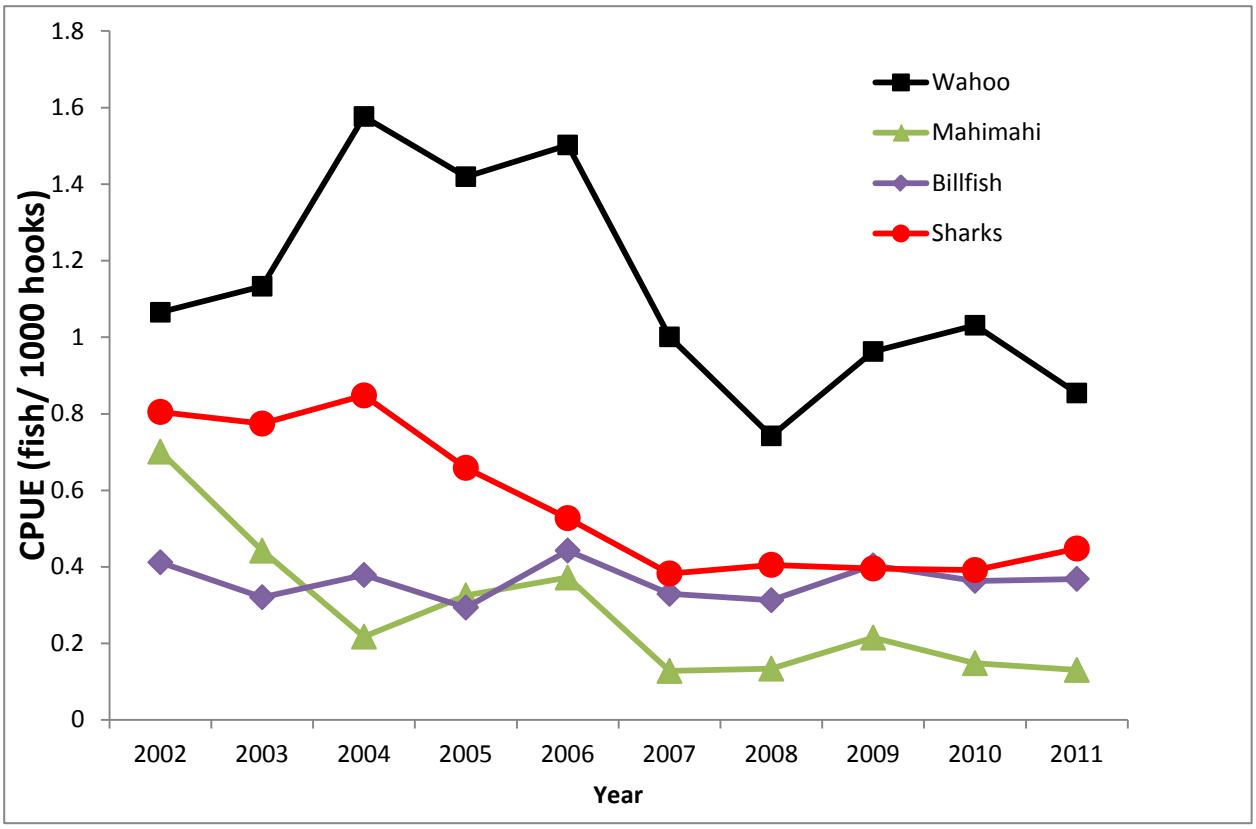

Figure C-8: CPUE time series for other pelagic fishes in the American Samoa longline fishery.

Table C-5 shows the number of fish kept and released in the American Samoa longline fishery during 2012. Overall, 12 percent of the total catch was released, with skipjack tuna having one of the highest numbers released. Fishermen released nearly all sharks and oilfish. Fish are released for various reasons including quality, size, handling and storage difficulties, and as well as marketing issues. However, it is expected that catch rates and total catches of some pelagic MUS, such as the billfishes and mahimahi that typically occur closer to the surface, would be reduced by fishing with gear at 100 m and deeper, which was mandated in 2011 through gear configuration requirements (50 CFR § 665.819).

Species	Number Kept	Number Released	Percent Released
Skipjack tuna	23,160	4,186	15.3
Albacore tuna	129,930	541	0.4
Yellowfin tuna	21,378	450	2.1
Bigeye tuna	7,232	382	5.0
Tunas (unknown)	20	8	28.6
TUNAS SUBTOTALS	181,720	5,567	3.0
Mahimahi	1,055	352	25.0
Black marlin	14	8	36.4
Blue marlin	641	1,020	61.4
Striped marlin	92	196	68.1
Wahoo	7,589	1,609	17.5
Sharks (all)	104	4,720	97.8
Swordfish	213	105	33.0
Sailfish	117	335	74.1
Spearfish	253	976	79.4
Moonfish	119	263	68.8
Oilfish	85	6,394	98.7
Pomfret	121	542	81.7
NON-TUNA PMUS SUBTOTALS	10,403	16,520	61.4
Barracudas	60	187	75.7
Dogtooth tuna	0	1	100
Pelagic fishes (unknown)	19	3,847	99.5
OTHER PELAGICS SUBTOTALS	79	4,035	98.1
TOTAL PELAGICS	192,202	26,122	12.0

Table C-5: American Samoa Longline Fishery Quantity Kept versus Released, 2012.

1.3 Recreational Fishing

Levine and Allen (2009) provide an overview of fisheries in American Samoa, including subsistence and recreational fisheries. Citing a survey conducted in American Samoa by Kilarski et al. 2006, Levine and Allen noted that approximately half of the respondents stated that they fished for recreation, although this was also infrequent, with 71 percent of these individuals fishing once a week or less. Fishermen also fished infrequently for cultural purposes, although cultural, subsistence, and recreational fishing categories were difficult to distinguish as one fishing outing could be motivated by all three reasons.

There is no full-time regular charter fishery in American Samoa similar to those in Hawaii or Guam, although a local engineering company will take fishing charters on demand. The Pago Pago Game Fishing Association (PPGFA) annually hosts international tournaments with fishermen from neighboring Samoa and Cook Islands participating. The PPGFA also hosted the 11th Steinlager I'a Lapo'a Game Fishing Tournament, a qualifying event for the International Game Fish Association’s Offshore World Championship in Mexico. There are about 15 recreational fishing vessels ranging from 10 feet single engine dinghies to 35 foot twin diesel engine cabin cruisers. The recreational vessels fish extensively around fish aggregating devices (FADs), and during tournaments venture to the various outer banks which include the South

Bank (35 miles), North East Bank (40 miles NE), South East Bank (37 miles SE), 2% Bank (40 miles), and East Bank (24 miles E).

A summary of the species composition of fishery tournaments held between 1974 and 2010 is given in Table C-6. The data do not document every tournament held in the four decades since records were kept, but cover 55 individual competitions. Of the 136,000 pounds of fish landed in all these tournaments combined, almost two-thirds of the catch comprised equal amounts of skipjack and yellowfin tuna, while blue marlin, wahoo, mahimahi and sailfish made up most of the balance of the catch.

Table C-6: Catch composition from recreational fishery tournaments held in American Samoa from 1974 to 2010.

Species	Weight (lb)	Percent
Skipjack tuna	40,655.85	29.93%
Yellowfin tuna	39,458.34	29.05%
Blue marlin	21,102.25	15.54%
Wahoo	11,807.25	8.69%
Mahimahi	11,035.20	8.13%
Sailfish	3,215.00	2.37%
Sharks (unknown)	2,805.75	2.07%
Dogtooth tuna	1,786.05	1.32%
Others	3,951.75	2.91%
Total	135,817.44	100.00%

Source: American Samoa's Department of Marine and Wildlife Resources.

Estimation of the volume and value of recreational fishing in American Samoa are not known with any precision. An approximation of the volume of boat based recreational fishing is generated in the Council's Pelagic Annual Report, based on the annual sampling of catches conducted under the auspices of WPacFIN[53]. Boat-based non-commercial catches have ranged from 6,523 pounds in 2007 (WPRFMC 2009) to 6,259 pounds in 2010 (WPRFMC 2012) These catches are unsold, but based on the 2010 average price for pelagic fish ($2.33/lb) (WPRFMC 2012) this would be worth about $15,000. The volume of fish is caught recreationally by fishing tournaments mounted by the PPGFA are not monitored by WPacFIN.

2.0 Commonwealth of Northern Mariana Islands

With the exception of Japanese pole and line fishing in the 1930s and 40s (Higuchi 2007) and a now defunct purse seine support base on Tinian, CNMI has never had a large infrastructure dedicated to commercial fishing. The pelagic fishing fleet consists primarily of trolling vessels less than 24 ft in length which generally take one-day trips within 30 nm around the islands where they find abundant skipjack tuna. The harvest of pelagic species by CNMI-based vessels has always been small, around 240,000 pounds, caught with trolling gear. CNMI's pelagic fishery occurs primarily from waters off the island of Farallon de Medinilla south to the island of Rota.

[53] http://www.pifsc.noaa.gov/wpacfin/

Interest in longline fishing in CNMI has been variable with the issuance of eight, four, and five Western Pacific General Longline permits from 2007 through 2009, respectively. A longline fishing company located on Saipan, which began operating in late 2007, had four vessels occasionally fishing waters around the Mariana Archipelago in 2010 beyond 30 nm from shore but within EEZ waters. However, this fishing operation was not successful and ceased in 2011. This fishery caught minor amounts of bigeye tuna and pelagic catch; however, specific information cannot be displayed due to confidentiality requirements.

The primary target and most marketable species for the pelagic fleet is skipjack tuna. In 2011, skipjack tuna continued to dominate the pelagic landings, comprising around 80 percent of commercial pelagic landings and revenues totaling about $134,000 (Table 6). Schools of skipjack tuna have historically been common in nearshore waters, providing an opportunity for trollers to catch numerous fish with a minimum of travel time and fuel costs. Yellowfin tuna and mahimahi are also easily marketable species but are seasonal. Peak mahimahi catches are usually from February through April while the yellowfin tuna season usually runs from April through September. Table 7 provides information on the number of boats and landings by species in the troll fishery from 1983-2011.

Table C-7: CNMI 2011 Commercial Pelagic Trolling Landings, Revenues and Price.

Species	Landing(lbs)	Value($)	Avg Price ($/Lb)
Skipjack	33,989	65,889	1.94
Yellowfin	11,979	22,533	1.88
Saba (Kawakawa)	823	1,645	2.00
Tuna	46,790	90,067	1.92
Mahimahi	13,997	26,561	1.90
Wahoo	5,849	11,517	1.97
Sailfish	38	56	1.50
Sickle Pomfret	113	281	2.50
Non-tuna PMUS	19,996	38,415	1.92
Dogtooth tuna	2,364	4,147	1.75
Rainbow runner	863	1,725	2.00
Non-PMUS Pelagic	3,226	5,872	1.82
Total	70,012	134,354	1.92

Source: WPRFMC unpublished.

Table C-8: CNMI Total Commercial Trolling Landings (lb) 1983-2011.

Year	Boats	Mahimahi	Wahoo	Blue Marlin	Skipjack	Yellowfin	Other species	Total
1983	92	13939	8760	3787	183411	21281	14807	245,985
1984	99	7614	14087	1544	290843	19580	7468	341,136

1985	82	12955	18251	1860	177344	12466	11302	234,178
1986	96	17796	9062	2654	254362	16917	6668	307,459
1987	62	9502	13404	2460	161504	10454	7744	205,068
1988	78	30799	11697	1309	266497	15375	8846	334,523
1989	77	7320	1571	5704	257703	10109	4377	286,784
1990	79	10439	3462	2034	147962	10468	6085	180,450
1991	76	33756	1521	1568	115802	13042	22872	188,561
1992	104	26257	17172	6603	82280	25687	41229	199,228
1993	55	37545	2779	3687	97268	14898	25151	181,328
1994	65	15063	3863	2635	92212	13445	20111	147,329
1995	89	23321	5722	6619	131377	20918	12223	200,180
1996	114	35655	10783	8593	165037	38043	23166	281,277
1997	111	31277	7580	7068	133446	21352	18150	218,873
1998	92	25375	6299	4201	167114	14570	22704	240,263
1999	106	12882	8063	3541	106297	24419	21829	177,031
2000	113	7324	4097	3608	140389	17673	14204	187,295
2001	113	14229	4550	1924	133769	14543	10166	179,181
2002	90	18042	8212	1261	179966	30017	19484	256,982
2003	73	7357	7950	1130	171574	26042	14363	228,416
2004	71	35808	6936	2001	148328	27548	18386	239,007
2005	77	26891	3349	1595	260614	52014	27912	372,375
2006	65	17181	3116	1402	265753	41996	17742	347,190
2007	52	26410	2504	76	238972	34894	9698	312,554
2008	52	13187	1669	2027	170059	18695	9306	214,943
2009	47	20030	3500	82	133794	26463	6,676	190,545
2010	40	23157	2887	73	124096	30507	7,631	188,351
2011	37	13,997	5,849	0	33,989	11,979	4,198	70,012
Average	80	19,831	6,852	2,795	166,612	21,910	14,983	232,983
		8.46%	2.92%	1.19%	71.06%	9.34%	6.39%	99.37%

Source: WPRFMC (2012) and unpublished data.

CNMI's commercial troll fleet varied between 50-100 vessels between 1983 to 2001, after which the number of vessels declined to 37 in 2011 (Figure C-9). The decline in commercial fishing was matched by a major decline in commercial pelagic landings, from in excess of 370,000 pounds in 2005 to 70,000 pounds in 2011 (Figure C-10). Catch rates in the fishery are driven primarily by skipjack comprising about 70 percent of the catch (Table C-8). Although the commercial fishery has declined, catch rates for skipjack and yellowfin tuna, and mahimahi have all increased in the last several years (Figure C-11 and Figure C-12).

It should be noted that the troll pelagic fisheries production in CNMI is considerably higher than the commercial fishery landings in Table C-8 and Figure C-10. This is from a combination of

factors. First, the collection of commercial troll fishing data is incomplete, relying as it does on the voluntary participation of fish dealers in allowing access to CNMI Division of Fisheries and Wildlife (DFW) staff to their trip receipts. Secondly, fishermen may sell some of their catch 'door to door', rather than through a commercial dealer, and is not captured by the dealer data. Thirdly, DFW staff conduct creel surveys of fishery and landings, and these indicate that the true scale of pelagic fishery landings in CNMI range from between 340,000 and 700,000 pounds, most of which is skipjack tuna (Figure C-13). This suggests a large non-commercial or subsistence sector, which may be two to three times larger than the commercial fishery. However, in common with the commercial fishing sector, the fishery as a whole has been declining due to a variety of reasons, including unfavorable sea conditions and the rising cost of troll fishing from increased fuel prices.

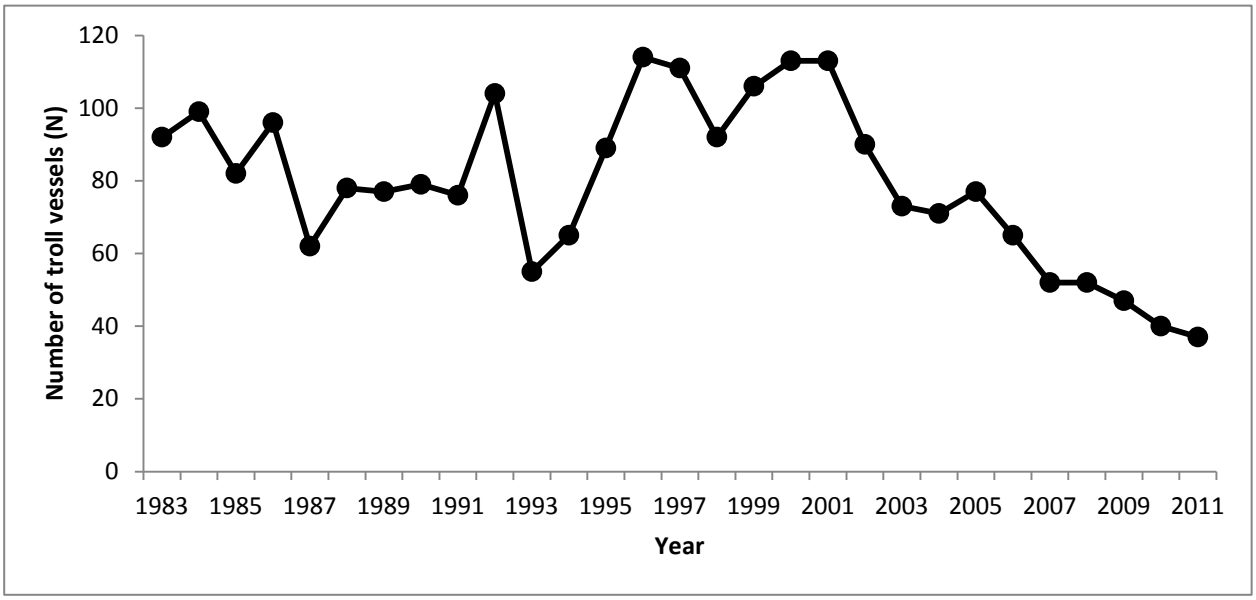

Figure C-9: Time series of annual numbers of vessels using troll gear in CNMI.
Source: WPRFMC (2012) and unpublished data.

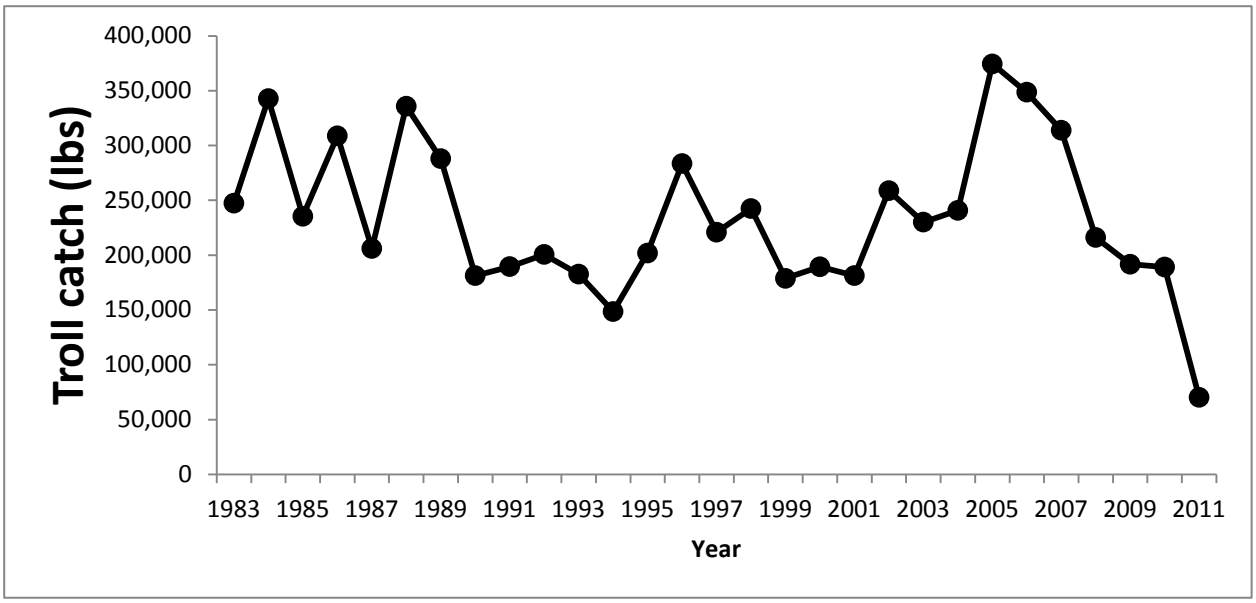

Figure C-10: Time series of total commercial catch by the CNMI troll fishery.
Source: WPRFMC (2012) and unpublished data.

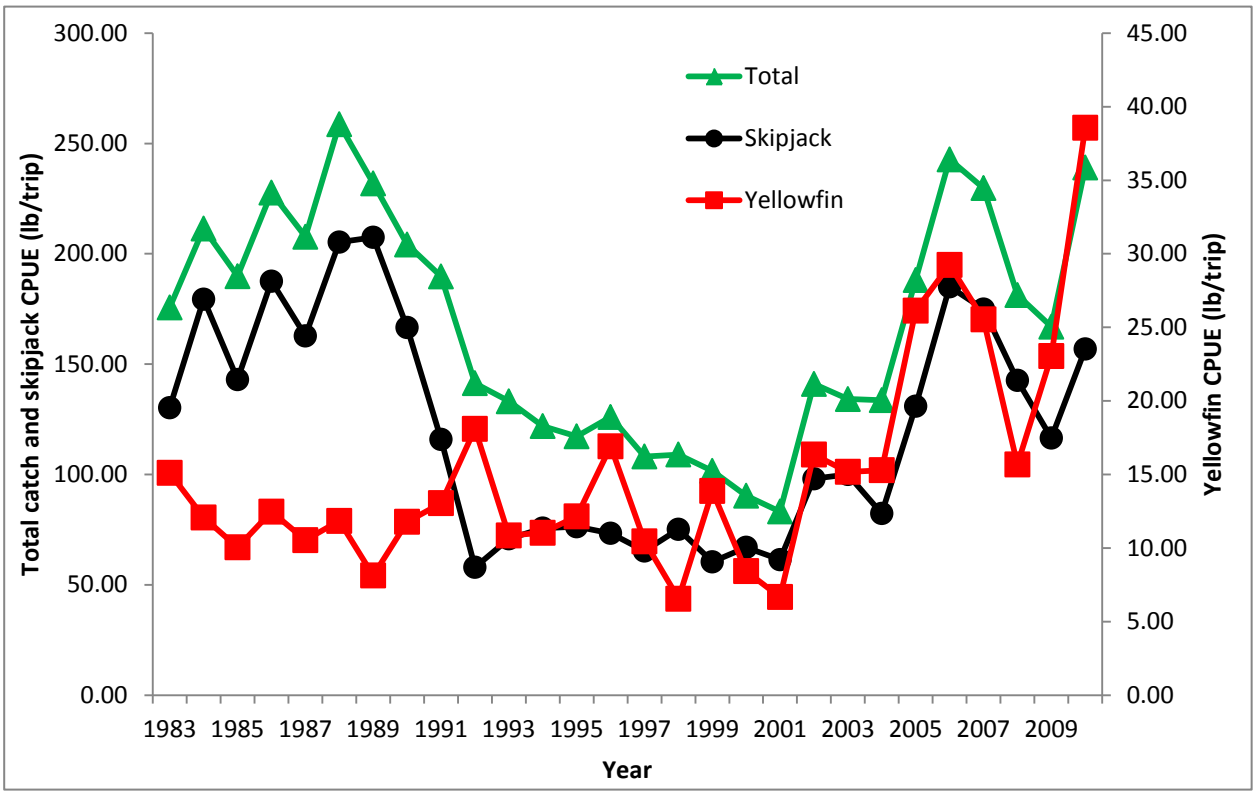

Figure C-11: Time series of catch per unit of effort of all pelagic species, skipjack tuna and yellowfin tuna by the CNMI troll fishery.
Source: WPRFMC (2012) and unpublished data.

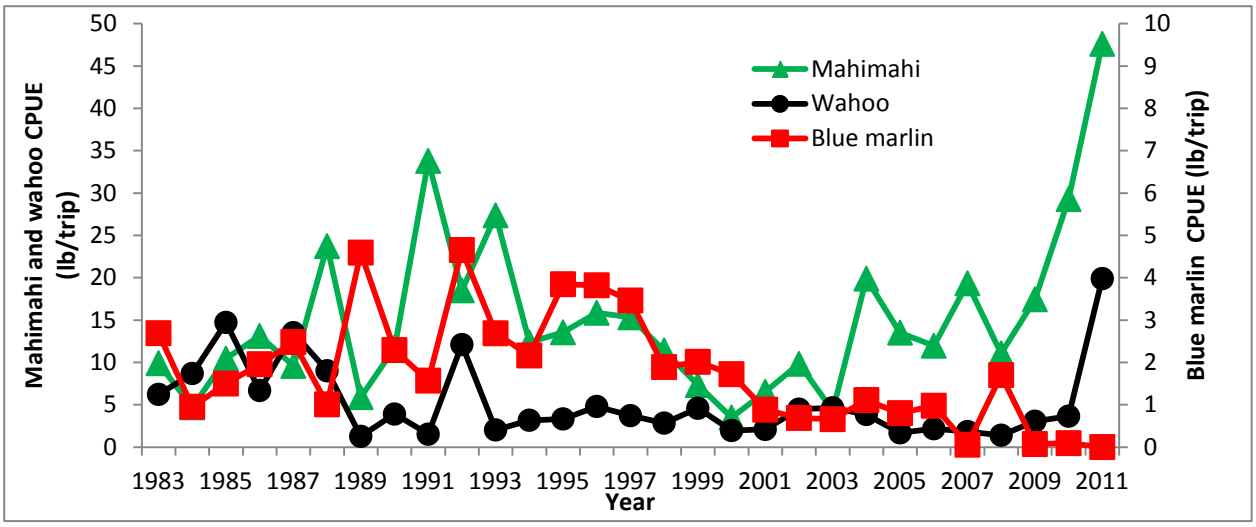

Figure C-12: Time series of catch per unit of effort of all mahimahi, wahoo and blue marlin by the CNMI troll fishery.
Source: WPRFMC (2012) and unpublished data.

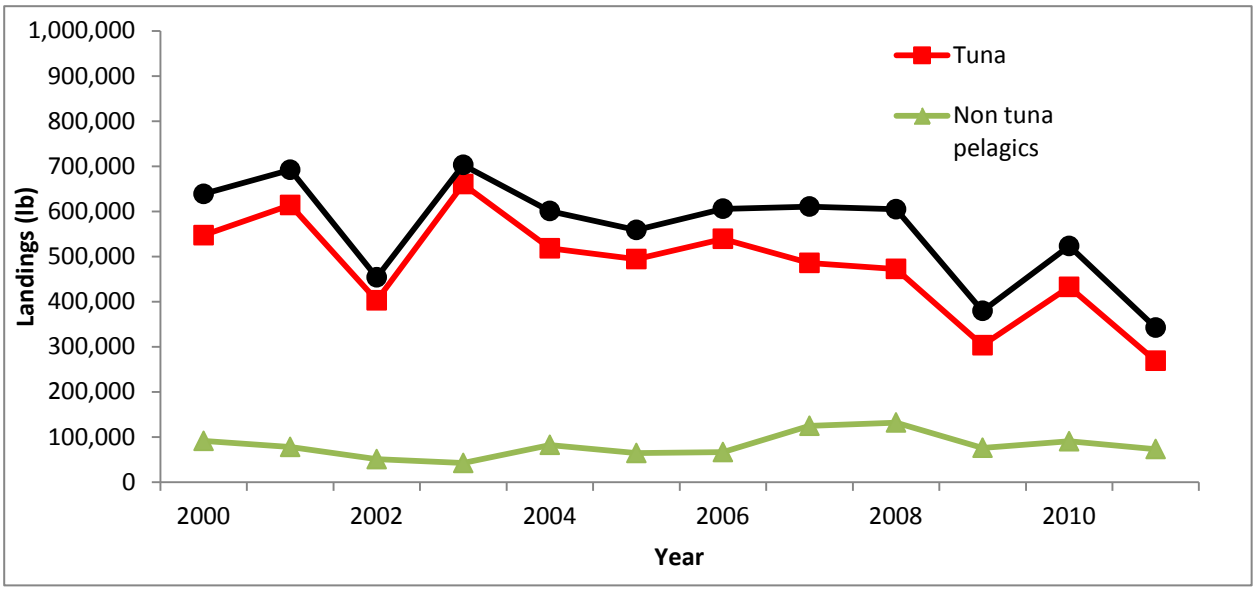

Figure C-13: Time series of total tuna and non-tuna pelagic species by the CNMI troll fishery.
Source: WPRFMC (2012) and unpublished data.

There is some charter fishing activity in the CNMI, with data limited to 2000 onwards. This pelagic fishery contributes to only 2-4 percent of the total (commercial and non-commercial) pelagic catch (Table 9).

Table C-9: Contribution of pelagic charter fishing to total pelagic catch in CNMI.

Year	Non-charter	Charter catch	Total (lb)	Charter as % of

	catch (lb)	(lb)		total
2000	614,737	24,240	638,977	3.79%
2001	674,397	18,097	692,494	2.61%
2002	442,094	12,033	454,127	2.65%
2003	694,950	8,440	703,390	1.20%
2004	589,836	11,299	601,135	1.88%
2005	539,094	20,059	559,153	3.59%
2006	595,061	11,150	606,211	1.84%
2007	600,886	10,110	610,996	1.65%
2008	602,148	2,866	605,014	0.47%
2009	376,136	3,694	379,830	0.97%
2010	519,480	4,043	523,523	0.77%
2011	333,163	9,493	342,656	2.77%

Source: WPRFMC (2012) and unpublished data.

3.0 Guam

For a complete description of troll, purse seine and longline gear please refer to section 4.1.1 of the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region (WPFMC 2009). Guam's principal pelagic fisheries comprise small, primarily recreational trolling boats that are towed to boat launch sites or are marina-berthed charter boats and fish only within territorial waters (0-3 nm), or within the U.S. EEZ within 50 nm of the shore. Most fishermen sell a portion of their catch at one time or another and it is difficult to make a distinction between recreational, subsistence, and commercial fishers. As of 2010 there were 15 civilian charter vessels on Guam (WPRFMC 2012) and one charter operation run by the U.S. military from Sumay Cove (John Calvo, Council staff, pers. comm.). A summary of the catches by the Guam charter fleet is given in WPRFMC (2012). A feature of the Guam charter industry is that catches are often served as sashimi to the patrons, most of whom are Japanese.

There are three sources of locally-caught fish in Guam's commercial market: (1) full-time commercial fishermen; (2) part-time commercial fishermen; and (3) subsistence or recreational "expense" fishermen who frequently sell portions of their catch to help defray costs. Licenses are not required to sell fish in Guam, nor are there any reporting requirements for those selling fish. A summary of Guam's pelagic troll catch in 2011 is given in Table C-10. Total revenues in 2011 were about $1.2 million. The total annual catches by Guam's troll fisheries are given in Table C-11. Like the CNMI, these catches include charter vessel catches and non-commercial catches.

Table C-10: Guam 2011 Commercial Pelagic Trolling Landings, Revenues and Price.

Species	Total catch (lb)	Average price ($/lb)	Value ($)
Skipjack	350,193	1.93	675,872.49
Yellowfin	81,814	2.11	172,627.54
Kawakawa	653	1.50	979.50
Mahimahi	90,888	2.18	198,135.84

Wahoo	37,354	2.20	82,178.80
Blue marlin	18,895	1.46	27,586.70
Sailfish	1,000	1.62	1,620.00
Sharks	238		0.00
Dogtooth tuna	1,840	1.50	2,760.00
Rainbow runner	3,473	1.97	6,841.81
Barracudas	2,065	1.97	4,068.05
Total	588,413		1,172,670.73

Source: WPRFMC (2012) and unpublished data.

Table C-1: Guam Total Trolling Landings (lb), 1982-2011.

Year	Boats	Mahimahi	Wahoo	Blue marlin	Skipjack	Yellowfin	Others	Total
1982	199	112,181	55,993	21,845	126,825	112,794	17,794	447,432
1983	193	156,340	86,530	30,402	97,802	65,996	13,753	450,823
1984	219	26,174	53,804	49,438	218,307	67,975	8,601	424,299
1985	276	72,361	123,685	55,945	110,303	95,273	19,506	477,073
1986	246	101,108	70,337	57,076	78,283	56,024	18,667	381,495
1987	219	79,480	86,465	49,360	61,806	41,444	19,799	338,354
1988	320	337,769	98,679	61,427	214,328	86,251	28,806	827,260
1989	329	96,043	127,325	85,515	128,209	40,457	28,262	505,811
1990	352	140,629	85,108	94,798	149,502	72,394	17,342	559,773
1991	349	415,944	55,926	87,869	118,708	44,034	15,172	737,653
1992	332	86,969	82,446	84,498	124,344	133,170	16,787	528,214
1993	346	234,979	62,550	57,992	109,582	50,350	32,842	548,295
1994	369	138,014	50,457	76,633	188,784	71,221	20,808	545,917
1995	427	326,979	77,391	76,569	179,036	93,495	27,919	781,389
1996	466	328,315	146,521	63,919	238,583	107,038	51,461	935,837
1997	449	265,157	65,034	90,777	219,177	90,167	29,624	759,936
1998	469	264,421	158,194	44,026	201,659	137,422	35,959	841,681
1999	449	161,936	76,338	80,537	123,538	128,026	61,944	632,319
2000	416	85,561	70,433	86,424	267,699	76,651	27,941	614,709
2001	375	183,278	119,765	33,302	331,768	57,929	28,957	754,999
2002	375	173,130	72,643	53,761	176,356	45,089	13,899	534,878
2003	371	84,739	64,266	68,204	185,575	71,626	40,410	514,820
2004	401	195,935	120,266	38,845	168,838	104,954	65,908	694,746
2005	358	106,178	43,443	9,270	99,391	24,884	18,321	301,487
2006	386	162,393	105,878	29,222	146,776	28,049	38,290	510,608
2007	370	259,828	44,528	18,994	157,861	48,118	33,184	562,513
2008	385	111,811	98,345	9,704	295,250	19,888	15,083	550,081
2009	368	146,649	130,903	32,605	330,955	50,279	28,563	719,954
2010	432	280,963	44,572	32,042	339,596	24,502	16,546	738,221

2011	454	90,888	37,354	18,895	350,193	81,815	9,270	588,415
Mean	357	174,205	83,839	53,330	184,634	70,911	26,714	593,633
		29.35%	14.12%	8.98%	31.10%	11.95%	4.50%	100.00%

Source: WPRFMC 2012 and unpublished data.

Unlike CNMI, the Guam charter fishery has a well-established charter vessel fishery, which in some years has contributed to almost 25 percent of pelagic landings (Table C-12). Commercial catches have accounted for between 20 to 75 percent of pelagic landings (Table C-12), with non-commercial catches forming between 5 and 70 percent of landings. Over the thirty years of data available, Guam's pelagic landings have comprised 13 percent from the charter fishery, 48 percent from the commercial fishery and 39 percent from non-commercial fishing.

Table C-12: Contribution of commercial and charter fisheries to pelagic landings on Guam.

Year	Total (lb)	Non-Charter (lb)	Charter (lb)	Charter as percent of total	Commercial catch (lb)	Commercial as percent of total
1982	447,432	438,297	9,135	2.04%	153,577	34.32%
1983	450,823	445,116	5,707	1.27%	285,118	63.24%
1984	424,299	401,687	22,612	5.33%	218,028	51.39%
1985	477,073	432,202	44,871	9.41%	237,695	49.82%
1986	381,495	359,020	22,475	5.89%	226,138	59.28%
1987	338,354	307,342	31,013	9.17%	242,444	71.65%
1988	827,260	743,415	83,845	10.14%	284,408	34.38%
1989	505,811	434,832	70,979	14.03%	242,554	47.95%
1990	559,773	434,361	125,412	22.40%	279,121	49.86%
1991	737,653	586,914	150,739	20.43%	285,696	38.73%
1992	528,214	409,546	118,667	22.47%	296,809	56.19%
1993	548,295	416,340	131,955	24.07%	351,201	64.05%
1994	545,917	438,677	107,239	19.64%	351,187	64.33%
1995	781,389	614,137	167,251	21.40%	389,849	49.89%
1996	935,837	698,544	237,293	25.36%	255,281	27.28%
1997	759,936	589,089	170,847	22.48%	307,764	40.50%
1998	841,681	719,841	121,840	14.48%	405,666	48.20%
1999	632,319	553,487	78,831	12.47%	260,669	41.22%
2000	614,709	519,677	95,032	15.46%	376,192	61.20%
2001	754,999	680,436	74,563	9.88%	399,471	52.91%
2002	534,878	486,790	48,087	8.99%	325,299	60.82%
2003	514,820	458,746	56,074	10.89%	272,633	52.96%
2004	694,746	588,217	106,529	15.33%	285,545	41.10%
2005	301,487	242,520	58,968	19.56%	228,936	75.94%
2006	510,608	443,504	67,104	13.14%	203,139	39.78%
2007	562,513	484,230	78,284	13.92%	266,964	47.46%

2008	550,081	499,137	50,945	9.26%	144,110	26.20%
2009	719,954	665,904	54,050	7.51%	138,854	19.29%
2010	738,221	676,904	61,316	8.31%	228,620	30.97%
2011	588,415	563,029	25,386	4.31%	145,755	24.77%
mean	593,633	511,065	82,568	13.30%	269,624	47.52%

Source: WPRFMC 2012 and unpublished data.

The Guam troll fleet has shown a generally increasing trend over time, rising from about 200 vessels in 1982 to a peak in 1998 of about 470 vessels. (Figure C-14). Fleet size decreased after 1998 to 2001 when it leveled off at around 380 vessels, before increasing again to about 450 vessels in 2011.

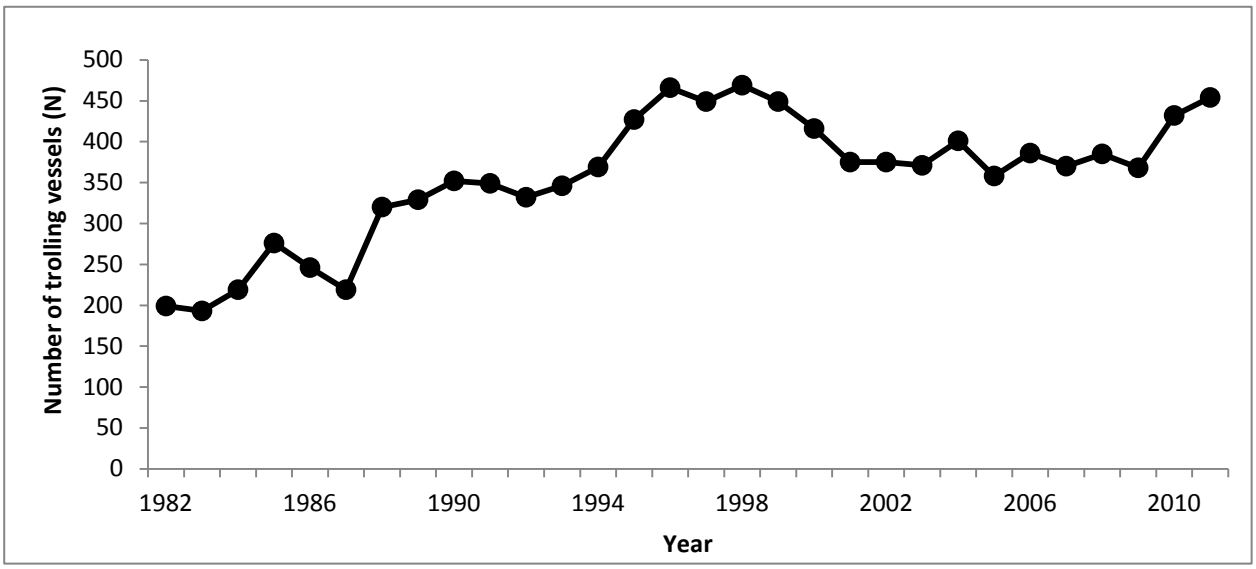

Figure C-14: Time series of annual numbers of vessels using troll gear in Guam.
Source: WPRFMC (2012) and unpublished data.

The total commercial pelagic troll catch has been quite variable over this 30-year time series but follows the same general trajectory as the fleet size. Catches increased as the fleet increased in size after 1982, peaking in the late 1990s at about 940,000 pounds, with a subsequent decline thereafter to a low of around 300,000 pounds, before increasing in concert with the fleet size with landings between 550,000 and 740,000 pounds (Figure C-15).

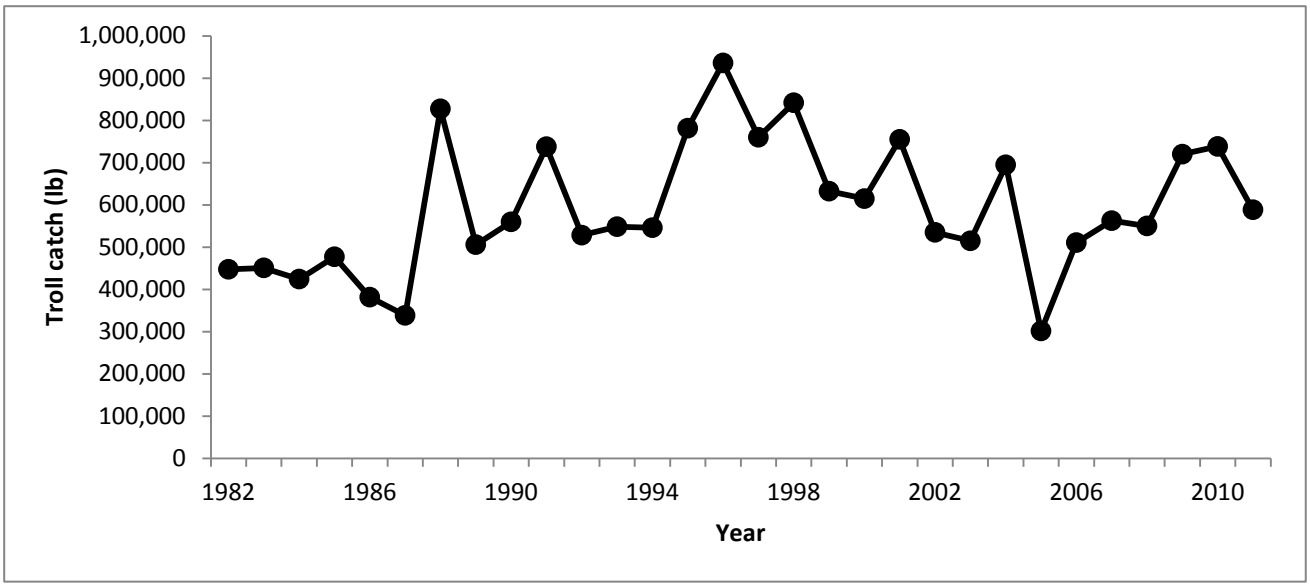

Figure C-15: Time series of total commercial catch by the Guam troll fishery.
Source: WPRFMC (2012) and unpublished data.

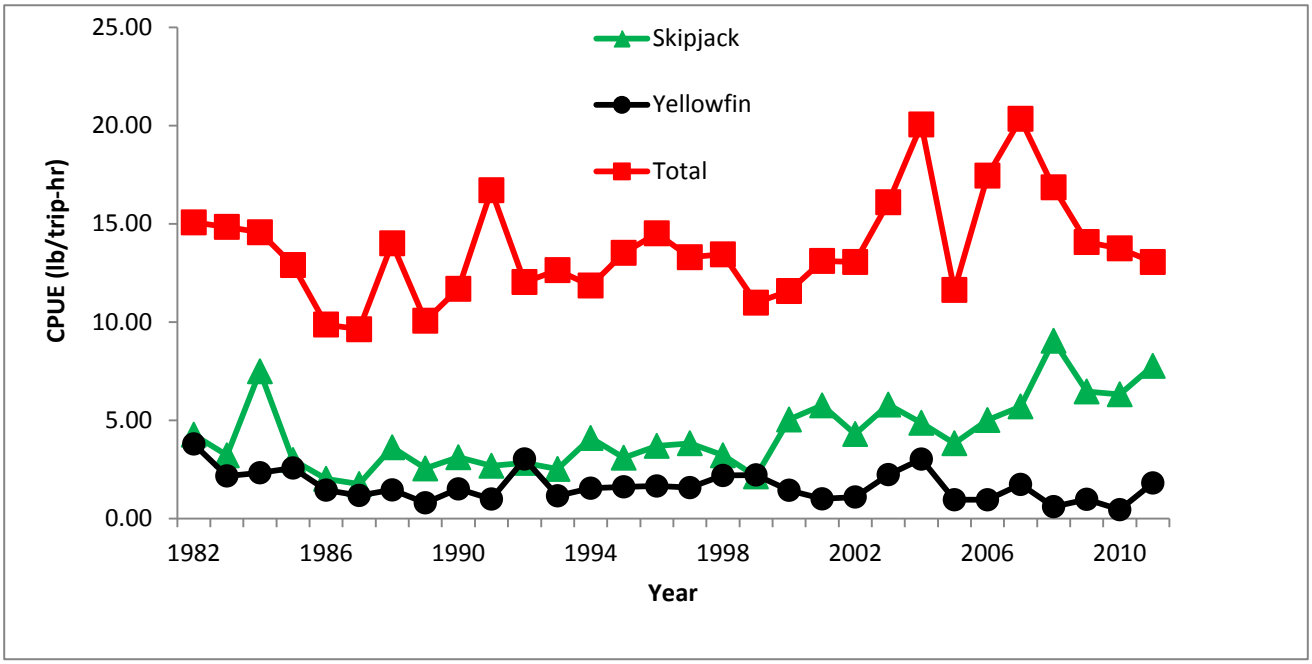

Figure C-16: Time series of catch per unit of effort of all pelagic species, skipjack tuna, and yellowfin tuna in the Guam troll fishery.

Overall pelagic CPUE in the Guam troll fishery shows some variation from year to year but has been essentially stable, neither declining or increasing, with an average CPUE of about 14 lb/troll-hour (Figure C-16). The skipjack tuna CPUE shows some similarity to the total CPUE, but demonstrates an increasing trend after 1999. By contrast, yellowfin tuna CPUE is declining very slowly over the time series.

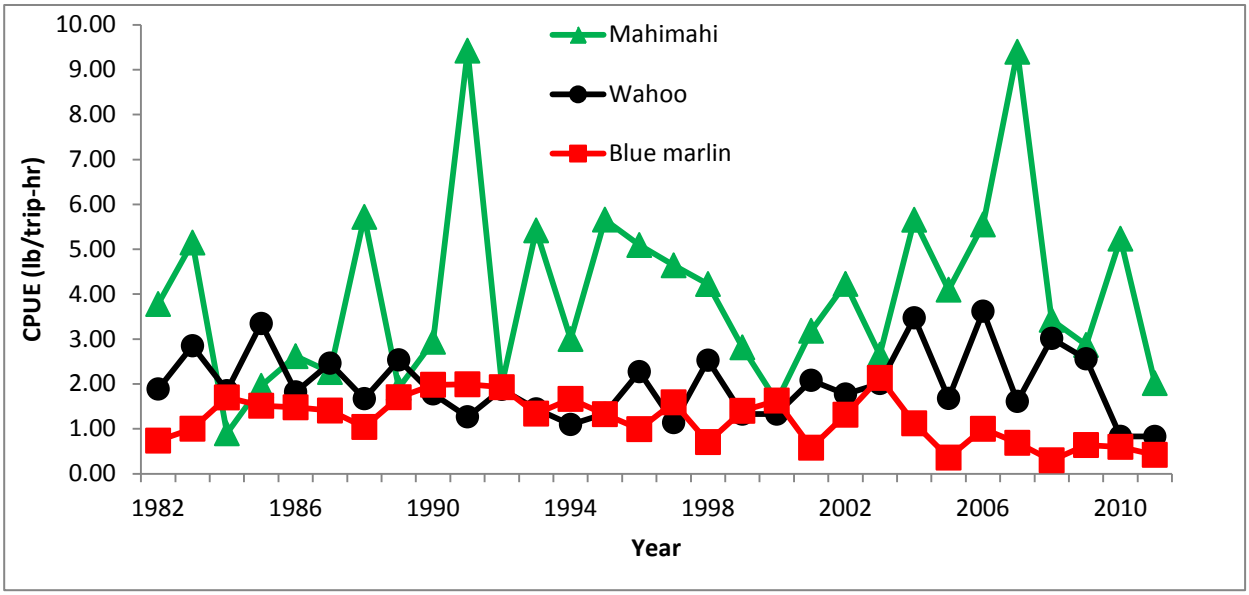

Figure C-17: Time series of catch per unit of effort of mahimahi, wahoo and blue marlin in the Guam troll fishery.

Mahimahi CPUE has been highly variable in the Guam troll fishery with extreme inter-annual variability and no discernible positive or negative trend (Figure C-17). A similar situation obtains for wahoo, although the CPUEs in 2010 and 2011 were all time lows for this species. Blue marlin CPUE has been on a declining trend in the Guam fishery since 1992 after an initial increase during the 1980s.

Guam has one inactive longline vessel and no domestic purse seine vessels in current operation. Any catches from the single longline vessel cannot be reported due to confidentiality requirements.

4.0 Hawaii

Hawaii's pelagic fisheries, which include the longline, MHI troll and handline, offshore handline, and the aku boat (pole and line) fisheries—are the state's largest and most valuable fishery sector. Tuna, billfish, and other tropical pelagic species supply most of the fresh pelagic fish consumed by Hawaii residents and support popular recreational fisheries. Hawaii-based longline vessels are capable of traveling long distances to offshore and high-seas fishing grounds, while the smaller handline, troll, charter and pole-and-line fisheries—which may be commercial, recreational or subsistence —generally occur within 25 miles of land, with trips lasting only one day.

The majority of the commercial landings and revenue come from the longline fisheries although the majority of State of Hawaii Commercial Marine Licenses (CMLs) required to report are for fishermen on small vessels using trolling gear.

Though somewhat dated, Boggs and Ito (1993) provide an excellent overview of the development and status of Hawaii's pelagic fisheries circa 1990. A more recent overview of Hawaii's fisheries, including pelagic fisheries, is given by Pickering and Gist (2011). Generally, the aku boat fishery has contracted steadily to where it now exists as minor remnant of former times while the longline fisheries have expanded steadily and are by far the leading producers of pelagic landings and bigeye tuna in Hawaii. The deep-set fishery is based upon and targets sub-adult and adult sized bigeye tuna. The MHI troll and handline fisheries take a variety of pelagic species of which bigeye tuna is a relatively minor component.

The inshore ika shibi handline fishery for large tunas, which did at one time take significant quantities of bigeye tuna, has contracted steadily over the last decade for a variety of reasons. In its place, the "offshore handline fishery" has evolved steadily and undergone a number of changes. This fishery originally centered on handline and troll fishing on tuna found in aggregations around the Cross Seamount and four offshore moored NOAA weather buoys. Although the FADs moored around the coast of Hawaii by the State government have not been used extensively by the offshore handline fishery, the fishery has, in recent years, expanded to include fishing operations on privately set FADs, some of which are very close to the MHI thus blurring the distinction between "offshore handline" and "MHI handline" fisheries. The private FAD fishery is included here with the offshore handline fishery due to similar fishing techniques, operational and catch characteristics. The offshore handline fishery targets juvenile and sub-adult bigeye tuna with a considerable catch of juvenile, sub-adult and adult size yellowfin.

A summary of Hawaii's pelagic fisheries landings and revenue in 2010 and 2011 is given in Table C-13.

Table C-13: Hawaii commercial pelagic landings, revenue, and average price by species, 2010-2011.

	2010			2011		
Species	Pounds Landed (1000 lbs)	Ex-vessel Revenue ($1000)	Average Price ($/lb)	Pounds Landed (1000 lbs)	Ex-vessel Revenue ($1000)	Average Price ($/lb)
Tuna PMUS						
Albacore	1,054	$1,328	$ 1.47	1,771	$2,557	$ 1.61
Bigeye Tuna	14,521	$52,347	$ 4.03	13,092	$53,110	$ 4.12
Bluefin Tuna	1	$0	--	0	$0	--
Skipjack Tuna	658	$571	$ 1.91	1,107	$1,012	$ 1.60
Yellowfin Tuna	2,724	$7,250	$ 3.02	3,864	$9,899	$ 2.91
Tuna PMUS subtotal	18,958	$61,496	$3.71	19,834	$66,577	$3.60
Billfish PMUS						
Swordfish	3,995	$7,230	$ 2.39	3,325	$6,555	$ 2.58
Blue Marlin	967	$1,164	$ 1.33	1,242	$1,238	$ 1.35
Striped Marlin	408	$639	$ 1.91	911	$1,136	$ 1.25
Other Billfish	341	$424	$ 1.40	591	$555	$ 1.14
Billfish PMUS subtotal	5,711	$9,456	$2.08	6,068	$9,485	$2.09
Other PMUS						
Mahimahi	1,697	$3,407	$ 2.26	1,620	$4,314	$ 3.03
Ono (wahoo)	750	$1,807	$ 3.02	671	$1,806	$ 3.20
Opah (moonfish)	1,778	$2,313	$ 1.48	1,617	$2,781	$ 1.82
Oilfish	572	$788	$ 1.39	629	$865	$ 1.38
Pomfret	650	$1,594	$ 2.71	428	$1,449	$ 3.39
Sharks (whole weight)	292	$114	$ 0.52	237	$115	$ 0.66
Other Pelagics	60	$67	$ 1.72	71	$92	$ 1.45
Other PMUS subtotal	5,799	$10,089	$1.98	5,272	$11,422	$2.38
Total Pelagics	**30,468**	**$81,042**	**$3.09**	**31,175**	**$87,485**	**$3.12**

Source: WPRFMC (2012) and unpublished data.

4.1 Troll fishery

A summary of the Hawaii troll fishery from 1991 to 2011 is given in Table C-14. The troll fishery includes full time and part time commercial trollers, recreational fishers that possess a commercial license, and pelagic charter vessels. The predominant species in the troll catch include yellowfin, mahimahi, blue marlin, wahoo, and skipjack.

Table C-14: Hawaii Total Trolling Landings (lb) 1991-2011.

Year	Fishers	Catch (lb x 1000)												
		Yellowfin	Skipjack	Bigeye	Albacore	Other Tunas	Blue marlin	Striped marlin	Swordfish	Other Billfish	Mahimahi	Wahoo	Misc Pelagic	Total catch
1991	1,547	615	504	11	2	13	749	89	1	52	718	337	12	3,103
1992	1,578	606	347	9	3	15	565	83	0	35	461	262	8	2,394
1993	1,599	616	332	4	3	9	675	150	0	44	444	286	13	2,576
1994	1,648	914	283	6	22	15	648	76	1	46	546	245	9	2,811
1995	1,737	949	318	10	10	9	684	114	1	57	419	388	8	2,967
1996	1,697	707	424	4	5	6	885	119	1	37	451	347	7	2,993
1997	1,707	712	376	6	7	6	814	83	1	36	517	451	5	3,014
1998	1,669	636	278	5	4	10	527	57	1	41	464	442	6	2,471
1999	1,812	687	347	7	87	7	635	62	1	71	545	558	6	3,013
2000	1,564	671	181	15	5	6	422	30	5	49	786	386	7	2,563
2001	1,597	542	215	23	13	5	608	93	4	75	637	516	6	2,737
2002	1,480	500	203	86	9	6	446	65	3	22	694	350	4	2,388
2003	1,427	732	237	82	10	27	390	63	1	37	619	498	3	2,699
2004	1,447	690	246	328	7	45	360	74	0	46	1,166	412	3	3,377
2005	1,414	708	191	188	14	15	396	44	1	35	595	416	4	2,607
2006	1,402	590	221	154	2	12	320	47	1	29	754	457	3	2,590
2007	1,461	1,032	192	140	7	11	263	28	2	23	680	454	3	2,835
2008	1,546	941	344	166	3	8	388	30	1	29	560	500	4	2,974
2009	1,666	961	303	130	7	16	362	22	1	18	696	439	4	2,959
2010	1,570	884	211	526	14	24	295	42	46	48	672	462	17	3,241
2011	1,593	954	274	251	18	8	407	43	4	35	648	306	6	2,954
Mean	1,579	745	287	102	12	13	516	67	4	41	622	405	7	2,822
Percent of mean		26.40%	10.17%	3.63%	0.43%	0.46%	18.29%	2.39%	0.13%	1.46%	22.06%	14.36%	0.23%	100.00%

Source: WPRFMC (2012) and unpublished data.

The number of troll fishermen and total troll pelagic catch have remained remarkably stable from the 1990s until the present. The annual number of commercial troll fishers has varied between 1,500 and 1,600, while the troll catch per year has varied between 2.5 and 3.5 million pounds, with an average of 2.8 million pounds (Figure C-18 and Figure C-19).

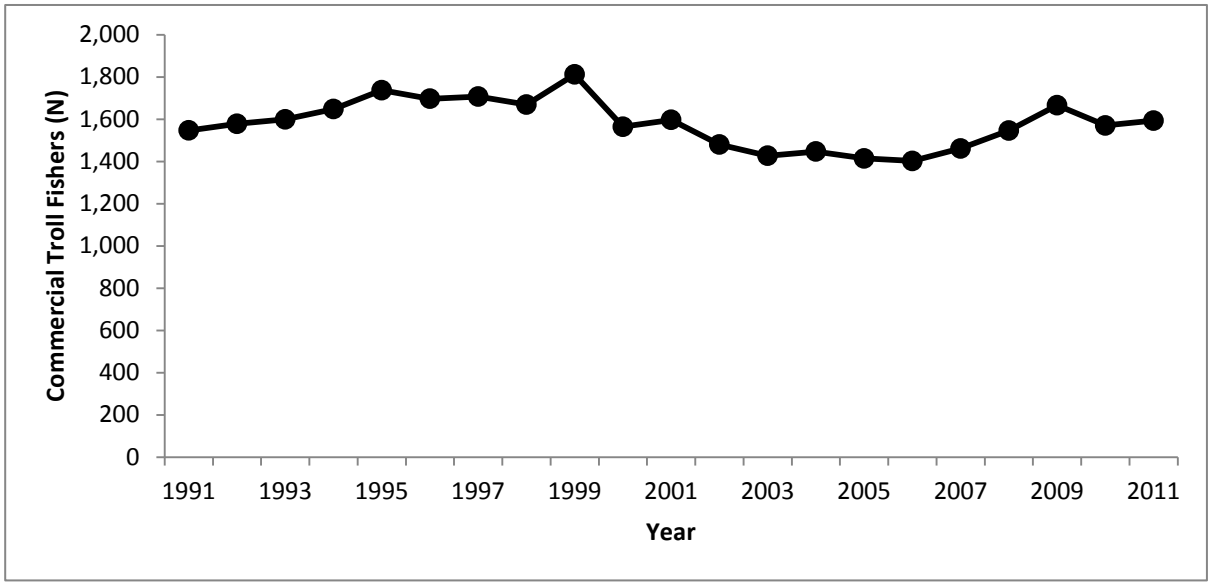

Figure C-18:Time series of annual numbers of fishermen using troll gear in Hawaii.
Source: WPRFMC (2012) and unpublished data.

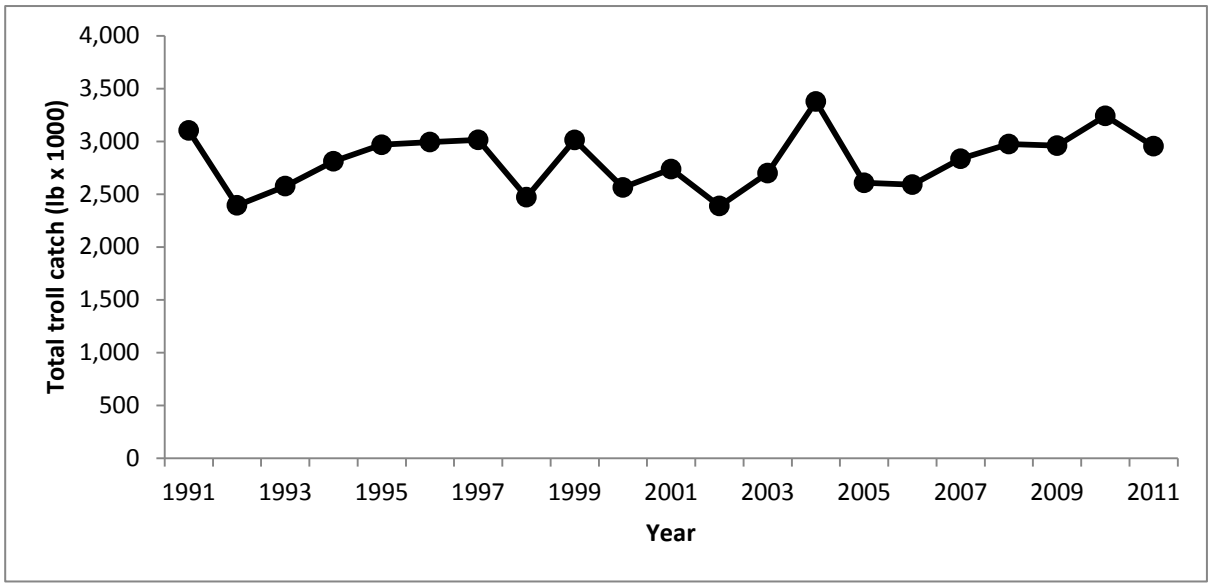

Figure C-19: Time series of total commercial catch by the Hawaii troll fishery.
Source: WPRFMC (2012) and unpublished data.

The CPUE of the principal tunas, yellowfin and skipjack, are shown in Figure C-20. Yellowfin CPUE was stable between 1991 and 2006, after which it has shown an increasing trend. Skipjack CPUE declined between 1991 to 2000 after which it has been stable.

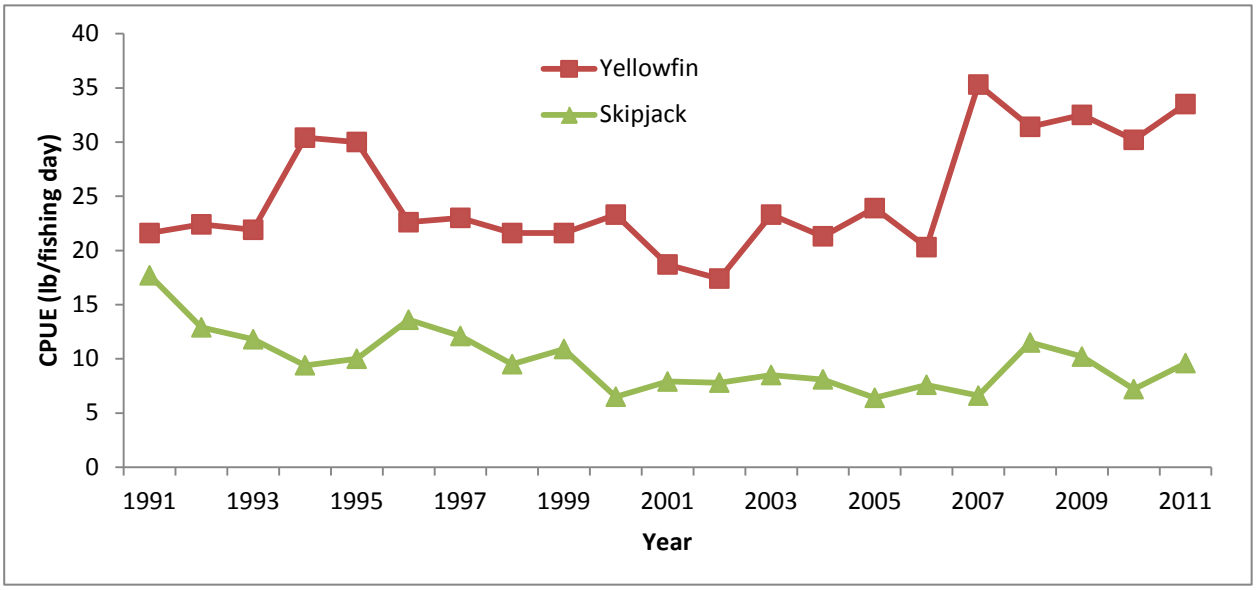

Figure C-20: Time series of catch per unit of effort of skipjack tuna and yellowfin tuna in the Hawaii troll fishery.
Source: WPRFMC (2012) and unpublished data

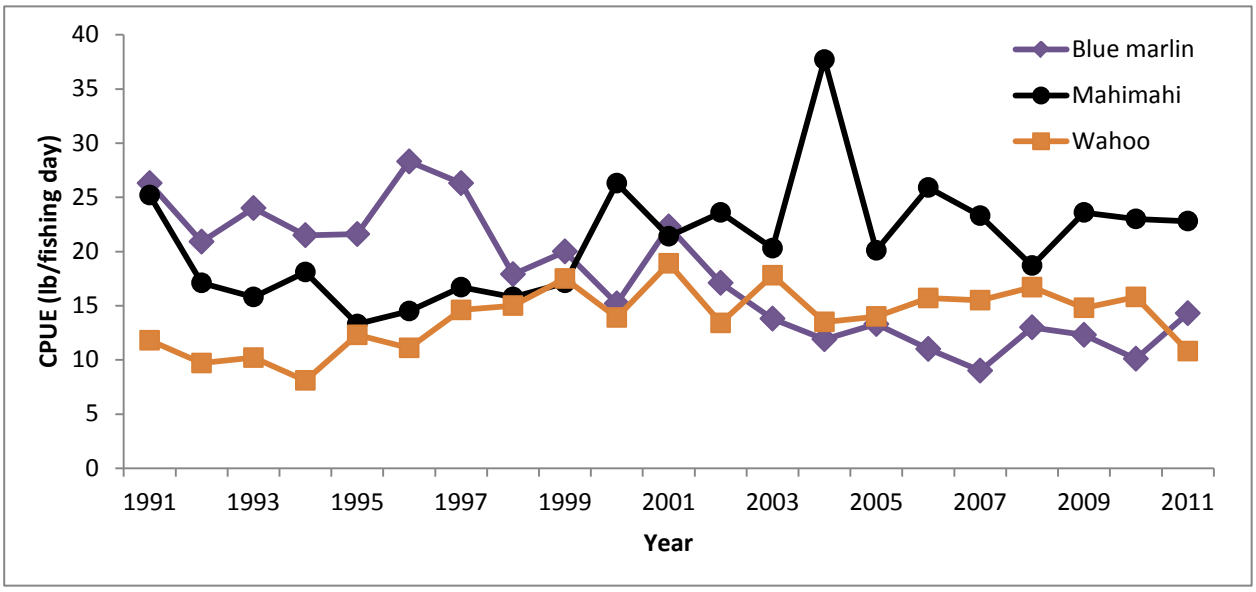

Figure C-21: Time series of catch per unit of effort of mahimahi, wahoo and blue marlin in the Hawaii troll fishery.
Source: WPRFMC (2012) and unpublished data.

For uncertain reasons, blue marlin CPUE has declined over the period 1991 and 2011 by about 50 percent, while wahoo and mahimahi have been generally stable, though showing some inter-annual variability (Figure C-21).

4.2 Main Hawaiian Islands handline fishery

A summary of the MHI handline fishery from 1991 to 2011 is given in Table C-15. Like the troll fishery this includes full time and part time commercial fishermen and recreational fishers that possess a commercial license. Yellowfin tuna comprises about 62 percent of the catch with albacore accounting for nearly 20 percent and bigeye about 8 percent.

Table C-15: MHI commercial handline landings (lb) 1991-2011.

Year	Fishers	Catch (lb x 1000)					
		Yellowfin	Albacore	Bigeye	Skipjack	Other	Total
1991	550	1,154	157	45	19	102	1,477
1992	564	722	116	19	21	68	946
1993	493	1,283	154	2	14	79	1,532
1994	538	1,003	176	10	21	77	1,287
1995	579	1,207	380	33	17	96	1,733
1996	650	1,352	409	11	69	121	1,962
1997	628	986	287	52	56	98	1,479
1998	572	1,052	191	15	38	72	1,368
1999	637	1,559	642	46	52	115	2,414
2000	544	938	346	141	14	279	1,718
2001	498	1,078	605	226	30	131	2,070
2002	463	711	511	353	20	104	1,699
2003	426	752	176	75	16	73	1,092
2004	442	770	351	125	23	137	1,406
2005	428	665	370	143	21	92	1,291
2006	374	414	187	135	11	72	819
2007	419	517	208	188	15	54	982
2008	466	437	62	86	20	97	702
2009	544	652	214	70	24	102	1,062
2010	469	541	102	477	14	566	1,700
2011	493	695	186	146	17	156	1,200
Mean	531.16	880.38	277.62	114.19	25.33	128.14	1,425.67
Percent of mean		61.75%	19.47%	8.01%	1.78%	8.99%	100.00%

Source: WPRFMC (2012) and unpublished data.

The number of participants in the MHI handline fishery has varied between about 370 and 650 fishermen (Figure C-22). MHI commercial handline catches have varied from 0.7 to 2.4 million pounds, with an overall mean of 1.4 million pounds. Handline CPUE trends are shown in Figure C-23.

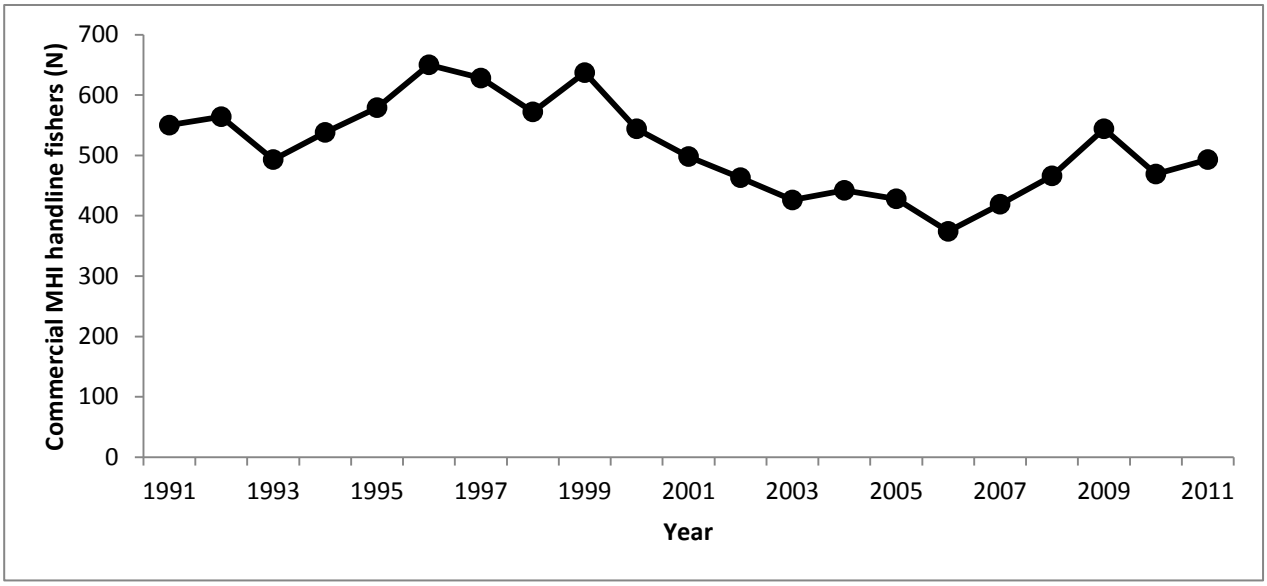

Figure C-22: Time series of annual numbers of fishermen using handline gear in the MHI handline fishery.
Source: WPRFMC (2012) and unpublished data.

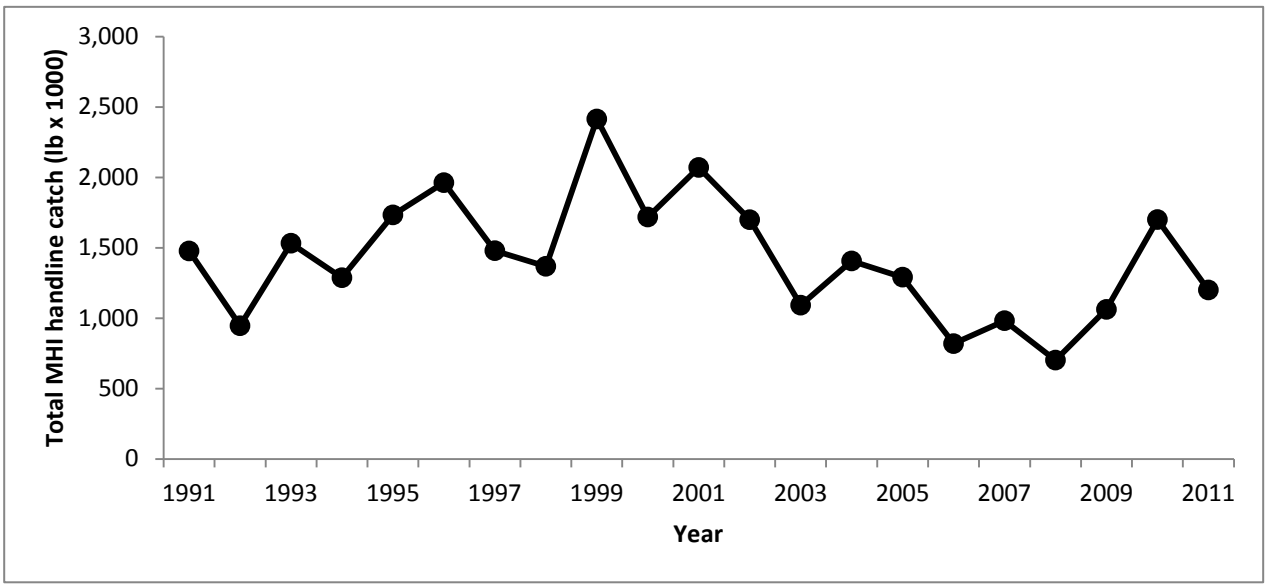

Figure C-23: Time series of total commercial catch by the MHI handline fishery.
Source: WPRFMC (2012) and unpublished data.

The time series of MHI handline CPUE is shown in Figure C-24. Yellowfin tuna CPUE shows a decline from 1991 to 2001, after which the CPUE trend stabilized. Bigeye CPUE increased from 1991 tro 2001 and declined thereafter. Albacore CPUE shows and increasing trend after 1999.

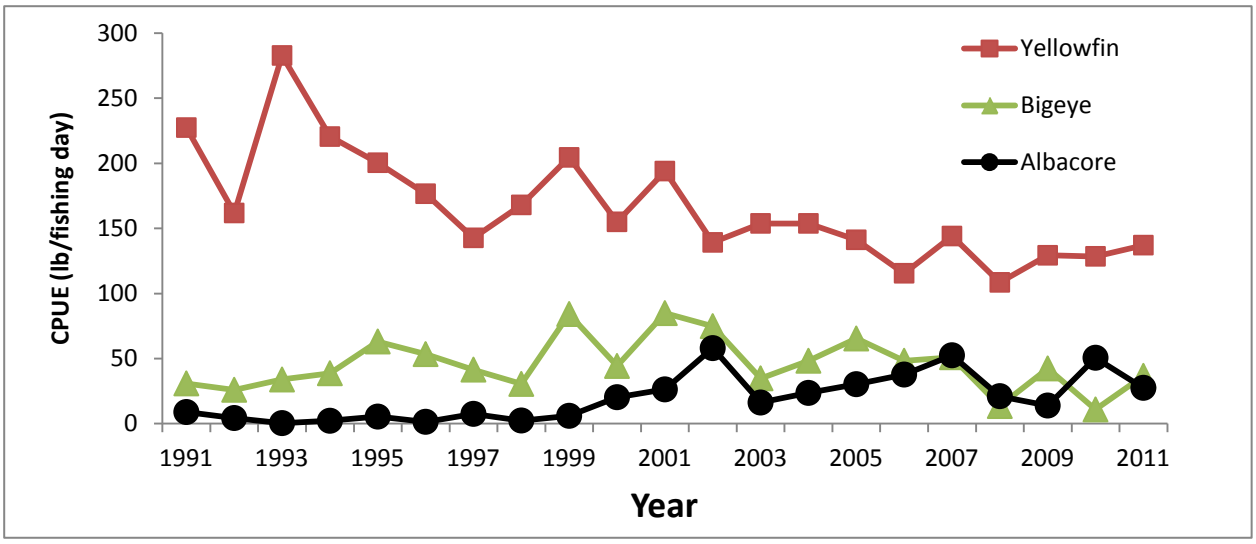

Figure C-24: Time series of catch per unit of effort of yellowfin, skipjack, and albacore tuna in the Hawaii MHI handline fishery.
Source: WPRFMC (2012) and unpublished data.

4.3 Offshore handline fishery

The offshore handline fishery operates principally at the Cross Seamount, which is about 150 nm southwest of the MHI and around several NOAA oceanographic buoys, which act as FADs. The fishery targets primarily bigeye, but more recently some participants have targeted the lustrous pomfret, *Eumegistus illustris.* The fishery uses a variety of gears including handlines, pole and lines, and short-lines, a longline of less the one nm in length. After developing the short-line to target large bigeye tuna, it became apparent that large quantities of lustrous pomfret, or monchong, were also available over the seamount summit. By modifying the gear slightly, it was found that the gear could effectively target this species of monchong while also catching medium and large bigeye tuna. Short-lines are not regulated as a longline under current federal regulations. Unlike the troll and MHI handline fisheries, the offshore handline fishery does not include recreational fishermen.

Table C-16: MHI commercial handline landings (lb) 1991-2011.

Year	Fishers	Catch (lb x 1000)			All
		Bigeye	Yellowfin	Mahimahi	Species
1991	22	94	232	5	331
1992	35	151	816	21	988
1993	32	85	571	23	679
1994	30	324	834	18	1,176
1995	22	102	591	20	713
1996	19	375	401	17	793
1997	17	138	415	9	562
1998	18	508	613	13	1,134
1999	16	164	703	20	887

Year	Fishers	Catch (lb x 1000)			All
		Bigeye	Yellowfin	Mahimahi	Species
2000	15	650	739	54	1,443
2001	20	660	379	35	1,074
2002	15	850	151	26	1,027
2003	11	316	53	14	383
2004	15	385	75	14	474
2005	10	345	67	8	420
2006	9	431	52	8	491
2007	10	535	42	6	583
2008	9	245	65	9	319
2009	9	239	46	7	292
2010	13	1,250	44	14	1,308
2011	13	515	84	6	605
Mean	17.14	398.19	332.05	16.52	746.76
Percent of mean		53.32%	44.46%	2.21%	100.00%

Source: WPRFMC (2012) and unpublished data.

The participation and total catch in the offshore handline fishery is shown in Table C-16. The peak of interest in this fishery was in 1992 with 35 participants, which declined thereafter and leveled out at about 10 participants after 2005 (Figure C-25). Recently, there has been some increased interest in the offshore handline fishery with new entrants. Despite the long-term decline in the participants in this fishery, the catch has been variable, but does not show a parallel decline, but has tended to be lower after 2002 (Figure C-26).

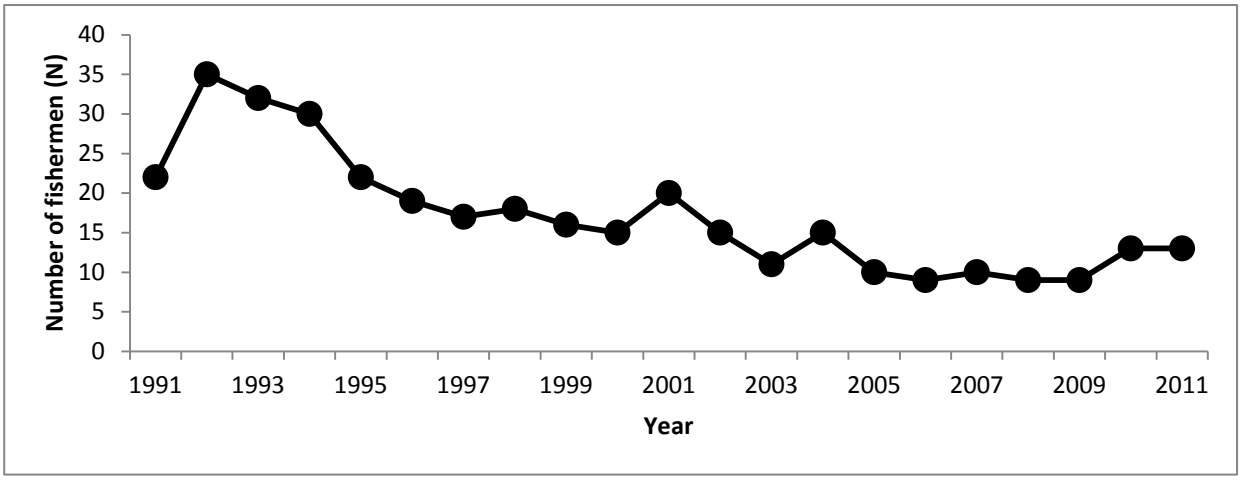

Figure C-25: Time series of annual numbers of fishermen participating in the offshore handline fishery.
Source: WPRFMC (2012) and unpublished data.

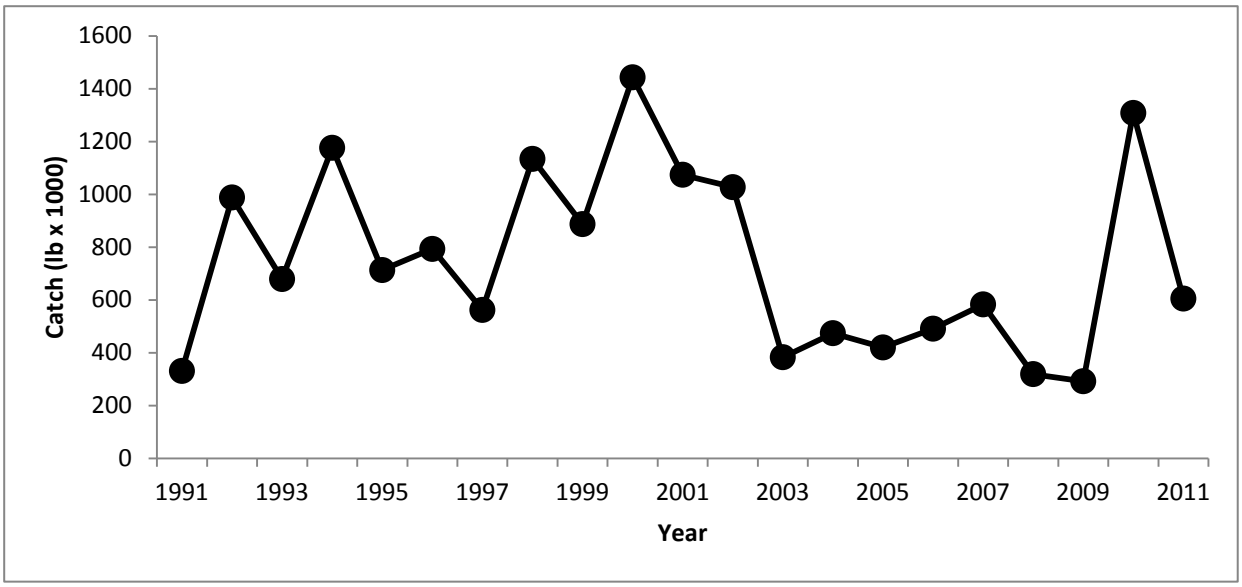

Figure C-26: Time series of total catch by the offshore handline fishery.
Source: WPRFMC (2012) and unpublished data.

Catch rates in the offshore handline fishery are shown in Figure C-27. The increasing trend of bigeye CPUE and parallel decline in yellowfin CPUE is a primarily a function of the better identification and distinguishing of bigeye from yellowfin on catch reports. Further, the catch per day fished includes a mix of different gears as noted previously. Some of the increase in bigeye may also be driven by the use of newer gears like the short-line gear.

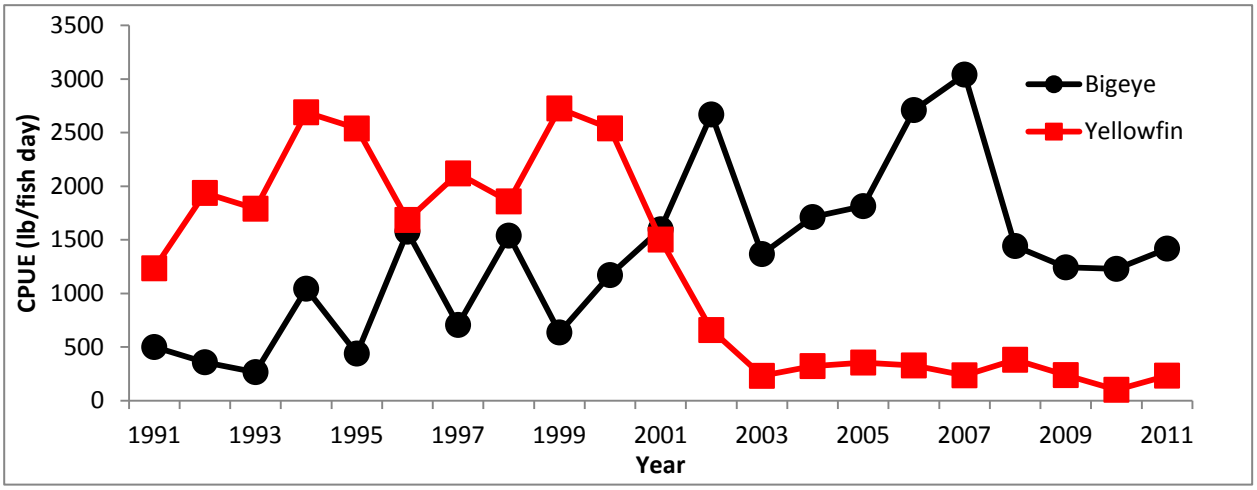

Figure C-27: Time series of catch per unit of effort of yellowfin, skipjack, and albacore tuna in the Hawaii MHI handline fishery.
Source: WPRFMC (2012) and unpublished data.

4.4 Longline fishery

Longline fishing has almost a century of operations in Hawaii, commencing in 1917 with wooden sampan vessels operating basket style tarred rope longlines, and using floats with marker

flags, which gave rise to this fishery as the 'flag-line' fishery. Fishing was conducted close to shore and targeted bigeye and yellowfin tuna. The fishery reached a zenith in the early 1950s where after it declined and was replaced as the principal fishery in Hawaii by the pole-and-line skipjack or 'aku-boat' fleet. The fishery was reduced to about 20 vessels in the early 1980s when some longline vessels began targeting pelagic fish further offshore from the Hawaiian Islands. News of this success attracted participation by longline vessels from the Atlantic and Gulf of Mexico and the fishery expanded rapidly, reaching a maximum number of vessels (141) in 1991, and then stabilizing at between 120-130 vessels operating annually (Figure C-28).

The Hawaii longline fleet comprises two distinct fisheries; one which sets lines deep to maximize the catch of bigeye tuna, and the other a shallow-set fishery which targets swordfish. This split is not into two distinct fleets, rather about 25-30 vessels annually target swordfish, and may switch to deep-set tuna fishing, like the majority of the fleet as the swordfish season ends (Table C-17 and Table C-18). The total catch of the fishery has varied from about 16,000 lbs to 28,000 lbs.

Table C-17: Number of vessels and effort in the Hawaii deep-set fishery, 2004-2011.

Year	Vessel making deep-sets (N)	Deep-set fishing effort (hooks x 1000)	Deep-set fishing effort (Trips)	Deep-set fishing effort (Sets)
2004	125	31,906	1,382	15,894
2005	124	33,661	1,443	16,550
2006	127	34,597	1,388	16,452
2007	129	38,839	1,427	17,815
2008	127	40,078	1,380	17,885
2009	127	37,630	1,241	16,810
2010	122	37,197	1,205	16,070
2011	129	40,720	1,306	17,155
Avg.	**126**	**36,828**	**1,346**	**16,829**

Source: PIFSC logbook summaries (http://www.pifsc.noaa.gov/fmb/reports.php).

Table C-18: Number of vessels and effort in the Hawaii shallow-set fishery, 2004-2011.

Year	Vessel making Shallow-sets (N)	Shallow-set fishing effort (hooks)	Shallow-set fishing effort (Trips)	Shallow-set fishing effort (Sets)
2004	7	113,318	11	135
2005	33	1,385,457	109	1,645
2006	35	705,446	57	850
2007	28	1,371,949	88	1,570
2008	27	1,496,298	93	1,597
2009	28	1,721,346	112	1,762
2010	28	1,803,432	108	1,833
2011	20	1,489,243	82	1,468
Avg.	**26**	**1,260,811**	**83**	**1,358**

Source: PIFSC logbook summaries (http://www.pifsc.noaa.gov/fmb/reports.php).

The catch composition of the deep-set and shallow-set fisheries in 2011 is shown in Table C-19 and Table C-19. About 30 percent of the deep-set fishery comprises bigeye tuna, with the balance of the catch comprising mahimahi, blue shark, oilfish, pomfret, albacore, yellowfin, skipjack, and various other pelagic species. Most of these fish are retained, apart from the blue shark, which is mostly discarded. About 40 percent of the shallow-set catch comprises swordfish, with blue shark, mahimahi, albacore and oilfish forming most of the balance of the catch. Like the deep-set fishery, most of the blue shark is discarded. Unlike the deep-set fishery, where almost all of the principal target bigeye is retained, 10 percent of the swordfish catch is discarded in the shallow-set fishery. These discards are primarily small juvenile swordfish, which sell for about half the value of large mature fish. In 2011, the deep-set fishery retained overall about 88 percent of the catch, while the shallow-set retained about 68 percent of the catch. In the shallow-set fishery about 22 percent of the catch is formed by sharks, while only 10 percent of the deep-set fishery comprises sharks. Table C-20 and Table C-21 show total catch by weight for the Hawaii longline fishery.

Table C-20: Species composition of the Hawaii tuna targeting deep-set fishery in 2011.

Species	No Caught	% Caught	No Kept	% Kept/Caught
Bigeye tuna	155,121	30.31%	152,457	98.28%
Mahimahi	74,792	14.61%	73,724	98.57%
Blue shark	47,956	9.37%	339	0.71%
Oilfish	36,182	7.07%	35,839	99.05%
Pomfret	33,340	6.51%	32,810	98.41%
Albacore	31,445	6.14%	31,171	99.13%
Yellowfin tuna	31,312	6.12%	30,579	97.66%
Skipjack tuna	25,744	5.03%	24,953	96.93%
Moonfish	17,697	3.46%	17,633	99.64%
Striped marlin	16,181	3.16%	15,982	98.77%
Spearfish	15,531	3.03%	15,354	98.86%
Wahoo	10,446	2.04%	10,403	99.59%
Thresher sharks	4,535	0.89%	252	5.56%
Blue marlin	4,424	0.86%	4,382	99.05%
Swordfish	2,906	0.57%	2,502	86.10%
Mako sharks	2,242	0.44%	711	31.71%
Oceanic whitetip sharks	791	0.15%	27	3.41%
Other billfishes	541	0.11%	534	98.71%
Other sharks	388	0.08%	18	4.64%
Silky sharks	232	0.05%	3	1.29%
Other tuna	18	0.00%	18	100.00%
Bluefin tuna	2	0.00%	2	100.00%
Total	511,826	100.00%	449,693	87.86%

Source: WPRFMC (2012) and unpublished data.

Table C-21: Species composition of the Hawaii tuna targeting shallow-set-set fishery in 2011.

Species	No Caught	% No Caught	No Kept	% Kept/Caught
Swordfish	16,405	40.96%	14,663	89.38%
Blue shark	7,857	19.62%	19	0.24%
Mahimahi	6,413	16.01%	5,681	88.59%
Albacore	2,982	7.45%	2,480	83.17%
Oilfish	2,498	6.24%	1,999	80.02%
Bigeye tuna	1,050	2.62%	953	90.76%
Mako sharks	984	2.46%	65	6.61%
Striped marlin	572	1.43%	513	89.69%
Yellowfin tuna	317	0.79%	299	94.32%
Moonfish	207	0.52%	110	53.14%
Spearfish	192	0.48%	163	84.90%
Blue marlin	116	0.29%	110	94.83%
Thresher sharks	112	0.28%	4	3.57%
Pomfret	103	0.26%	80	77.67%
Oceanic whitetip sharks	78	0.19%	3	3.85%
Other sharks	62	0.15%	0	0.00%
Skipjack tuna	47	0.12%	43	91.49%
Wahoo	35	0.09%	29	82.86%
Other tuna	12	0.03%	2	16.67%
Other billfishes	8	0.02%	5	62.50%
Silky sharks	1	0.00%	0	0.00%
Bluefin tuna	0	0.00%	0	0.00%
Total	40,051	100.00%	27,221	67.97%

Source: WPRFMC (2012) and unpublished data.

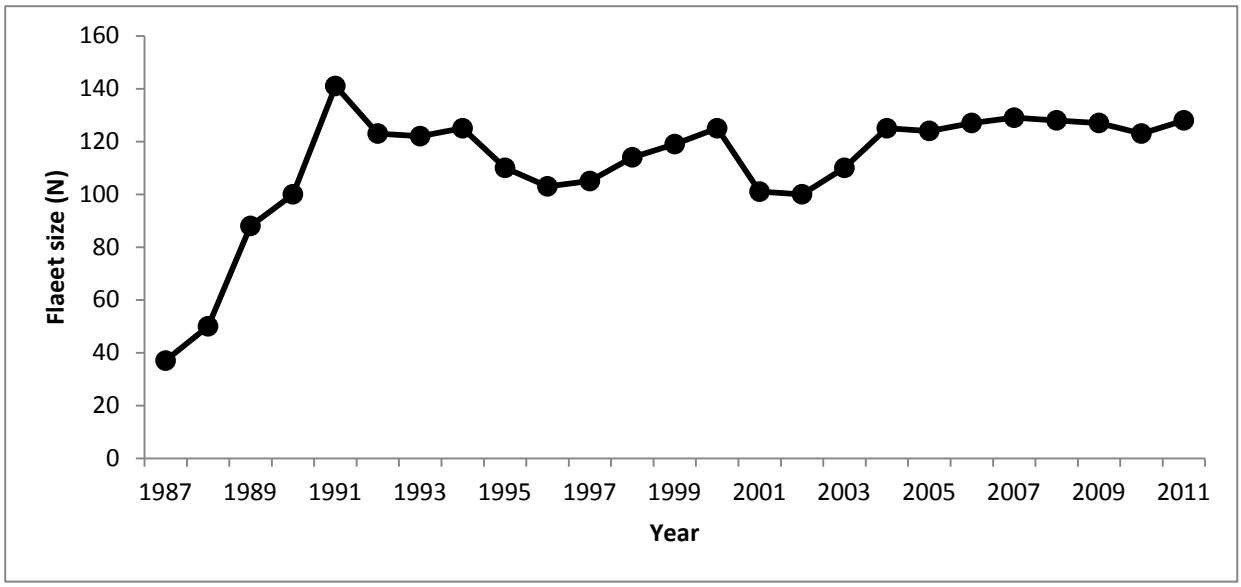

Figure C-28: Time series of annual fleet size in the Hawaii longline fishery, 1987-2011.
Source: WPRFMC (2012) and unpublished data.

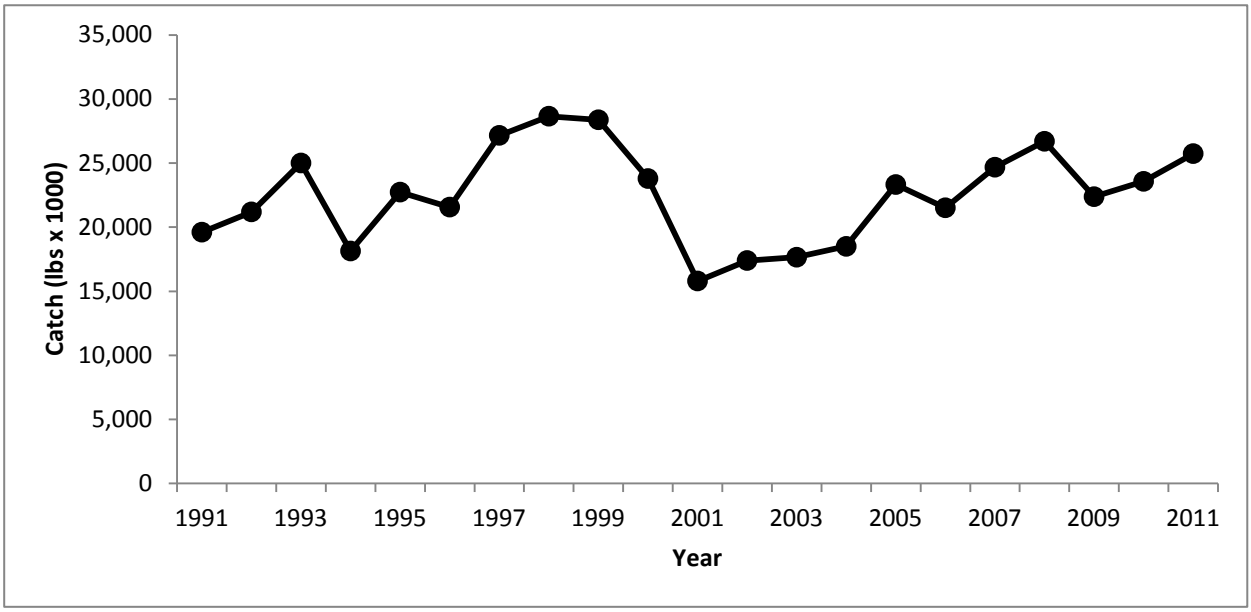

Figure C-29: Time series of total catch by the Hawaii longline fishery.
Source: WPRFMC (2012) and unpublished data.

The distribution of the 2011 bigeye and swordfish catches in the two fishery segments are shown in Figure C-30 and Figure C-31. Fishing effort for bigeye tuna occurs to the north and south of the Hawaiian Islands chain, with most of the catch being taken between 10-30 deg N and between 140-170 deg W, and with a small amount of fishing at equatorial latitudes in the U.S. EEZ around Palmyra and Kingman Reef. Swordfish fishing occurs almost exclusively to the north of the Hawaiian Islands with most fishing effort between 25-40 deg N, and extending along the sub-tropical convergence zone, over a wide longitudinal extent from 135-175 deg W.

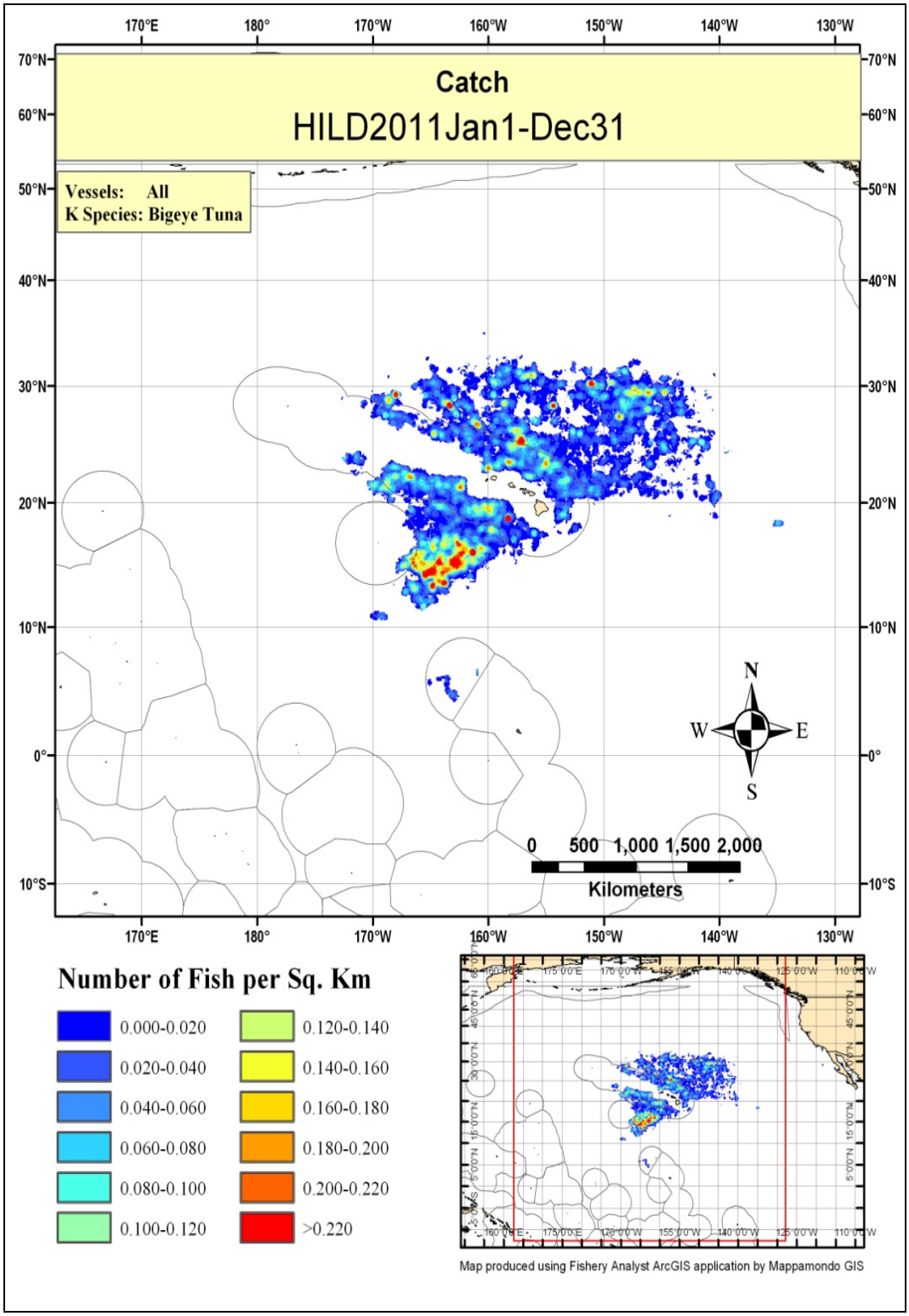

Figure C-30: Spatial distribution of the bigeye tuna catch in 2011.

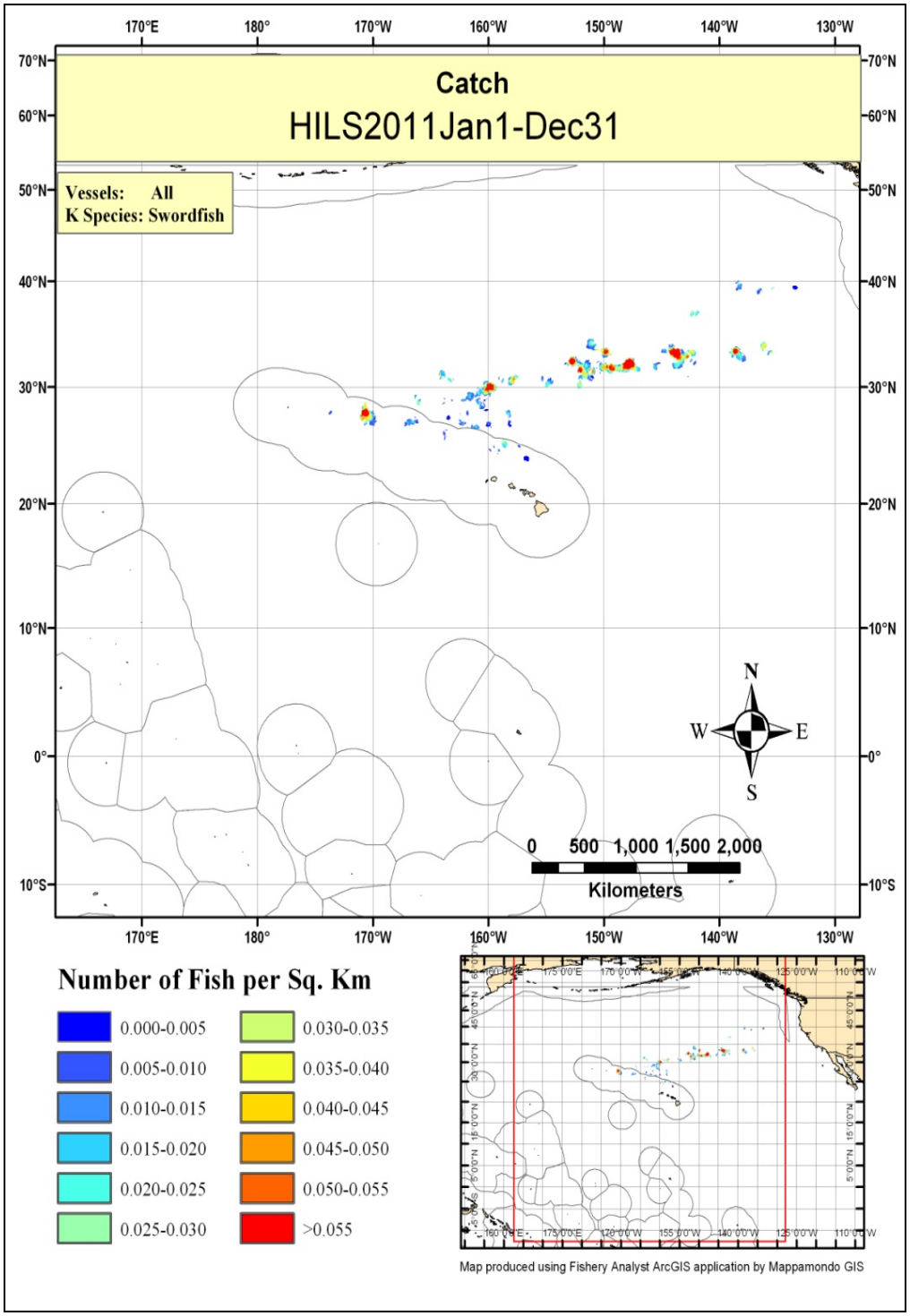

Figure C-31: Spatial distribution of the swordfish catch in 2011.

Table C-22: Total landings of tunas and billfish by the Hawaii longline fishery, 1991-2011, WCPO and EPO combined.

Year	Vessels	Catch (lb x 1000)									
		Total	Bigeye	Yellowfin	Albacore	Skipjack	Bluefin	Striped Marlin	Blue Marlin	Other Marlin	Swordfish
1991	141	19,608	3,423	1,617	687	66	4	1,462	654	153	9,939
1992	123	21,190	3,277	763	735	49	84	1,013	765	312	12,566
1993	122	25,005	4,677	1,392	965	79	92	1,039	748	220	13,027
1994	125	18,138	3,940	1,336	1,095	116	53	719	798	218	7,002
1995	110	22,733	4,522	2,159	1,938	223	56	1,198	1,257	401	5,981
1996	103	21,564	3,940	1,389	2,606	91	48	923	1,030	253	5,517
1997	105	27,160	5,399	2,515	3,626	234	52	775	1,074	316	6,352
1998	114	28,655	7,113	1,592	2,450	168	36	834	870	380	7,193
1999	119	28,377	5,995	1,042	3,250	219	23	803	787	533	6,835
2000	125	23,792	5,836	2,656	1,979	221	7	517	711	386	6,215
2001	101	15,800	5,193	2,277	2,803	455	2	902	909	299	519
2002	100	17,397	9,681	1,235	1,145	282	2	550	593	337	681
2003	110	17,653	7,922	1,815	1,160	438	1	1,308	777	567	301
2004	125	18,500	9,549	1,564	791	294	1	858	623	442	549
2005	124	23,324	10,977	1,624	662	197	1	1,177	731	473	3,527
2006	127	21,511	9,765	2,117	577	161	1	1,390	897	389	2,573
2007	129	24,675	12,742	1,830	554	202	0	609	577	355	3,781
2008	128	26,697	12,909	1,982	808	263	1	993	766	536	4,299
2009	127	22,377	10,420	1,119	460	298	2	623	790	279	3,961
2010	123	23,572	11,865	1,205	921	330	1	365	669	291	3,585
2011	128	25,737	12,007	2,056	1,564	460	0	867	827	553	3,230
Mean	119	22,546	7,674	1,680	1,466	231	22	901	803	366	5,125
Percent of mean		100.00%	34.04%	7.45%	6.50%	1.02%	0.10%	4.00%	3.56%	1.62%	22.73%

Source: WPRFMC 2012 and unpublished data.

Table C-23: Total landings of other commercial pelagic fish by the Hawaii longline fishery, 1991-2011.

Year	Catch (lb x 1000)								
	Mahimahi	Moonfish	Wahoo	Pomfret	Oilfish	Mako shark	Thresher shark	Other Sharks	Blue Shark
1991	555	270	101	75	130	104	89	125	0
1992	593	320	85	37	85	117	76	120	97
1993	316	454	142	92	0	150	51	112	1,423
1994	377	524	87	85	4	124	61	122	1,450
1995	570	629	195	93	10	160	62	268	2,978
1996	375	760	140	121	11	110	73	56	4,088
1997	518	823	239	178	15	137	123	152	4,598
1998	336	922	262	225	26	192	259	234	5,527
1999	679	1,210	343	313	29	242	409	372	5,249
2000	694	685	256	272	93	153	213	191	2,693
2001	523	768	390	268	141	142	109	13	63
2002	645	910	292	463	200	184	90	17	67
2003	686	1,091	519	416	277	196	109	9	39
2004	1,041	783	486	735	335	145	123	16	130
2005	972	1,093	458	632	380	233	75	15	66
2006	715	1,082	509	558	412	210	73	25	26
2007	966	1,223	381	572	448	281	97	17	15
2008	821	1,336	454	612	480	287	93	10	18
2009	720	1,895	301	583	540	263	67	12	24
2010	959	1,778	273	527	512	204	38	9	19
2011	924	1,605	352	401	616	142	42	6	36
Mean	666	960	298	346	226	180	111	91	1,362
Percent of mean	2.95%	4.26%	1.32%	1.53%	1.00%	0.80%	0.49%	0.40%	6.04%

Source: WPRFMC 2012 and unpublished data.

The catch trend over this period has been increasing from 16 million pounds in 2004 to a maximum of about 27 million pounds, with a mean of 22 million pounds (Figure C-29). Over this period, the swordfish fishery reopened in 2004, and the volume of hooks deployed by the fleet increased markedly (Figure C-32). Most of this hook increase was in the deep-set bigeye tuna fishery, with many longline vessels installing a second longline reel.

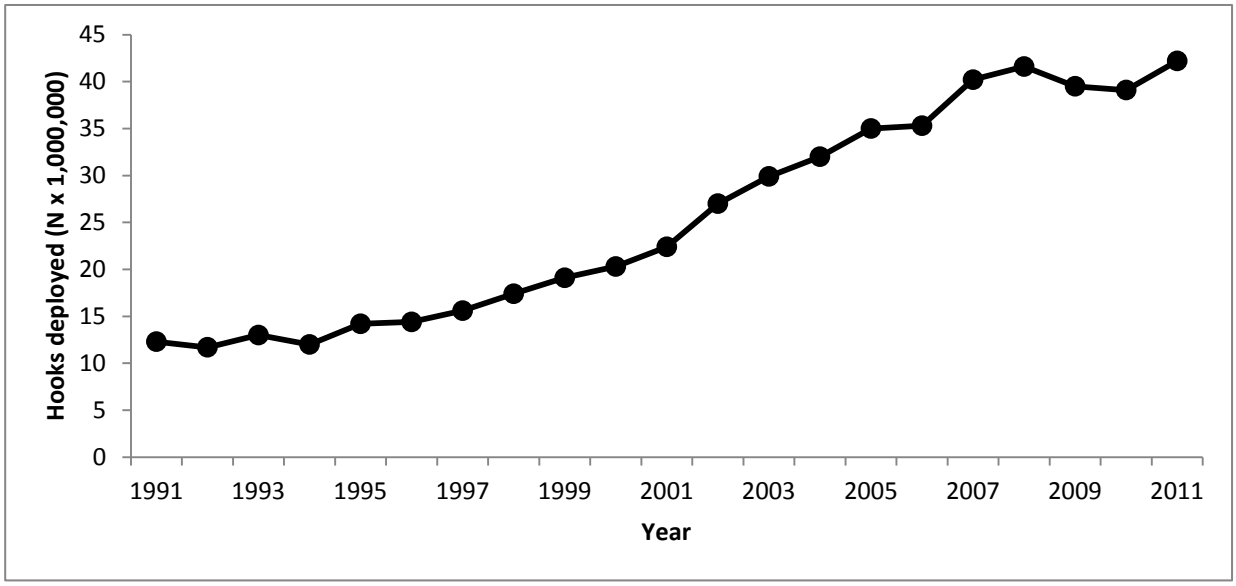

Figure C-32: Time series of the annual total number of hooks deployed by the Hawaii longline fishery.
Source: WPRFMC (2012) and unpublished data.

The CPUE time series for the principal tunas and swordfish are shown in Figure C-33 and Figure C-34. Also included in the swordfish time series are CPUE time series for the two commonly caught blue and striped marlins from the deep-set longline fishery. The tuna fishery is used here as the time series is unbroken (unlike the shallow set swordfish fishery which was closed from 2001-2004), and the CPUEs between the shallow- and deep-set fisheries and not greatly different.

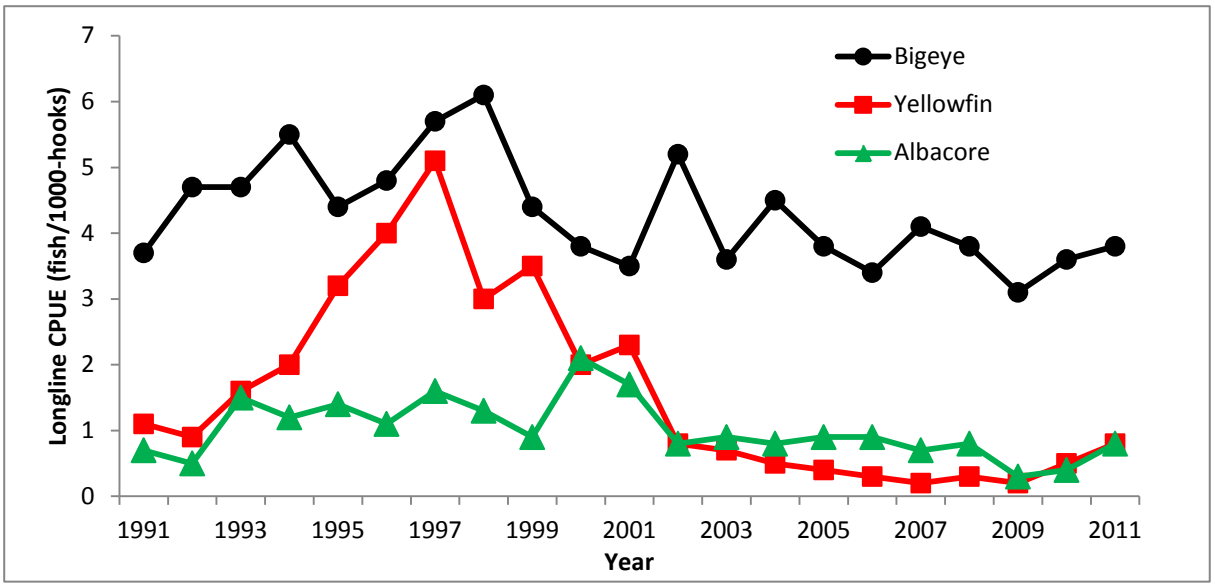

Figure C-33: Time series of catch per unit of effort of bigeye, yellowfin, and albacore tuna in the Hawaii deep-set longline fishery.
Source: WPRFMC (2012) and unpublished data.

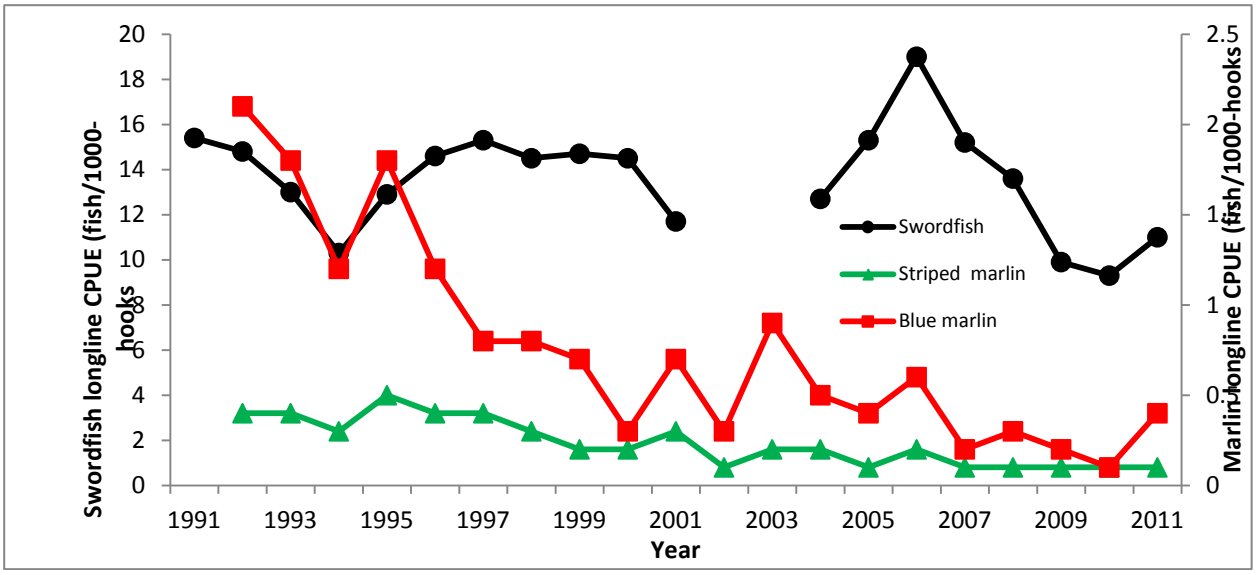

Figure C-34: Time series of catch per unit of effort of swordfish in the Hawaii shallow-set longline fishery and blue and striped marlins in the Hawaii deep-set longline fishery.
Source: WPRFMC (2012) and unpublished data.

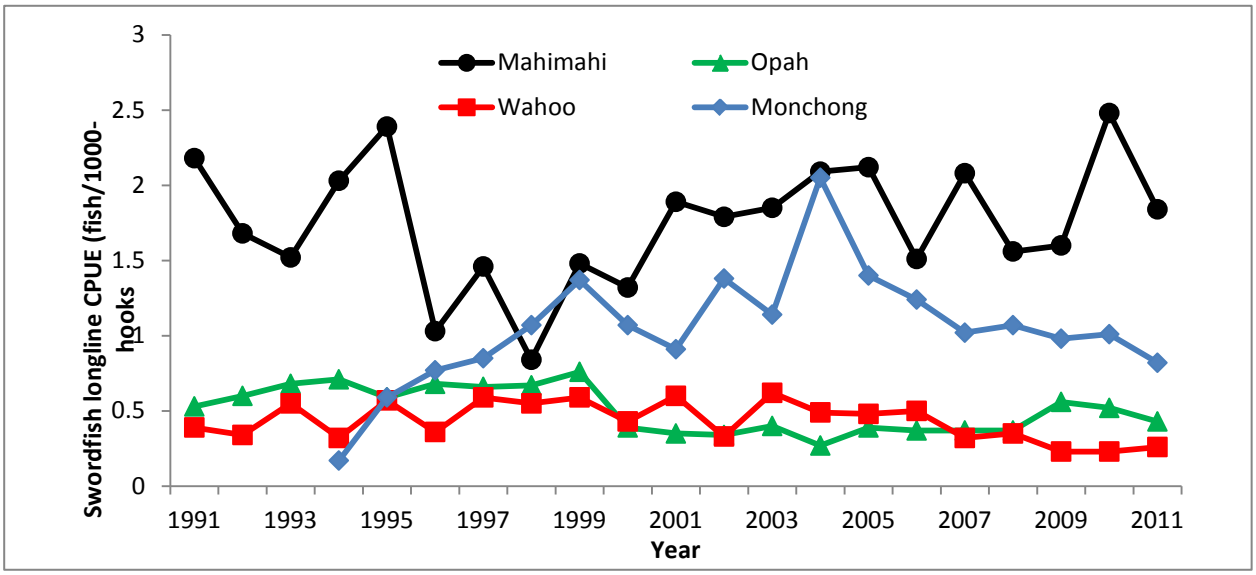

Figure C-35: Time series of mahimahi, wahoo, opah, and monchong in the Hawaii deep-set longline fishery.
Source WPRFMC (2012) and unpublished data.

The CPUEs for the most important non tuna, non billfish commercial pelagic species in the Hawaii deep-set longline fishery are shown above in Figure C-35. Mahimahi CPUE declined from 1991 to 1998 and then has been on a rising trend thereafter. Opah CPUE was relatively steady between 1991 and 1999, after which it declined by about 50 percent, and has slowly been on an increasing trend. The wahoo CPUE was variable between 1991 and 2003 but without any specific trend, but has shown a generally declining trend after 2003. Pomfret or monchong CPUE showed an increasing trend from 1994 to 2004, but has been in decline thereafter.

4.5 Recreational fishery

There are no State or Federal permit or reporting requirements for pelagic recreational fishers in Hawaii (those who do not sell one fish during the year); therefore, catch rates and effort data are not well understood. However in 2001, NMFS, in conjunction with HDAR, resumed its voluntary Hawaii Marine Recreational Fishing Survey (HMRFS) program in Hawaii.

The total number of recreational fishers in Hawaii is unknown but there are about 14,300 small vessels in Hawaii, of which about 90 percent are registered as ‘pleasure craft’. McConnell and Haab (2001) estimated that 6,600 of these vessels might be used for recreational fishing. Out of a sample of 1,008 respondents from these 6,600 vessel owners in a phone survey, 17 percent indicated that their vessel was either not being used or was not used for fishing. Based on these data it is estimated that Hawaii’s recreational small boat fleet numbers about 5,500 vessels.

A summary of Hawaii’s recreational catches is shown in Table C-23. Total catches have ranged from about 15 million to 23 million pounds, with an average of about 15 million pounds, of which about 90 percent comprises pelagic fish. Recreational pelagic catches are caught primarily

by troll fishing and comprise six principal species, blue marlin, mahi-mahi, skipjack, striped marlin, wahoo and yellowfin tuna (Figure C-36). Over half of the landings of these six species is formed by yellowfin, with mahimahi, skipjack and wahoo making up most of the balance (Table 23).

Table C-23: Recreational fish landings in Hawaii, 2003-2009.

Year	**Fishery type**	**Shore**	**Boat**	**Total**	Percent pelagic
2003	Pelagic	422,439	14,906,148	15,328,587	88.73%
	Others	1,429,654	517,127	1,946,782	
	Total	1,852,094	15,423,275	17,275,369	
2004	Pelagic	120,779	12,210,682	12,331,461	84.04%
	Others	1,148,206	1,193,997	2,342,203	
	Total	1,268,985	13,404,679	14,673,664	
2005	Pelagic	229,059	12,804,981	13,724,473	88.34%
	Others	1,015,647	795,857	1,811,504	
	Total	1,244,706	13,600,838	15,535,977	
2006	Pelagic	258,802	11,830,852	12,089,654	83.58%
	Others	1,519,287	856,242	2,375,530	
	Total	1,778,089	12,687,095	14,465,184	
2007	Pelagic	114,832	13,956,644	14,071,475	94.94%
	Others	346,453	404,283	750,735	
	Total	461,284	14,360,926	14,822,211	
2008	Pelagic	56,937	21,802,388	21,859,325	95.60%
	Others	773,611	231,582	1,005,193	
	Total	830,547	22,033,970	22,864,517	
2009	Pelagic	66,635	17,071,414	17,138,049	96.38%
	Others	369,993	272,841	642,834	
	Total	436,628	17,344,255	17,780,883	
2010	Pelagic	14,469	11,754,054	11,768,523	90.60%
	Others	492,484	728,295	1,220,778	
	Total	506,952	12,482,349	12,989,301	

Source: WPRFMC (2012).

Table C-24: Catches of pelagic fish in the Hawaii recreational fishery, 2003-2010.

Species	Blue Marlin	Mahi-mahi	Skipjack	Striped Marlin	Wahoo	Yellowfin
2003	781,037	1,137,979	1,810,708	176,225	2,120,246	9,111,431
2004	1,117,253	3,692,742	1,877,121	56,191	1,678,793	3,937,312
2005	1,117,253	3,692,742	1,877,121	56,191	1,678,793	3,937,312
2006	388,470	3,561,206	1,181,904	78,184	1,149,980	5,353,996
2007	238,005	2,057,498	1,380,634	68,847	1,015,083	9,090,920
2008	1,546,155	2,821,375	4,026,627	5,931	1,478,016	11,997,037
2009	476,219	1,555,346	1,684,689	25,251	1,091,755	12,191,248
2010	256,434	2,118,183	1,344,427	0	773,074	8,074,110
Mean	740,103	2,579,634	1,897,904	58,352	1,373,217	7,961,671
Percent of mean	5.07%	17.66%	12.99%	0.40%	9.40%	54.49%

Source: WPRFMC 2012; unpublished data.

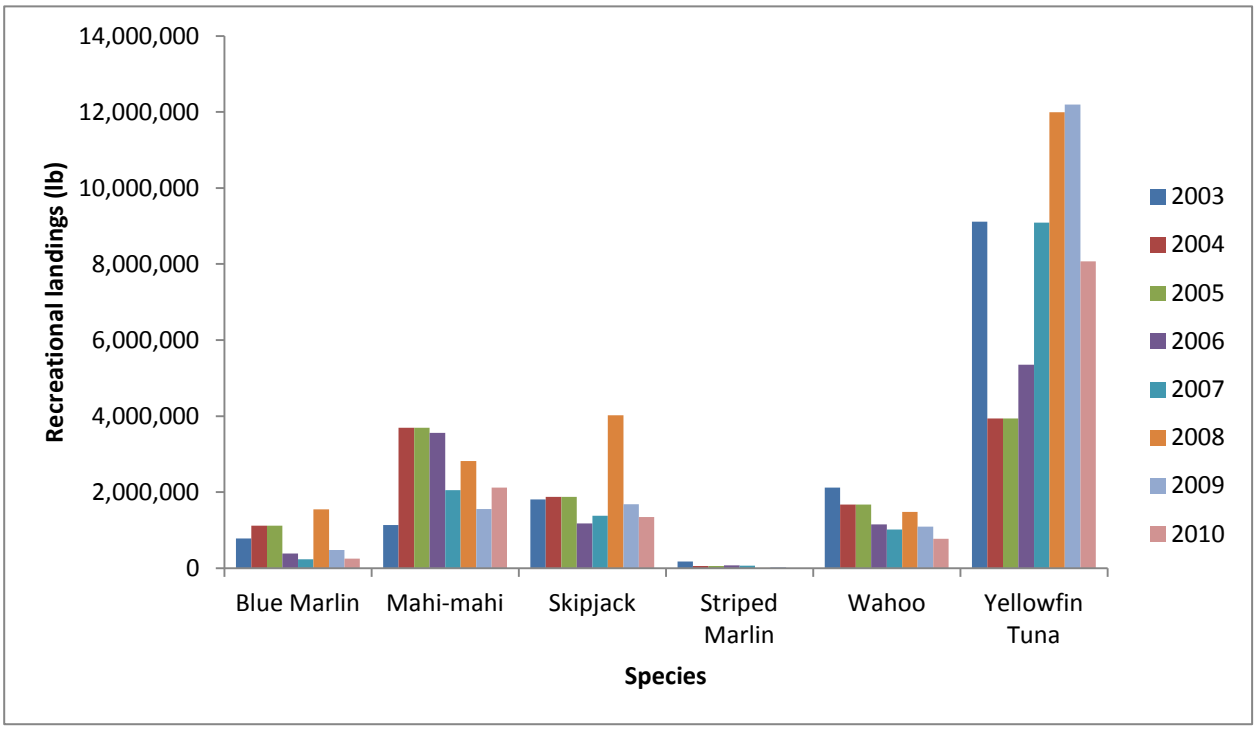

Figure C-36: Landings of six principal pelagic fish by recreational fisheries in Hawaii, 2003-2010.
Source: WPRFMC (2012) and unpublished data.

The data indicate that little to no bigeye tuna is caught by recreational fishers, while yellowfin landings have been estimated to range between 4 and 12 million pounds, with a mean of approximately 8 million pounds.

There is much uncertainty surrounding the recreational fishery catch estimates, which are estimated using intercept catch surveys of shoreline, and boat based fishermen at small boat harbors and ramps, and a random digit dialing telephone survey to estimate household fishing effort. However, if the numbers do reflect the scale of recreational fishing then yellowfin catches are two to three times greater in the commercial fishery (Figure C-37).

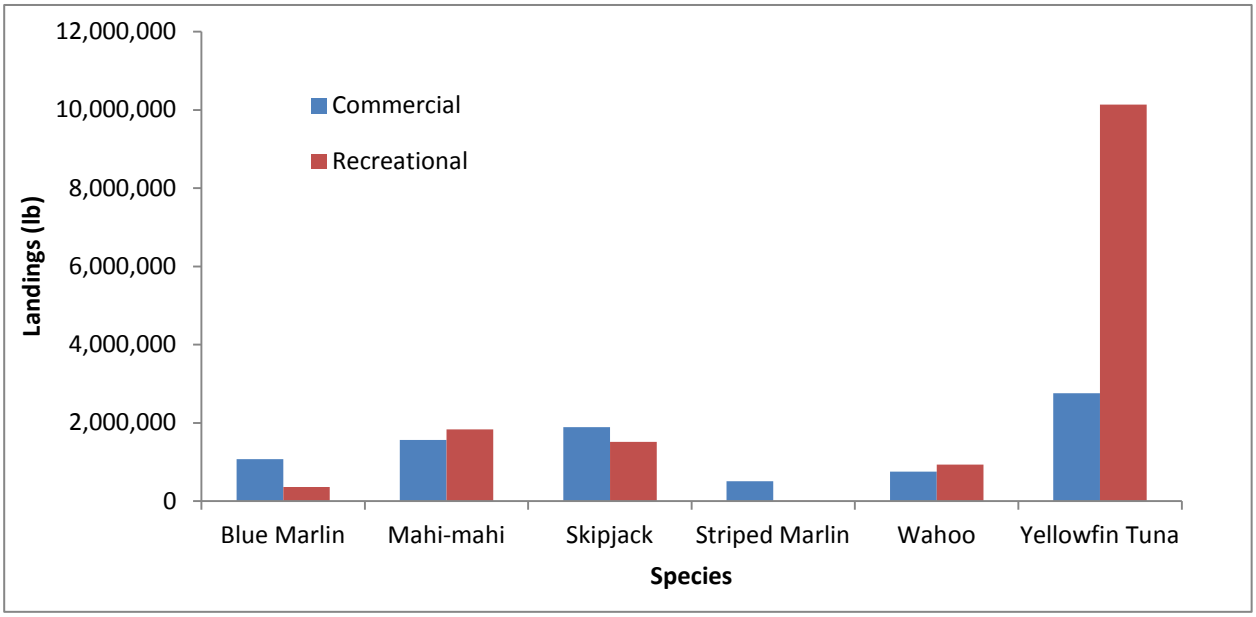

Figure C-37: Mean commercial and recreational landings (2009-2010) of the six principal pelagic species.
Source: WPRFMC (2012) and unpublished data.

Appendix D- TUMAS Analysis on Impacts to Stock Status of Bigeye Tuna in the WCPO

TUMAS Analysis[54]

I. Introduction

The following analysis uses TUMAS (Tuna Management Simulator) to evaluate impacts to bigeye tuna from international fisheries occurring within the WCPFC Convention Area. TUMAS is an online web tool designed to allow users to control fisheries data under various scenarios and project the status of a particular stock in the future.[55] This application was developed by the SPC-OFP and relies on stock assessments of tropical tunas in the WCPO.

With respect to bigeye tuna, the most recent version of TUMAS incorporates the 2011 stock assessment of bigeye tuna in the WCPO (see Davies et al. 2011). This stock assessment is a spatially disaggregated MULTIFAN-CL model that separates the WCPO into six regions. As designed, TUMAS incorporates bigeye tuna catch information from the early 1950s up to 2010 and allows users to scale catch data by fisheries overall or in one or more of the six stock assessment regions to make predictions about likely stock responses to catch or effort changes. New stock assessments are incorporated into TUMAS as they become available. The TUMAS model available at the time of writing incorporates 2010 catch information of bigeye tuna and does not include 2011 or 2012 catches.

TUMAS also offers the ability to conduct projections under two stock-recruitment scenarios for bigeye tuna:

1) Long-term recruitment average (1952-2009), which is termed “spawner recruitment relationship” in the model; and

2) Recent average recruitment (1989-2009).

The two recruitment scenarios offer different stock status trajectories, with long-term average recruitment being more pessimistic and recent average recruitment being more optimistic. The long-term recruitment average includes several decades (1950s-1970s) of older recruitment estimates that were derived from periods when fishing mortality on bigeye tuna was much lower and confined primarily to longline fishing. Higher levels of bigeye tuna recruitment occurred after the 1980s with the expansion of FAD-based purse seine fishing in the WCPO, and thus the recent average recruitment scenario (1989-2009) better reflects current conditions and conditions that are likely to prevail into the near future, where bigeye tuna catches originate from a mixture of purse seine and longline fisheries.

[54] Prepared by Eric Kingma, Western Pacific Regional Fishery Management Council, in collaboration with Keith Bigelow, NMFS Pacific Islands Fisheries Science Center. September 2013.
[55] http://www.tumas-project.org/about-tumas

With regards to deterministic projections, such as those produced using TUMAS, the WCPFC Science Committee has recommended that the WCPFC science provider (SPC-OFP) conduct projections using recent average recruitment and the long-term recruitment average; however, since the higher level of recent bigeye tuna recruitment is considered to be a better indicator of future recruitment levels, greater emphasis is provided to recent average recruitment when presenting catch projections (WCPFC 2010; WCPFC 2011(d); J. Hampton, SPC-OFP, pers. comm., 2013).[56]

It is expected that the SPC-OFP will incorporate data after 2010 in the TUMAS tool when the 2014 stock assessments of tropical tunas are completed by the SPC-OFP. With respect to 2011 catches, and as indicated below, the SPC-OFP has run projections to evaluate the impacts of 2011 fishing conditions on bigeye tuna stock status; however, the SPC-OFP has yet to include 2011 data in the online TUMAS tool. In addition, 2012 catches are still considered preliminary and therefore have not been used by the SPC-OFP to run projections for consideration by the WCPFC. However, catches of bigeye tuna in 2012 are believed to be similar to levels observed in 2011.

The fishing conditions in 2010, however, are especially useful for management purposes because they are representative of the volume of bigeye tuna caught in the purse seine, longline, and other fisheries (e.g., Indonesian/Philippine surface fisheries) that would result in eliminating overfishing on WCPO bigeye tuna in the near future consistent with existing WCPFC objectives. For example, under a scenario best approximating reported fishery catch and effort in 2010, the SPC-OFP projected the F/F_{MSY} ratio of bigeye tuna to be 0.96 by 2021 (Pilling et al. 2013). This is driven by several factors: the lower than usual FAD use in 2010, lower longline catches, and a large (30%) reduction in reported catches from the domestic fisheries of Indonesia and the Philippines (Ibid.). For a scenario approximating 2011 fishery conditions, the SPC-OFP projected the F/F_{MSY} ratio of bigeye tuna to be 1.29 by 2021 under the recent average recruitment scenario (Pilling et al. 2013). The difference between 2010 and 2011 fishery outcomes is mainly due to the return to higher levels of FAD-based purse seine effort in 2011 (Ibid.).

Subsequent to 2011 catches of bigeye tuna, the WCPFC agreed to CMM 2012-01, which maintained longline catch limits for bigeye tuna. CMM 2012-01 established additional measures to reduce the impact of purse seine fishing, including the implementation of an additional month prohibiting FAD usage, or an annual limit of FAD sets to 8/12 (75%) of the average number of FAD sets from 2001-2011 and for SIDS, 8/9 (88.8%) of the 3-year average for 2009-2011, restrictions to 2010 levels through the PNA vessel day scheme for PNA members, and restrictions on all other states to purse seine effort in their EEZs to 2001-2004 or 2010 levels. In the same measure, the WCPFC has agreed on an objective to eliminate overfishing on bigeye tuna ($F/F_{MSY} \leq 1.0$) through a step by step approach through 2017 (CMM 2012-01). To accomplish this objective, the WCPFC has established more restrictive measures in CMM 2013-01 on purse seine fisheries and longline fisheries than what is provided in CMM 2012-01. Thus,

[56] In 2011, the SPC-OFP ran projections using both recent average recruitment and long-term average recruitment; however, only presented projections using recent average recruitment at the Eighth Regular Session of the WCPFC in March 2012. This exemplifies that greater emphasis is being placed on recent average recruitment versus long-term average recruitment when conducting projections on the stock status of bigeye tuna. See WCPFC 2011(d).

the outcome based on 2011 fishing conditions as described above is considered less likely to occur in the future.

On the other hand, the fishing conditions observed in 2010 are understood by the WCPFC as representative of fishing conditions that would meet its objective in eliminating overfishing on bigeye tuna in the future. As noted above, 2011 conditions resulted in a projected continuation of overfishing, primarily from higher FAD use in the purse seine fishery compared to 2010. Fishing conditions in 2012 were similar to those in 2011. In order to meet the objective to eliminate bigeye overfishing, the WCPFC has agreed on CMM 2013, which is more restrictive than 2012-01, and if further reductions are needed, will establish measures through a step by step approach through 2017 that are likely to result in fishing conditions similar to 2010.

If replicated, the fishing conditions in 2010 would achieve the WCPFC objective of eliminating overfishing on bigeye tuna, whereas 2011 and 2012 fishing conditions would not. As such, the following analysis relies on the fishing conditions in 2010 as the best available scientific information to evaluate the impact of the action Alternatives on bigeye tuna stock status with respect to overfishing (F/F_{MSY}) and overfished reference points (B/B_{MSY}) in the Pelagics FEP. Furthermore, the limits established under CMM 2013-01 are more likely to result in fishing conditions similar those observed in 2010 than compared to 2011 and 2012.

For comparative purposes, the analysis below provides projection results using both recruitment scenarios and scaled Hawaii longline catches combined with 2010 fishing conditions. As noted, the WCPFC has agreed on an objective to eliminate overfishing on bigeye tuna ($F/F_{MSY} \leq 1.0$) through a step by step approach through 2017 (CMM 2012-01, CMM 2013-01). Projection results are provided for years 2017 and 2020, with 2020 being the last year available in the TUMAS model. While projection results are included for years 2017 and 2020 in the following tables, it is noted that the differences in projected values between years are believed to be statistically indistinguishable with respect to overfishing and overfished reference points. However, when comparing projection results between years under the same catch levels, there is a noticeable trend in stock status, with the stock improving under the recent average recruitment scenario and declining under the long-term average recruitment scenario (see Figures D-1 and D-2 below for illustrations of these trends).

Although using the long-term average recruitment scenario for the TUMAS projections results in overfishing under all Alternatives, less emphasis is placed on these results because recruitment levels associated with the long-term recruitment average are not believed to be representative future levels of recruitment. Beginning in the late1980s, higher levels of recruitment have been observed and incorporated in the stock assessment for bigeye tuna. The long-term recruitment average includes several decades (1950s-1970s) of recruitment estimates that were derived from periods when fishing mortality on bigeye tuna was much lower and confined primarily to longline fishing. Moreover, the older recruitment estimates, especially in the 1950s were based on longline data from the Japanese fishery while it was more spatially constrained and had not spread out across the WCPO.

Higher levels of bigeye tuna stock recruitment occurred after the 1980s with the expansion of FAD-based purse seine fishing in the WCPO. This high level of juvenile catch is explained in the

stock assessment as elevated levels of bigeye recruitment. Moreover, the dynamics of the ecosystem may also have responded to the increasing levels of fishing mortality, which have reduced the upper trophic level predator biomass including adult bigeye tuna, likely resulting in more favorable survival rates for juvenile bigeye tunas (Myers and Worm 2003; Sibert et al. 2006; Polovina et al. 2009; Woodworth-Jefcoats et al. 2012). Furthermore, the 2011 stock assessment for WCPO bigeye tuna indicates that most of the high levels of recruitment observed in the model occur at low estimated spawning biomass (Davies et. al 2011). As such, recent average recruitment of bigeye tuna is likely to be a better reflection of future levels of recruitment, given that favorable conditions will likely persist including the mix of longline and purse seine fishing gears harvesting bigeye tuna in the WCPO.

Because recent average recruitment is believed to be a better representation of current and future recruitment trends, greater emphasis is placed on recent average recruitment associated projections to evaluate impacts from the Alternatives to future bigeye tuna stock status. This is consistent with the advice provided by WCPFC Science Committee (WCPFC 2010; 2011(d)) and subsequent projections conducted by the SPC-OFP (WCPFC 2011(d)).

The 2010 baseline catch level for the Hawaii longline fishery used in the TUMAS analysis is 3,889 mt, which includes Hawaii longline catches and approximately 400 mt of bigeye tuna catch by vessels with dual Hawaii and American Samoa longline permits. The analysis uses 3,889 mt as the baseline from which various scalars are applied. In addition, the TUMAS analysis maintains the U.S. (i.e., Hawaii) WCPO longline limit of 3,763 mt through 2020 with respect to the Alternatives considered even though CMM 2013-01 will reduce the U.S. longline bigeye limit by approximately 11 percent from the 3,763-mt level in 2017 to 3,345 mt. The addition of approximately 400 mt in dual permit catch plus the CMM 2013-01 limits are sufficiently close to 3,889 mt for purposes of the projections and any slight differences in annual catches would produce statistically indistinguishable results as these differences are minuscule with respect to the total WCPO bigeye catches used in the model projections.

Figure D-1: Declining trend in F/F_{MSY} values under recent recruitment scenario (1989-2009) and 2010 fishing conditions.
Source: TUMAS 2010 baseline conditions.

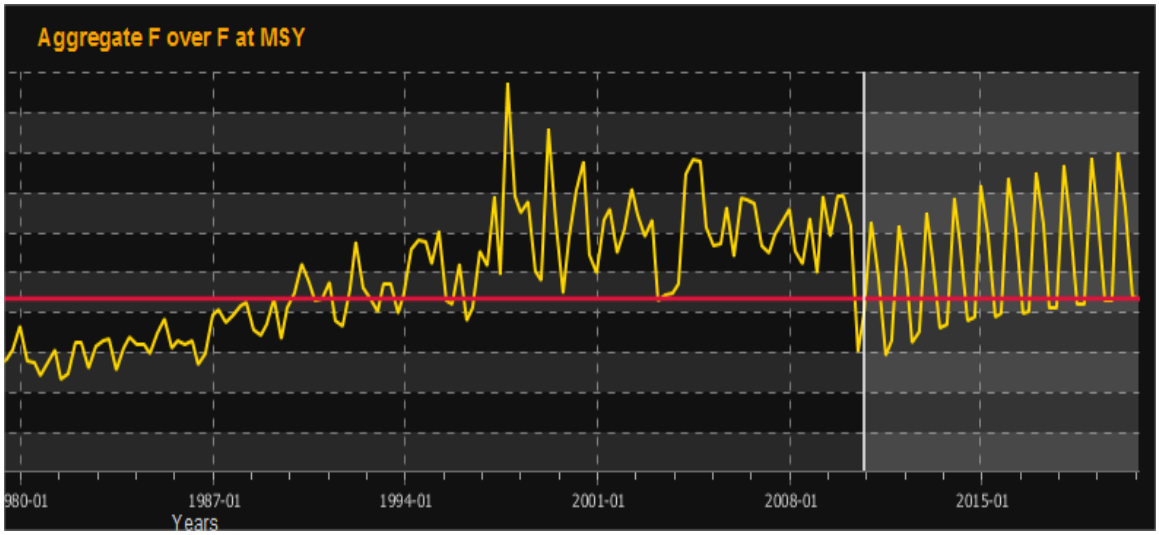

Figure D-2: Increasing trend in F/F_{MSY} values under long-term average recruitment (1952-2009) scenario and 2010 fishing conditions.
Source: TUMAS 2010 baseline conditions.

Bigeye catch as reported in 2010 is used for the projections, and scaled upwards based on the Alternatives considered. 2010 Hawaii longline catches and Hawaii and American Samoa dual permitted longline vessels are included in the model for Region 2 and Region 4 (total 3,889 mt). Catches of bigeye by the American Samoa longline fishery are included in a longline fishery for all Pacific Islands fleets in Region 6.

Scalars can be applied to the combined 2010 bigeye tuna catch (3,889 mt) of the Hawaii longline fishery and American Samoa and Hawaii longline dual permitted vessels to quantify the impacts

to bigeye tuna stock status, expressed in percent change to overfishing (F/F_{MSY}) and overfished (B/B_{MSY}) values through years 2017 and 2020.

Under the Pelagics FEP, $F/F_{MSY}>1$ indicates overfishing is occurring, and $B/B_{MSY}<0.6$ indicates the stock is in an overfished condition. The tables below also include the SB/SB_{MSY} ratio, which represents adult fish biomass levels.

II. Methods

The following provides the methods used in the TUMAS analysis. TUMAS allows users to apply various scalars on the reported US WCPO (Hawaii) longline catches while not modifying other catches reported for various fisheries included in the model. Hawaii longline data catch data in the model are separated in to Region 1 and Region 2, respectively, of the WCPO MULTIFAN-CL bigeye stock assessment.

1. Impacts from Alternative 1, status quo

<u>Scalar of 1.17 for the Hawaii longline fishery in Regions 2 and 4:</u>

HI LL catch limit + AS mean transfer = X

X – HI LL 2010 catch /HI LL 2010 catch x 100 = % increase

(3,763 + 700) – (3,889)/3,889 x 100 = 1.17 scalar on 2010 HI LL bigeye catch

2. Impacts from Alternative 2- Territory agreements not authorized

2010 catch from Hawaii longline fishery in Regions 2 and 4 = 3,889 = 1.0 scalar on 2010 HI LL bigeye catch

3. Impacts from Alternative 4, 1,000 mt transferable limit per Territory plus U.S. WCPO catch limit, 3,000 mt transfers + U.S. WCPO limit, 2,000-mt catch limit per Territory + U.S. WCPO catch limit

(3,763 + 1,000) – (3,889)/3,889 x 100 = Scalar 1.22 on 2010 HI LL bigeye tuna catch

(3,763 + 3,000) – (3,889)/3,889 x 100 = Scalar 1.74 on 2010 HI LL bigeye tuna catch

(3,763 + 6,000) – (3,889)/3,889 x 100 = Scalar 2.51 on 2010 HI LL bigeye tuna catch

III. Results

Table 1: Projections Related to Alternatives 1 through 4 and Percent Increase in F/F_{MSY}, SB/SB_{MSY} and B/B_{MSY}, at various scalars, and using recent bigeye tuna recruitment (1989-2009).

Predicted F/F_{MSY} levels

Year	Baseline projected	Alternatives 1 and 3		Alternative 2 (2010 catch)		Alternative 4					
		HI LL Reg. 2 HI LL Reg. 4 scalar 1.17 (3,763 mt + 700 mt)		Same as Baseline*/No Allocation (3,763 mt)		HI LL Reg. 2 HI LL Reg. 4 scalar 1.22 (3,763 mt + 1,000 mt)		HI LL Reg. 2 HI LL Reg. 4 scalar 1.74 (3,763 mt + 3,000 mt)		HI LL Reg. HI LL Reg. 4 scalar 2.5 (3,763 mt + 6,000 mt)	
	F/F_{MSY}	F/F_{MSY}	% change	F/F_{MSY}	% change	F/F_{MSY}	% change	F/F_{MSY}	% change	F/F_{MSY}	% change
2010	1.227										
2017	1.008	1.013	0.50	1.008	0	1.014	0.60	1.028	1.98	1.049	4.07
2020	0.975	0.979	0.41	0.975	0	0.980	0.51	0.994	1.95	1.015	4.10

Predicted SB/SB_{MSY} and B/B_{MSY} levels

Year	SB/SB_{MSY} (B/B_{MSY})	SB/SB_{MSY} (B/B_{MSY})	% change	SB/SB_{MSY} (B/B_{MSY})	% change	SB/SB_{MSY} (B/B_{MSY})	% change	SB/SB_{MSY} (B/B_{MSY})	% change	SB/SB_{MSY} (B/B_{MSY})	% change
2010	1.081 (1.263)										
2017	1.605 (1.702)	1.687 (1.696)	5.1% (-0.35%)	1.605 (1.702)	0	1.685 (1.738)	4.9% (2.1%)	1.662 (1.677)	3.55% (-1.47%)	1.629 (1.694)	1.49% (-0.47%)
2020	1.832 (1.822)	1.842 (1.815)	0.54% (-0.38%)	1.832 (1.702)	0	1.840 (1.826)	0.44% (0.22%)	1.816 (1.794)	-0.87% (-1.54%)	1.780 (1.779)	-2.78% (-2.36%)

Note: Percent change is comparison between same years (e.g., change in F/F_{MSY} in 2017 without scalar (baseline) vs. 2017 with scalar.
*Alternative 2 assumes no increase in U.S. bigeye tuna catch and therefore same as baseline conditions.
Alternative 4 includes 2,000 mt per U.S. Territory for a total of 6,000 mt added to Hawaii longline catches.

Table 2: Projections Related to Alternatives 1 through 4 and Percent Increase in F/F_{MSY}, SB/SB_{MSY} and B/B_{MSY} levels, at various scalars, and using long-term average recruitment (1952-2009).

Predicted F/F_{MSY} levels

Year	Baseline	Alternatives 1 and 3		Alternative 2 (2010 catch)		Alternative 4					
		HI LL Reg. 2 HI LL Reg. 4 scalar 1.17 (3,763 mt + 700 mt)		Same as Baseline*/No Allocation (3,763 mt)		HI LL Reg. 2 HI LL Reg. 4 scalar 1.22 (3,763 mt + 1,000 mt)		HI LL Reg. 2 HI LL Reg. 4 scalar 1.74 (3,763 mt + 3,000 mt)		HI LL Reg. HI LL Reg. 4 scalar 2.51 (3,763 mt + 6,000 mt)	
	F/F_{MSY}	F/F_{MSY}	% change	F/F_{MSY}	% change	F/F_{MSY}	% change	F/F_{MSY}	% change	F/F_{MSY}	% change
2010	1.157										
2017	1.260	1.265	0. 40%	1.204	0.0	1.267	0.56%	1.282	1.34%	1.342	6.51%
2020	1.343	1.350	0.52%	1.343	0.0	1.352	0.67%	1.370	1.49%	1.456	8.41%

Predicted SB/SB_{MSY} and B/B_{MSY} levels

Year	SB/SB_{MSY} (B/B_{MSY})	SB/SB_{MSY} (B/B_{MSY})	% change	SB/SB_{MSY} (B/B_{MSY})	% change	SB/SB_{MSY} (B/B_{MSY})	% change	SB/SB_{MSY} (B/B_{MSY})	% change	SB/SB_{MSY} (B/B_{MSY})	% change
2010	1.076 (1.223)										
2017	0.879 (0.902)	0.876 (0.899)	-0.34% (-0.33%)	0.879	0	0.874 (0.898)	0.57% (-0.44%)	0.863 (0.888)	-1.82% (-1.55%)	0.814 (0.849)	-7.39 % (-5.87%)
2020	0.779 (0.802)	0.774 (0.806)	-0.64% (0.50%)	0.779	0	0.773 (0.805)	-0.77% (0.37%)	0.758 (0.793)	-2.70% (-1.12%)	0.700 (0.744)	-10.1% (-7.23%)

Note: Percent change is comparison between same years (e.g., change in F/F_{MSY} in 2017 without scalar (baseline) vs. 2017 with scalar
*Alternative 2 assumes no increase in U.S. bigeye tuna catch and therefore same as baseline conditions.
Alternative 4 includes 2,000 mt per U.S. Territory for a total of 6,000 mt added to Hawaii longline catches.