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Environmental Assessment

2018 Bigeye Tuna Catch and Allocation Limits for Pelagic Longline Fisheries in U.S. Pacific Island Territories including a Regulatory Impact Review

(RIN 0648-XG025)

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Abstract

The National Marine Fisheries Service (NMFS) proposes to specify a 2018 catch limit of 2,000 metric tons (t) of longline-caught bigeye tuna (*Thunnus obesus*) for each of the pelagic longline fisheries of American Samoa, Guam, and the Northern Mariana Islands. NMFS also proposes to authorize each U.S. territory to allocate up to 1,000 t of its 2,000 t bigeye tuna limit to a U.S. longline fishing vessel or vessels holding a valid permit issued under Title 50, Code of Federal Regulations, Section 665.801 (50 CFR 665.801) and identified in a valid specified fishing agreement with a territory. NMFS would attribute the catches of bigeye tuna made by vessels identified in a valid specified fishing agreement to the territory to which the agreement applies in accordance with the procedures set forth in 50 CFR 665.819. NMFS applies funds received under a specified fishing agreement toward fisheries development projects identified in a territorial marine conservation plan (MCP).

NMFS would monitor catches of bigeye tuna caught by the longline fisheries of each territory, including catches made by longline vessels operating under specified fishing agreements. As an accountability measure (AM), NMFS would prohibit the retention of longline-caught bigeye tuna by vessels in the applicable territory (if NMFS projects the territorial limit will be reached),

and/or by vessels operating under the applicable specified fishing agreement (if NMFS projects the allocation limit will be reached).

At its 172nd meeting held March 14-16, 2018, in Honolulu, Hawaii, the Western Pacific Fishery Management Council (Council) recommended that NMFS implement the proposed catch and allocation limits and AM for 2018. The recommended limits are identical to those that NMFS implemented in 2014 (79 FR 64097, October 28, 2014), 2015 (80 FR 61767, October 14, 2015; 80 FR 68778, November 6, 2015), 2016 (81 FR 63145, September 14, 2016), and 2017 (82 FR 47644, October 13, 2017).

The EA analyzes the following three alternatives for catch and allocation limit specifications in detail:

- Alternative 1: NMFS would not specify a territorial bigeye tuna catch or allocation limit (No Management Action).
- Alternative 2: NMFS would specify, for each territory, a 2,000 t catch limit and 1,000 t allocation limit (Status Quo/Council and NMFS preferred).
- Alternative 3: NMFS would specify, for each territory, a 2,000 t catch limit and 2,000 t allocation limit.

The analysis in the EA indicates that the proposed catch and allocation limits and AM are not expected to result in adverse effects on the long-term sustainability of bigeye tuna, other non-target species, bycatch species, protected species, or adversely affect marine habitats, or result in large changes to any western Pacific longline fishery. The proposed action supports the long-term sustainability of fishery resources of the U.S. Pacific Islands.

Copies of this EA and final rule are found under RIN 0648-XG025 at www.regulations.gov, or by contacting the responsible official or Council at the above addresses.

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ACRONYMS AND ABBREVIATIONS

ANE	Adult nesting equivalency
APA	Administrative Procedure Act
B	Biomass
BE	Biological Evaluation
BiOp	Biological Opinion
CCM	Cooperating members, non-members, and participating territories of the WCPFC
CMM	Conservation and management measure
CNMI	Commonwealth of the Northern Mariana Islands
CNP	Central North Pacific
CPUE	Catch per unit of effort
Council	Western Pacific Fishery Management Council
DPS	Distinct population segment
EA	Environmental assessment
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EPO	Eastern Pacific Ocean
ESA	Endangered Species Act
F	Fishing mortality
FAD	Fish aggregation device
FEP	Fishery ecosystem plan
FMP	Fishery management plan
FR	*Federal Register*
HAPC	Habitat areas of particular concern
IATTC	Inter-American Tropical Tuna Commission
ISC	International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean
ITS	Incidental take statement
lb	Pound(s)
LRP	Limit reference points
LVPA	large vessel prohibited area
M	Natural mortality rate
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MCP	Marine Conservation Plan
MHI	Main Hawaiian Islands
MFMT	Maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
MUS	Management unit species
M&SI	Mortalities and serious injuries
NEPA	National Environmental Policy Act
nm	Nautical mile(s)
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration

NWHI	Northwestern Hawaiian Islands
Pelagic FEP	Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region
PBR	Potential biological removal
PIFSC	Pacific Islands Fisheries Science Center
PIRO	Pacific Islands Regional Office
PMUS	Pelagic management unit species
PT	Participating Territory
RA	Regional Administrator
SC	Scientific Committee of the WCPFC
SIDS	Small Island Developing States
SPC	Secretariat of the Pacific Community
SPTT	South Pacific Tuna Treaty
t	Metric ton(s)
USFWS	U.S. Fish and Wildlife Service
WCNPO	Western and central North Pacific Ocean
WCPFC	Western and Central Pacific Fisheries Commission
WCPF Convention	Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean
WCPO	Western and central Pacific Ocean
WP SFF	Western Pacific Sustainable Fisheries Fund
WPFMC	Western Pacific Fishery Management Council

Environmental Assessment

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1 INTRODUCTION

1.1 Overview of Bigeye Tuna Management in the Western and Central Pacific Ocean

The Council and NMFS manage fishing for bigeye tuna and other pelagic management unit species (PMUS) on the high seas and in the Exclusive Economic Zone (EEZ or federal waters; generally 3-200 nautical miles, nm, from shore) around American Samoa, Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and Hawaii. Management occurs through implementation of the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region (Pelagic FEP) as authorized by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 16 U.S.C. § 1801 *et seq.*).

Bigeye tuna is an important component of tuna fisheries throughout the Pacific Ocean, harvested predominantly by purse seine and longline fleets of several nations. In the western and central Pacific Ocean or WCPO (generally west of 150° W. long.) bigeye tuna was previously assessed as experiencing overfishing (69 FR 78397, December 30, 2004), but currently is not experiencing overfishing based on the latest stock assessment (McKechnie et al. 2017). Bigeye has not been in an overfished condition according to stock status determination criteria described in the Pelagic FEP (WPFMC 2009).

Since 2006, the Western and Central Pacific Fisheries Commission (WCPFC) has adopted conservation and management measures (CMMs) aimed at reducing fishing mortality of bigeye tuna in the WCPO, including catch and effort limits that are applicable to longline and purse seine fisheries of WCPFC member countries. For the purpose of WCPFC membership, the United States is a full WCPFC member, while the U.S. Territories of American Samoa and Guam, and the CNMI are each a participating territory (PT) to the WCPFC (hereafter, U.S. participating territory). The U.S. participating territories have limited participation rights at WCPFC, as described by Article 43 of the *Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean* (WCPF Convention) and the WCPFC Rules of Procedure.

The most recent WCPFC CMM that applies to WCPO bigeye tuna is CMM 2017-01, which the WCPFC developed to serve as a bridging measure until it adopts a harvest strategy for bigeye, skipjack, and yellowfin tuna stocks and/or fisheries. Taking into account the bridging role of the measure and the uncertain framework for evaluating the impact of management measures on the bigeye stock, WCPFC committed to working toward achieving and sustaining the aims with respect to bigeye, skipjack, and yellowfin management objectives.

In accordance with CMM 2017-01, and as an interim measure, the U.S. longline bigeye limit for 2018 is 3,554 metric tons (t), which was the same limit in place for 2016 (Table 1). WCPFC restored longline bigeye limits for other cooperating members, non-members, and participating territories of the WCPFC (CCMs) to 2016 levels, with the exception of China and Japan. China received an additional 500 t increase transferred from Japan's quota. WCPFC restored the catch limits for Japan and Indonesia to their 2016 limits, although the countries reported their 2016 bigeye catches as 12,610 t and 8 t, respectively, which is approximately 5,000 t less than their 2016 catch limit for each country (SPC 2017b).

The 3,554 t limit for the United States is only applicable to U.S. longline fisheries in Hawaii and the West Coast of the United States. The limit does not apply to longline fisheries of the U.S. participating territories, as the WCPFC treats each as separate from the U.S. for the purpose of tropical tuna catch or effort limits. Furthermore, the WCPFC agreed to attribute catch and effort of U.S.-flagged vessels operating under agreements with its PTs to the U.S. participating territories, and not to the United States (see Paragraph 9 of CMM 2017-01). WCPFC places no limits on the amount of bigeye transferrable from U.S. participating territories and other Small Island Developing States (SIDS) [1] under agreements.

Table 1. Longline bigeye catch limits for WCPFC CCMs

WCPFC CMM	2016 Catch Limit (t)	2017 Catch Limit (t)	2018 Catch Limit (t)
Japan	18,265	16,680	17,765
Korea	13,942	12,869	13,942
Chinese Taipei	10,481	9,675	10,481
China	8,224	7,049	8,724
Indonesia	5,889	5,889	5,889
USA	3,554	3,345	3,554
NZ, AU, EU, PI,	2,000	2,000	2,000
SIDS/PTs	No limit	No limit	No limit

Source: WCPFC CMM 2017-01

CMM 2017-01 also provides that each WCPFC member country that is not a SIDS that caught less than 2,000 t of tuna in 2004 to ensure that its catch does not exceed 2,000 t in 2018. Paragraph 5 of CMM 2017-01 makes clear, however, that nothing shall prejudice the rights and obligations of SIDS and PTs seeking to develop their domestic fisheries. This provision of CMM 2017-01 addresses Article 30 of the WCPF Convention. Specifically, Article 30 of the WCPF Convention recognizes the special needs of SIDS and PTs. CMMs must 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 giving effect to paragraph 7 and Article 30, WCPFC does not apply the 2,000 t bigeye limit to SIDS and PTs, which includes the U.S. participating territories. Thus, there are no current WCPFC-agreed upon catch limits or fishing effort for bigeye tuna in longline fisheries of SIDS and PTs, including American Samoa, Guam, and the CNMI. This is consistent with previous WCPFC measures.

1.2 Overview of Catch and Allocation Limit Specification Process

In 2014 the Council developed and NMFS approved Amendment 7 to the Pelagic FEP (WPFMC 2014). Amendment 7 established a process under the authority of the Magnuson-Stevens Act to specify catch and/or effort limits for pelagic fisheries in the U.S. participating territories, as recommended by the Council.[2] The process also allows NMFS to authorize the government of

[1] CMM 2017-01 defines "SIDS"s as inclusive of Participating Territories. See Paragraph 6.

[2] At its 173rd meeting held June 11-13, 2018, in Wailea, Maui, the Council recommended amending the Pelagic FEP and implementing regulations to remove the requirement for establishing a separate total catch or effort limit for the

each U.S. participating territory to allocate a portion of its catch or fishing effort limit of PMUS to a U.S. fishing vessel permitted under the Pelagic FEP through specified fishing agreements to support fisheries development in the U.S. participating territories. Regulations implementing Amendment 7 became effective on October 24, 2014. See 50 CFR 665.819.

Amendment 7 also established criteria that a specified fishing agreement must satisfy, which include among other requirements, that agreements identify those vessels subject to the agreement, and that such vessels land fish in the territory, or deposit funds into the Western Pacific Sustainable Fisheries Fund (WP SFF). Pursuant to Section 204(e)(4) of the Magnuson-Stevens Act, funds deposited into the WP SFF may be used for the implementation of an MCP[3].

When operating under a valid specified fishing agreement, federal regulations (50 CFR 665.819) require NMFS to attribute bigeye tuna catches made by vessels identified in the agreement to the territory to which the agreement applies seven days before NMFS projects the U.S. longline bigeye limit will be reached, or upon the effective date of the agreement, whichever is later. NMFS attributes catches of bigeye tuna made by Hawaii longline vessels identified in a specified fishing agreement to the territory to which the agreement applies in reports to the WCPFC.

By entering into a specified fishing agreement with Hawaii longline vessels, funds are deposited into the WP SFF and made available to support fisheries development projects identified in the Guam MCP (82 FR 38876, August 16, 2017), the CNMI MCP (82 FR 37198, August 8, 2017), and the American Samoa MCP (80 FR 18820, April 8, 2015). If funds remain after all projects in the MCPs for the U.S. participating territories have been completed, funds may be used to support projects identified in the Pacific Remote Island Areas MCP (82 FR 37575, August 11, 2017). For more information on the territorial catch and allocation limit process, see Amendment 7 to the Pelagic FEP (WPFMC 2014), and implementing federal regulations at 50 CFR 665.819.

1.3 Proposed Action

Under the proposed action, NMFS would specify a 2018 catch limit of 2,000 t of longline-caught bigeye tuna for each U.S. participating territory in the WCPO, as recommended by the Council. NMFS would also authorize each U.S. territory to allocate and transfer up to 1,000 t of its 2,000 t bigeye tuna limit to a U.S. longline fishing vessel(s) permitted under the Pelagic FEP and identified in a specified fishing agreement applicable to the territory. Criteria for a specified fishing agreement and the process for attributing longline caught bigeye tuna made by vessels of the U.S. participating territories and U.S. vessels identified in an approved specified fishing agreement are codified in 50 CFR 665.819. The catch and allocation limits would be in effect until December 31, 2018.

U.S. participating territories prior to establishing allocation limits, and the requirement that the Council must annually specify catch and allocation limits by permitting the Council to recommend that NMFS promulgate multi-year catch and/or allocation limits in regulations.

[3] MCPs are developed by the governors of each U.S. participating territory and describe planned marine conservation projects that may include, but are not limited to, development and implementation of sustainable marine resource development projects, fisheries monitoring and enforcement activities, and scientific research.

NMFS will monitor catches of bigeye tuna in the WCPO by the longline fisheries of each U.S. participating territory, including catches made by U.S. longline vessels operating under specified fishing agreements. As an accountability measure, NMFS would prohibit the retention of longline-caught bigeye tuna by vessels in the applicable U.S. territory (if NMFS projects the fishery will reach the territorial catch limit), and/or by vessels operating under specified fishing agreements (if NMFS projects the fishery will reach the allocation limit). Pursuant to federal regulations at 50 CFR 664.819, if NMFS determines catch made by vessel(s) identified in a specified fishing agreement exceeds the allocated limit, NMFS will attribute any overage of the limit back to the U.S. or U.S. participating territory to which the vessel(s) is(are) registered and permitted.

The action area where U.S. longline vessels operate is the EEZ around Hawaii, American Samoa, Guam, the CNMI, the Pacific Remote Islands Areas, and the adjacent high seas. However, under the proposed action, the catch and allocation limits apply only to bigeye tuna caught by longline gear in the WCPO (generally west of 150° W. long) and does not apply to bigeye tuna caught by longline gear in the eastern Pacific Ocean or EPO (generally east of 150° W. long).

1.4 Purpose and Need for Action

The purpose of this action is to establish a bigeye tuna catch and an allocation limit for longline fisheries of each U.S. participating territory (American Samoa, Guam, and the Northern Mariana Islands) that: 1) prevents bigeye overfishing, 2) supports fisheries development in US territories, and 3) promotes the availability of sustainably caught bigeye from U.S. vessels supplying the Hawaii seafood market during the culturally important end of year season of peak demand. The need for this action is to ensure that NMFS and the Council manage allocations of longline caught bigeye tuna under specified fishing agreements consistent with the conservation needs of the stock.

1.5 Decision(s) to be Made

The Council recommended the proposed action at its 172nd meeting held in Honolulu on March 14-16, 2018. This document will support a decision by the Regional Administrator (RA) of the NMFS Pacific Island Region, on behalf of the Secretary of Commerce, whether to approve, disapprove, or partially approve the Council's recommendation. The RA will use the information in this environmental assessment (EA) to make a determination about whether the proposed action would constitute a major federal action that has the potential to affect the quality of the environment significantly. If NMFS determines the action would *not* significantly affect the quality of the environment, NMFS will prepare a Finding of No Significant Impact. If NMFS determines the proposed action is a major federal action that would significantly affect the quality of the environment, NMFS would prepare an environmental impact statement before taking action.

1.6 List of Preparers

Authors:

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- Phyllis Ha, Resource Management Specialist, PIRO SFD
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1.7 Public Involvement

At its 172nd meeting held March 14-16, 2018, the Council considered and discussed issues relevant to bigeye tuna catch and allocation limits for the U.S. participating territories, including the most recent (2017) bigeye stock assessment, the recommendations of the Council's Scientific and Statistical Committee (SSC) made at the 128th SSC meeting held March 6-8, 2018, recommendations made by its Advisory Panels, and other relevant information. The Council also discussed issues relevant to bigeye tuna catch and allocation limits for the territories at its 173rd meeting held June 11-13, 2018. Council-affiliated meetings are open to the public and publicized in the local media (83 FR 7162, February 20, 2018), and on the Council's website www.wpcouncil.org.

On August 8, 2018, NMFS published the proposed territorial bigeye tuna catch and allocation specifications, and requested public review and comments on the proposed specification. The proposed specification was accompanied by a draft EA dated July 20, 2018 (83 FR 39037). The comment period ended August 23, 2018. NMFS received comments from the fishing industry on the proposed specifications and on the draft EA. NMFS considered public comments in finalizing the EA and in making its decision on the proposed action, and responds to comments in the final specification.

2 DESCRIPTION OF THE ALTERNATIVES CONSIDERED

This section describes alternatives for longline bigeye tuna catch and allocation limits for American Samoa, Guam, and the CNMI for 2018 and the expected fishery outcomes that would occur under each alternative. Table 2 provides a comparison of the features of the alternatives considered and possible fishery outcomes.

2.1 Development of the Alternatives

From 2014 to 2017, the Council has recommended annual longline bigeye catch limits of 2,000 t for each U.S. participating territory and recommended that each territory could allocate up to 1,000 t of that limit. The Council made these recommendations taking into account WCPFC measures, Magnuson-Stevens Act requirements, other applicable law, and bigeye stock status. Prior to 2017, the Secretariat of the Pacific Community (SPC), the science provider to the WCPFC, assessed bigeye tuna as experiencing overfishing. As previously mentioned, the best scientific information available indicates that bigeye is no longer experiencing overfishing. In light of the improved stock status of WCPO bigeye tuna, the Council considered the projected impact of various catch and attribution scenarios on the stock (Appendix A) in making its recommendation.

2.2 Description of the Alternatives

Features Common to all Alternatives

In accordance with CMM 2017-01 adopted by the WCPFC, the U.S. longline bigeye limit for the WCPO is 3,554 t. NMFS has undertaken a separate rulemaking to implement this limit (see the final rule at 83 FR 33851, July 18, 2018). When NMFS projects vessels will reach the catch limit, NMFS would prohibit the retention of longline-caught bigeye tuna in the WCPO for the remainder of the calendar year. Once the prohibition on bigeye tuna retention is in effect, Hawaii longline vessels that target bigeye tuna in the WCPO may shift fishing effort for bigeye tuna into the eastern Pacific Ocean or EPO (generally east of 150° W). Vessels may not switch to targeting swordfish in 2018, because NMFS temporarily closed the Hawaii shallow-set pelagic longline fishery in compliance with an order of the U.S. District Court for the District of Hawaii, effective May 8, 2018 through December 31, 2018 (83 FR 21939, May 11, 2018). Starting January 1, 2019, vessels will be allowed to engage in shallow-set longline fishing and bigeye tuna caught by these vessels in the WCPO would count toward the 2019 U.S. longline bigeye limit, once established by the WCPFC at its meeting in December 2018.

In the EPO, the Inter-American Tropical Tuna Commission (IATTC) has adopted and NMFS has implemented a 2018 bigeye tuna limit applicable to U.S. longline vessels of 750 t for vessels greater than 24 m (78.7 ft) in length (83 FR 15503, April 11, 2018). The limit does not apply to vessels less than 24 m in length. As of April 2018, 36 out of 145 vessels in the Hawaii longline fishery are greater than 24 m. When NMFS projects vessels greater than 24 m will reach the catch limit, NMFS would prohibit the retention of longline-caught bigeye tuna by vessels greater than 24 m in the EPO for the remainder of the calendar year. However, the remaining 109 vessels shorter than 24 m may retain longline-caught bigeye tuna in the EPO.

Consistent with WCPFC decisions and articles of the Convention applicable to SIDS and PTs, U.S. longline vessels that are not subject to the U.S. longline bigeye limit for the WCPO include vessels that land bigeye tuna in a U.S. territory and vessels that have an American Samoa and Hawaii longline permit (dual AS/HI longline permitted vessel) and land in Hawaii, provided the fish was not caught in the U.S. EEZ around Hawaii. Additionally, if the proposed action described in this document is approved, bigeye tuna caught by the eligible U.S. longline vessels fishing under a specified fishing agreement with a U.S. territory would not be counted toward the U.S. bigeye tuna limit. Rather, in accordance with 50 CFR 300, Subpart O, catches of bigeye tuna by these vessels are attributed to the applicable U.S. participating territory under the specified fishing agreement to which the vessel is associated.

2.2.1 Alternative 1: No Specification of Territorial Catch or Allocation Limits (No Action)

Under Alternative 1, NMFS would not specify a bigeye tuna catch or allocation limit for any U.S. participating territory in 2018. This alternative provides a baseline for comparison with the other alternatives, but does not meet the purpose and need for action.

Expected Fishery Outcome

Under Alternative 1, longline fisheries of American Samoa, Guam, and the CNMI would not be subject to a bigeye tuna catch limit in 2018; they would also not be able to allocate any catch under a specified fishing agreement.

Based on recent fishery performance data, NMFS anticipates that vessels operating in the longline fisheries of American Samoa would catch approximately 529 t of bigeye tuna in 2018. This amount represents the combined average annual bigeye tuna caught in 2011-2016 by American Samoa longline permitted vessels fishing in the south Pacific within or nearby the EEZ around American Samoa (120 t), and in the North Pacific outside the EEZ near Hawaii by vessels holding both American Samoa and Hawaii limited access longline permits (409 t) (see Appendix A, Kingma and Bigelow 2018). NMFS does not expect longline vessels in CNMI or Guam to catch bigeye tuna in 2018 because as of October 2018 there are no active longline vessels based in those islands. High docking costs along with poor market access contribute to the lack of longline fishing in the Marianas (WPFMC 2014). Based on recent historical fishery performance, NMFS anticipates that vessels operating in the Hawaii longline fishery would catch the entire 2018 U.S. bigeye tuna limit of 3,554 t by November or earlier.

Under Alternative 1, the expected total bigeye tuna catch in the WCPO for longline fisheries managed under the Pelagic FEP for 2018 would be 4,083 t. This represents the combined anticipated catch of bigeye tuna by the U.S. longline fisheries from Hawaii (3,554 t), American Samoa (529 t), Guam (0 t) and the CNMI (0 t) (3,554 + 529 + 0 + 0 = 4,083).

Without any Council-recommended specifications for catch and allocation limits for the U.S. participating territories, NMFS would not authorize any specified fishing agreements. The U.S. participating territories could not allocate bigeye tuna catch to eligible U.S. longline vessels permitted under the FEP and no funds would be available for deposit into the WP SFF in 2018. Consequently, there would be less monetary resources available to fund fishery development projects identified in an approved territorial MCP, and fewer opportunities for fisheries development by the U.S. participating territories, including improvements to existing fishery infrastructure. The Hawaii longline fishery would likely catch the 3,554 t bigeye limit prior to the end of the year, forcing boats wishing to target bigeye tuna to fish the remainder of the year in the EPO. Historically, fishing in the EPO in the winter months by Hawaii longline vessels is less efficient and can result in longer trips lengths, higher trip costs, and lower quality fish (Richmond et al. 2015).

2.2.2 Alternative 2: Specify for each U.S. participating territory a 2,000 t bigeye catch limit and 1,000 t bigeye allocation limit in 2018 (Status Quo/Council recommended)

Under Alternative 2, NMFS would implement the Council's recommendation by specifying a catch limit of 2,000 t of bigeye tuna for each U.S. participating territory in 2018. NMFS would also authorize the three U.S. participating territories to each allocate up to 1,000 t of their 2,000 t bigeye limit to FEP-permitted longline vessels identified in a specified fishing agreement with a U.S. territory. As an AM, NMFS would prohibit the retention of longline-caught bigeye tuna by vessels in the applicable U.S. territory (if NMFS projects the territorial limit will be reached), and/or by vessels operating under the applicable specified fishing agreement (if NMFS projects

the allocation limit will be reached). Pursuant to federal regulations at 50 CFR 664.819, if NMFS determines catch made by vessel(s) identified in a specified fishing agreement exceeds the allocated limit, NMFS will attribute any overage of the limit back to the U.S. or U.S. participating territory to which the vessel(s) is(are) registered and permitted.

The alternative is identical to the bigeye tuna catch and allocation limit specifications NMFS implemented in 2014 (79 FR 64097, October 28, 2014), 2015 (80 FR 61767, October 14, 2015; 80 FR 68778, November 6, 2015), 2016 (81 FR 63145, September 14, 2016), and 2017 (82 FR 47644, October 13, 2017).

Expected Fishery Outcomes

Under Alternative 2, longline fisheries in the U.S. participating territories would each be subject to a 2,000 t catch limit for bigeye tuna. This catch limit is currently more restrictive than CMM 2017-01, which places no limits on SIDS and PTs (see Section 1.1). Under Alternative 2, each U.S. participating territory could allocate up to 1,000 t of its 2,000 t bigeye tuna catch limit to FEP-permitted longline vessels under specified fishing agreements. Specified fishing agreements under this alternative would support responsible fisheries development in the U.S. participating territories by providing funds for territorial MCPs.

Like Alternative 1, NMFS does not expect longline vessels based in CNMI or Guam to catch bigeye tuna in 2018 because there are currently no active longline fisheries based in those territories. For American Samoa, NMFS expects bigeye tuna catches by longline vessels possessing an American Samoa limited access permit to be similar to the average annual catch from 2011-2016, which is approximately 529 t. Therefore, limiting the amount of bigeye tuna a U.S. participating territory could allocate to 1,000 t ensures that some quota (1,000 t) would remain available for American Samoa longline fishery participants.

Based on recent levels of bigeye tuna catch by longline vessels to which the U.S bigeye tuna limit applies, the U.S. longline fleet could reach the 2018 U.S. bigeye tuna limit of 3,554 t by October or earlier. Once the prohibition occurs, NMFS anticipates that territorial governments and/or vessels in the Hawaii longline fishery will seek to negotiate a specified fishing agreement to allocate a portion of a territory's 1,000 t limit. Because federal regulations prohibit a vessel from participating in more than one specified fishing agreement at a time, NMFS expects U.S. longline permitted vessels from Hawaii to enter into specified fishing agreements sequentially, with one or more U.S. territories, as has occurred annually from 2014 to 2017.

When operating under a valid specified fishing agreement, federal regulations at 50 CFR 665.819 require NMFS to attribute bigeye tuna catches made by vessels identified in the agreement to the territory to which the agreement applies seven days before the U.S. limit is projected to be reached, or upon effective date of the agreement, whichever is later. NMFS does not count catches of bigeye tuna made by longline vessels identified in a specified fishing agreement toward the U.S. bigeye tuna limit because the vessels are fishing under the territory's established limit.

This EA evaluates the range of effects to the WCPO bigeye tuna stock and other fishery resources based on the Council's recommendation that NMFS could authorize one, two, or three

specified fishing agreements. Thus, under Alternative 2, there are four distinct possible fishery outcomes for catch of bigeye tuna.

Potential Outcome A: One Specified Fishing Agreement

Under Outcome A, NMFS would authorize a single specified fishing agreement. Like Alternative 1, NMFS expects vessels operating under an American Samoa longline permit to catch about 529 t of bigeye tuna in 2018. This is the average level of catch for the period 2011-2016. As previously discussed, NMFS does not expect longline vessels in CNMI or Guam in 2018 to catch bigeye tuna. We expect vessels operating in the Hawaii longline fishery to catch 3,554 t of bigeye tuna in 2018. With one specified fishing agreement, the expected bigeye tuna catch for 2018 under Outcome A is 5,083 t. This amount represents the combined anticipated catch of bigeye tuna by the longline fisheries of the U.S. territories of American Samoa (529 t), Guam (0 t), CMMI (0 t) and by the U.S. longline fisheries from Hawaii (3,554), plus an allocation of the maximum of 1,000 t under one specified fishing agreement.

Potential Outcome B: Two Specified Fishing Agreements

Under Outcome B, NMFS would authorize two specified fishing agreements, and would maintain the same assumptions for catch by American Samoa, Guam, CNMI, and Hawaii longline vessels as Outcome A. With two agreements in effect, the expected bigeye tuna catch for 2018 under Outcome B is 6,083 t. This amount represents the combined anticipated catch of bigeye tuna by the longline fisheries of the U.S. territories of American Samoa (529 t), Guam (0 t), CMMI (0 t) and by the U.S. longline fisheries from Hawaii (3,554), plus an allocation of 2,000 t under two specified fishing agreements.

Potential Outcome C: Three Specified Fishing Agreements and Partial Utilization of Territorial Limits

Under Outcome C, NMFS would authorize three specified fishing agreements and would maintain the same assumptions for catch by American Samoa, Guam, CNMI, and Hawaii longline vessels as Outcome A. With three agreements in effect, the expect longline bigeye tuna catch for 2018 under Outcome C is 7,083 t. This amount represents the combined anticipated catch of bigeye tuna by the longline fisheries of the U.S. territories of American Samoa (529 t), Guam (0 t), CMMI (0 t) and by the U.S. longline fisheries from Hawaii (3,554), plus an allocation of 3,000 t under three specified fishing agreements.

Potential Outcome D: Three Specified Fishing Agreements and Full Utilization of Territorial Limits

Under Outcome D, NMFS would authorize three specified fishing agreements and assumes that each territory would fully utilize its full allocation of 2,000 t. Specifically, Outcome D assumes that all three U.S. territories - American Samoa, Guam and the CNMI - would each catch 1,000 t of bigeye tuna (3,000 t) in 2018, and each territory would also allocate their 1,000 t of bigeye tuna under three specified fishing agreements (3,000 t), for a total of 6,000 t. Outcome D also assumes the Hawaii longline fishery would catch 3,554 t in 2018, for a total of 9,554 t under this scenario. NMFS does not anticipate this scenario would occur in the foreseeable future due to lack of longline vessels operating out of Guam and the CNMI in recent years, but we analyze the

scenario as the maximum authorized effect on the environment, including the WCPO bigeye tuna stock.

Under Outcomes A through D, we do not expect that the longline fisheries based in Hawaii and the U.S. participating territories would change the manner in which they fish, including gear types used, species targeted, area fished, seasons fished, or intensity of fishing. Additionally, NMFS does not expect the effort of these fisheries to be higher than historical levels due to existing regulatory constraints, including catch limits and limited entry programs.

2.2.3 Alternative 3: Specify for each U.S. participating territory, a 2,000 t catch limit and that each territory can allocate up to 2,000 t of the catch limit

Under Alternative 3, NMFS would specify a catch limit of 2,000 t of bigeye tuna for each U.S. participating territory in 2018 and authorize the three U.S. territories to each allocate up to their entire 2,000 t bigeye limit to FEP-permitted longline vessels identified in a specified fishing agreement with a U.S. territory. As an AM, NMFS would prohibit the retention of longline-caught bigeye tuna by vessels in the applicable U.S. territory (if NMFS projects the territorial limit will be reached), and/or by vessels operating under the applicable specified fishing agreement (if NMFS projects the allocation limit will be reached). Pursuant to federal regulations at 50 CFR 664.819, if NMFS determines catch made by vessel(s) identified in a specified fishing agreement exceeds the allocated limit, NMFS will attribute any overage of the limit back to the U.S. or U.S. participating territory to which the vessel(s) is(are) registered and permitted.

Expected Fishery Outcomes

Under Alternative 3, each U.S. participating territories would be subject to a total longline bigeye limit (2,000 t), and would be able to each allocate their entire catch limit of 2,000 t to FEP-permitted longline vessels identified in a specified fishing agreements. Like Alternative 1, NMFS does not expect bigeye tuna to be caught by longline vessels based in CNMI or Guam in 2018 because there are currently no active longline fisheries based in those islands. Therefore, under this alternative, it is possible for the CNMI and Guam to allocate all 2,000 t of its limit to vessels identified in a specified fishing agreement.

For American Samoa, the territory would have the ability allocate away all 2,000 t of its limit to vessels identified in a specified fishing agreement, or allocate only a portion of its bigeye tuna limit and while retaining a portion for its local fleet. Based on average annual catch in 2011-2016, the American Samoa longline fleet landed an average of approximately 529 t annually, with 120 t from vessels operating inside the EEZ around American Samoa and 409 t from dual American Samoa and Hawaii permitted vessels operating in the North Pacific.

Based on recent levels of bigeye tuna catch by longline vessels to which the U.S. bigeye tuna limit applies, the U.S. longline fleet could reach the 2018 U.S. bigeye tuna limit of 3,554 t by October or earlier. Once the prohibition occurs, NMFS expects that territorial governments and/or vessels in the Hawaii longline fishery will seek to negotiate a specified fishing agreement to allocate a portion of a territory's allocation limit. Because federal regulations prohibit a vessel from participating in more than one specified fishing agreement at a time, NMFS anticipates that

U.S. longline permitted vessels from Hawaii would enter into specified fishing agreements sequentially, with one or more U.S. territories.

When operating under a valid specified fishing agreement, federal regulations at 50 CFR 665.819 require NMFS to attribute bigeye tuna catches made by vessels identified in the agreement to the territory to which the agreement applies seven days before the U.S. limit is projected to be reached, or upon effective date of the agreement, whichever is later. NMFS does not count catches of bigeye tuna made by longline vessels identified in a specified fishing agreement toward the U.S. bigeye tuna limit because the vessels are fishing under the territory's established limit.

Potential Outcome E: Three Specified Fishing Agreements and Maximum Allocation of Territorial Limits (No catch for American Samoa fleet)

Under Alternative 3, there are several distinct possible fishery outcomes for total catch of bigeye tuna, ranging from one specified fishing agreement (3,554 t from the U.S. limit, plus 2,000 t catch and allocation limit = 5,554 t) to all three specified fishing agreements (3,554 t from the U.S. limit, plus 6,000 t catch and allocation limit = 9,554 t). Under three specified fishing agreements, the maximum allowable catch, however, would be 3,554 t plus 6,000 t in allocations, or 9,554 t. This EA analyzes 9,554 t as the expected fishery Outcome E under Alternative 3. Under Option E, all three territories would each allocate all 2,000 t of their catch limit, and American Samoa would not retain any bigeye tuna for its local fleet.

Potential Outcome F: Three Specified Fishing Agreements and Maximum Allocation of Territorial Limit for Guam and the CNMI and 1,500 t Allocation for American Samoa

Because NMFS does not expect American Samoa to allocate its entire 2,000 t catch limit to FEP-permitted longline vessels, we also analyze a more plausible outcome (Outcome F), where NMFS would authorize all three specified fishing agreements, with Guam and the CNMI each allocating the maximum of 2,000 t, while American Samoa allocating 1500 t of its 2,000 t limit for a total of 5,500 t in allocations. Under this scenario (Outcome F), American Samoa would retain 500 t for its local fleet. Thus, the maximum allowable catch of bigeye tuna under Option F would be 9,554 t, with 3,554 t from the U.S. limit, 2,000 t of allocation each from the Guam and the CNMI, plus 1,500 t from the American Samoa allocation, and 500 t from American Samoa catch. While total bigeye mortality would be the same as in Outcome E (i.e., 9,554 t) under this outcome, there are slightly different socioeconomic effects primarily for American Samoa.

Table 2. Comparison of Features of the Alternatives

Topic	**Alternative 1: No Action** ***No catch and allocation limits for U.S. territories, and no fishing agreements***	**Alternative 2: 2,000 t Catch Limit and 1,000 t Allocation Limit for each U.S. Territory**				**Alternative 3: 2,000 t Catch Limit and up to 2,000 t Allocation Limit for each U.S. Territory**	
		Outcome A 1 fishing agreement and 1,000 t allocation	***Outcome B 2 fishing agreements and 2,000 t allocation***	***Outcome C 3 fishing agreements and 3,000 t allocation and partial utilization of BET limit in U.S. territories***	***Outcome D 3 fishing agreements and 3,000 t allocation and full utilization of BET limit in U.S. territories***	***Outcome E 3 fishing agreements and 6,000 t allocation***	***Outcome F 3 fishing agreements and 5,500 t allocation and full utilization of American Samoa BET limit***
Proposed longline-caught bigeye tuna (BET) catch limit for each U.S. participating territory in 2018	None	2,000 t	2,000 t	2,000 t	2,000 t	2,000 t	2,000 t
Proposed BET limit each U.S. participating territory may allocate to Pelagic FEP permitted longline	None	1,000 t	1,000 t	1,000 t	1,000 t	2,000 t	2,000 t

Topic	**Alternative 1: No Action** ***No catch and allocation limits for U.S. territories, and no fishing agreements***	**Alternative 2: 2,000 t Catch Limit and 1,000 t Allocation Limit for each U.S. Territory**				**Alternative 3: 2,000 t Catch Limit and up to 2,000 t Allocation Limit for each U.S. Territory**	
		Outcome A 1 fishing agreement and 1,000 t allocation	***Outcome B 2 fishing agreements and 2,000 t allocation***	***Outcome C 3 fishing agreements and 3,000 t allocation and partial utilization of BET limit in U.S. territories***	***Outcome D 3 fishing agreements and 3,000 t allocation and full utilization of BET limit in U.S. territories***	***Outcome E 3 fishing agreements and 6,000 t allocation***	***Outcome F 3 fishing agreements and 5,500 t allocation and full utilization of American Samoa BET limit***
vessels in 2018							
Proposed AMs to ensure the proposed longline BET catch and allocation limits are not exceeded in 2018	None	If the territorial longline BET catch limit is projected to be reached, NMFS would prohibit the retention of longline-caught BET by vessels in the applicable U.S. territory; if the longline BEt al.location limit is projected to be reached, NMFS would prohibit the retention of longline-caught BET by vessels operating under specified fishing agreements.					
Expected Fishery Outcomes							

Topic	**Alternative 1: No Action** ***No catch and allocation limits for U.S. territories, and no fishing agreements***	**Alternative 2: 2,000 t Catch Limit and 1,000 t Allocation Limit for each U.S. Territory**				**Alternative 3: 2,000 t Catch Limit and up to 2,000 t Allocation Limit for each U.S. Territory**	
		Outcome A ***1 fishing agreement and 1,000 t allocation***	***Outcome B*** ***2 fishing agreements and 2,000 t allocation***	***Outcome C*** ***3 fishing agreements and 3,000 t allocation and partial utilization of BET limit in U.S. territories***	***Outcome D*** ***3 fishing agreements and 3,000 t allocation and full utilization of BET limit in U.S. territories***	***Outcome E*** ***3 fishing agreements and 6,000 t allocation***	***Outcome F*** ***3 fishing agreements and 5,500 t allocation and full utilization of American Samoa BET limit***
Expected amount of longline caught BET that would be attributed to the U.S. (Hawaii) longline vessels in 2018:	3,554 t	3,554 t	3,554 t	3,554 t	3,554 t	3,554 t	3,554 t
Expected number of specified fishing agreements	None	1	2	3	3	3	3

Topic	**Alternative 1: No Action** ***No catch and allocation limits for U.S. territories, and no fishing agreements***	**Alternative 2: 2,000 t Catch Limit and 1,000 t Allocation Limit for each U.S. Territory**				**Alternative 3: 2,000 t Catch Limit and up to 2,000 t Allocation Limit for each U.S. Territory**	
		Outcome A ***1 fishing agreement and 1,000 t allocation***	***Outcome B*** ***2 fishing agreements and 2,000 t allocation***	***Outcome C*** ***3 fishing agreements and 3,000 t allocation and partial utilization of BET limit in U.S. territories***	***Outcome D*** ***3 fishing agreements and 3,000 t allocation and full utilization of BET limit in U.S. territories***	***Outcome E*** ***3 fishing agreements and 6,000 t allocation***	***Outcome F*** ***3 fishing agreements and 5,500 t allocation and full utilization of American Samoa BET limit***
Expected amount of BET that would be allocated to the Hawaii longline fishery under specified fishing agreements	None	1,000 t	2,000 t	3,000 t	3,000 t	6,000 t	5,500 t

Topic	**Alternative 1: No Action** ***No catch and allocation limits for U.S. territories, and no fishing agreements***	**Alternative 2: 2,000 t Catch Limit and 1,000 t Allocation Limit for each U.S. Territory**				**Alternative 3: 2,000 t Catch Limit and up to 2,000 t Allocation Limit for each U.S. Territory**	
		Outcome A ***1 fishing agreement and 1,000 t allocation***	***Outcome B*** ***2 fishing agreements and 2,000 t allocation***	***Outcome C*** ***3 fishing agreements and 3,000 t allocation and partial utilization of BET limit in U.S. territories***	***Outcome D*** ***3 fishing agreements and 3,000 t allocation and full utilization of BET limit in U.S. territories***	***Outcome E*** ***3 fishing agreements and 6,000 t allocation***	***Outcome F*** ***3 fishing agreements and 5,500 t allocation and full utilization of American Samoa BET limit***
Expected amount of BET caught by longline vessels in the three U.S. participating territories in 2018	529 t	529 t	529 t	529 t	3,000 t	0 t	500 t
Expected amount of BET caught by Hawaii and U.S. territory longline vessels combined in 2018	4,083 t	5,083 t	6,083 t	7,083 t	9,554 t	9,554 t	9,554 t

Topic	**Alternative 1:** **No Action** ***No catch and allocation limits for U.S. territories, and no fishing agreements***	**Alternative 2: 2,000 t Catch Limit and 1,000 t Allocation Limit for each U.S. Territory**				**Alternative 3: 2,000 t Catch Limit and up to 2,000 t Allocation Limit for each U.S. Territory**	
		Outcome A ***1 fishing agreement and 1,000 t allocation***	***Outcome B*** ***2 fishing agreements and 2,000 t allocation***	***Outcome C*** ***3 fishing agreements and 3,000 t allocation and partial utilization of BET limit in U.S. territories***	***Outcome D*** ***3 fishing agreements and 3,000 t allocation and full utilization of BET limit in U.S. territories***	***Outcome E*** ***3 fishing agreements and 6,000 t allocation***	***Outcome F*** ***3 fishing agreements and 5,500 t allocation and full utilization of American Samoa BET limit***
Fishery Activity (based on most recent 5 year period)	WCPO likely to close by October or earlier; EPO likely to close to large vessels, shortly after WCPO closure.	WCPO likely to close in third or fourth quarter of the year. Less effort in EPO compared to Alternative 1. However, EPO could close to large vessels, if one fishing agreement allocation is exhausted.	WCPO could close in fourth quarter. Less effort in EPO compared to Alt. 1 and Alt. 2 Outcome A. However, EPO could close to large vessels, if two fishing agreement allocation is exhausted. Less activity in EPO than Alt 1 or Alt 2 Outcome A.	WCPO unlikely to close; less activity in EPO.	WCPO unlikely to close; less activity in EPO.	WCPO unlikely to close; less activity in EPO. American Samoa vessels unable to retain bigeye tuna.	WCPO unlikely to close; less activity in EPO. American Samoa likely able to retain bigeye throughout the year.

2.3 Alternatives Considered, but Rejected from Further Analysis

The existing regulations at 50 CFR 665.819(a) implementing Amendment 7 require that the Council first establish a catch or effort longline limit for the U.S. participating territories before specifying an allocation limit.[4] However, in recognition of the special requirements of SIDS and PTs under Article 30 of the WCPF Convention, CMM 2017-01 (see Paragraph 5, Paragraph 9, Paragraphs 39-44, and Table 3 of the measure) does not provide a longline catch limit for U.S. participating territories. Accordingly, WCPFC decisions do not provide that PTs should be assigned longline catch limits merely to establish an allocation limit.

Given that CMM 2017-01 does not provide longline catch limits for the U.S. participating territories and that bigeye is no longer subject to overfishing, the Council considered recommending allocation limits only and not total catch limits at its 173rd meeting. Under this option, the Council would not recommend and NMFS would not specify total longline bigeye catch limits per U.S. participating territory, but would specify limits on the amount of bigeye each territory can transfer under annual specified fishing agreements. Staff proposed the following three sub-alternatives to the Council:

- 1,000 t allocation limit per territory
- 1,500 t allocation limit per territory
- 2,000 t allocation limit per territory

NMFS did not consider the option of specifying a territorial bigeye tuna allocation limit without a bigeye tuna catch limit as within the range of reasonable alternatives in this EA because the regulations implementing Amendment 7 (50 CFR 665.819) require a catch limit with an allocation limit, and therefore, such an option would be inconsistent with current regulations. However, under Alternative (3), NMFS did analyze a catch limit of 2,000 t per territory, of which up to the full amount of the catch limit may be allocated under territory fishery arrangements. The impacts of this alternative would be substantially similar to an alternative of having no territory catch limits, since the territories currently lack the fishing capacity to approach or exceed the 2,000 t limit. The Council, at its 173rd meeting in June 2018, did recommend an amendment to the Pelagic FEP and implementing regulations to remove the requirement that NMFS must specify catch limits before specifying allocation limits.

3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter describes the baseline condition of resources in the action area without management action. The environmental resources that are potentially affected include target and non-target species (including bycatch), protected resources, and marine habitat. This chapter also describes fishery participants, fishing communities, and enforcement and administration. NMFS derives

[4] Specifically, 50 CFR 665.819(a)(2) states that "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…. 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 through a specified fishing agreement."

the data in this chapter from longline and observer reports, required under the Pelagic FEP, and other available information from regional fishery management organizations such as the WCPFC.

Under this baseline, NMFS would not implement Council-recommended territory bigeye tuna catch or allocation limits. Once the WCPO catch limit is reached, NMFS would prohibit the U.S. longline fleet from retaining bigeye tuna in the WCPO through the end of the year. Based on past fishing years, the U.S. longline fleet could close by November 2018 or earlier.

3.1 Target and Non-Target Stocks

This section identifies the PMUS managed under the Pelagic FEP that the longline fisheries of American Samoa, Guam, the CNMI, and Hawaii harvest. They include several species of tuna, billfish, and sharks shown in Table 3. This section also briefly summarizes the overfishing and overfished status of PMUS where known. For a comprehensive discussion of the biology and life history of PMUS, see the Pelagic FEP (WPFMC 2009).

The Pelagic FEP (WPFMC 2009) includes status determination criteria (SDC) for overfishing and overfished. Specifically, overfishing occurs when the fishing mortality rate (F) for one or more years is greater than the maximum fishing mortality threshold (MFMT), which is the fishing mortality rate that produces maximum sustainable yield (F_{MSY}). Thus, if the F/F_{MSY} ratio is greater than 1.0, overfishing is occurring.

A stock is considered overfished when its biomass (B) has declined below the minimum stock size threshold (MSST), or the level that jeopardizes the capacity of the stock to produce MSY on a continuing basis (B_{MSY}). Specifically, the $B_{MSST} = (1\text{-}M)B_{MSY}$, where M is the natural mortality rate of the stock, or one half of B_{MSY}, whichever is greater. For example, if the natural mortality rate of a stock is 0.35, $B_{MSST} = 0.65*B_{MSY}$. Thus, if the B/B_{MSY} ratio for the stock falls below 0.65, the stock is overfished. If a stock has a natural mortality rate greater than 0.6, MSST is set at the default of $0.5*B_{MSY}$ (because 1- 0.6 = 0.4, and 0.5 is greater than 0.4). For such a stock, the stock is overfished when the B/B_{MSY} ratio falls below 0.5.

Table 3 shows the stock status of PMUS based on the SDCs of the Pelagic FEP, based on the best scientific information available for the stock. For some PMUS, the SDC specified in the Pelagic FEP differs from the SDC (also known as limit reference points or LRP) adopted by the WCPFC and IATTC. Additionally, in some cases, the SDCs adopted by the WCPFC for a particular stock of fish differs from the SDCs adopted by the IATTC. Finally, in other cases, no stock assessments are available and fishery management organizations must infer stock status from other indicators or not at all. For the purposes of stock status determinations, NMFS uses the SDCs specified in the Pelagic FEP.

Table 3. Estimates of stock status in relation to Pelagic FEP overfishing and overfished reference points for PMUS.

Stock	Overfishing reference point	Is overfishing occurring?	Approaching Overfishing (2 yr)	Overfished reference point	Is the stock overfished?	Approaching Overfished (2 yr)	Assessment results	Natural mortality[1]	MSST
Skipjack Tuna (WCPO)	F/F_{MSY}=0.45	No	No	SB_{2015}/SB_{MSY}=2.56, $SB_{2015}/SB_{F=0}$=0.58	No	No	McKechnie et al. 2016	>0.5 yr^{-1}	0.5 B_{MSY}
Skipjack Tuna (EPO)	Unknown	No	Unknown	Unknown	No	Unknown	Maunder 2018	Unknown	Unknown
Yellowfin Tuna (WCPO)	F/F_{MSY}=0.74	No	No	$SB_{2012-2015}/SB_{MSY}$=1.41, $SB_{2012-2015}/SB_{F=0}$=0.33	No	No	Tremblay-Boyer et al. 2017	0.8-1.6 yr^{-1}	0.5 B_{MSY}
Yellowfin Tuna (EPO)	F/F_{MSY}=1.01	TBD[2]	Not applicable	$SB_{2015-2017}/SB_{MSY}$=1.08, $B_{2015-2017}/B_{MSY}$=1.35	No	No	Minte-Vera *et al.* 2018	0.2-0.7 yr^{-1}	0.5 B_{MSY}
Albacore (S. Pacific)	F/F_{MSY}=0.20	No	No	$SB_{2013-2016}/SB_{MSY}$=3.3, $SB_{2013-2016}/SB_{F=0}$=0.52,	No	No	Tremblay-Boyer et al. 2018	0.4 yr^{-1}	0.6 SB_{MSY}
Albacore (N. Pacific)	F/F_{MSY}=0.61	No	No	$SB_{2015}/SB_{F=0}$=0.40	No	No	ISC 2017	0.4 yr^{-1}	0.6 B_{MSY}
Bigeye Tuna (WCPO)	F/F_{MSY}=0.82	No	No	$SB_{2012-2015}/SB_{MSY}$=1.39, $SB_{2012-2015}/SB_{F=0}$=0.33	No, because SSB>MSST	No	Vincent et al. 2018	0.4 yr^{-1}	0.6 B_{MSY}
Bigeye Tuna (EPO)	NA	NA	NA	NA	NA	NA	Maunder et al 2018b	NA	NA
Pacific Bluefin Tuna	F/F_{MSY} =1.17	Yes, because F>MFMT	Not applicable	SB_{2016}/MSST=0.21	Yes, because SSB<MSST	Not applicable	ISC 2018a	0.25-1.6 yr^{-1}	~0.75 B_{MSY}
Blue Marlin (Pacific)	F/F_{MSY}=0.81	No	Unknown	$SB_{2012-2014}/SB_{MSY}$=1.23	No	Unknown	ISC 2016	0.22-0.42 yr^{-1}	~0.7 B_{MSY}
Swordfish (WCNPO)	F_{2012}/F_{MSY}=0.45	No	Unknown	SB_{2016}/SB_{MSY}=1.87	No	Unknown	ISC 2018c	0.3 yr^{-1}	0.7 B_{MSY}
Swordfish (EPO)	F_{2012}/F_{MSY} = 1.11	Yes, because F > MFMT	Not applicable	SB_{2012}/SB_{MSY} =1.87	No	Unknown	ISC 2014	0.35 yr^{-1}	0.65 B_{MSY}

Stock	Overfishing reference point	Is overfishing occurring?	Approaching Overfishing (2 yr)	Overfished reference point	Is the stock overfished?	Approaching Overfished (2 yr)	Assessment results	Natural mortality[1]	MSST
Striped Marlin WC (N. Pacific)	F/F_{MSY}=1.49	Yes, because F>MFMT	Not applicable	SB_{2013}/SB_{MSY}=0.39	Yes, because SSB_{2013}<MSST	Not applicable	ISC 2015	0.4 yr^{-1}	0.6 SB_{MSY}
Striped Marlin (NEPO)	Not provided in assessment	No	No	$SB_{(2009)}/SB_{MSY}$=1.5	No	Unknown	Hinton and Maunder 2011	0.5 yr^{-1}	0.5 B_{MSY}
Blue Shark (N. Pacific)	F/F_{MSY}=0.38	No	Unknown	$SB_{2012-2014}/SB_{MSY}$=1.69	No	Unknown	ISC 2017	0.145-0.785 yr^{-1}	~0.8 B_{MSY}
Oceanic white-tip shark (WCPO)	F/F_{MSY}=6.69	Yes	Not applicable	SB/SB_{MSY}=0.15	Yes	Not applicable	Rice and Harley 2012	0.18 yr^{-1}	0.82 B_{MSY}
Silky shark (WCPO)	F/F_{MSY}=4.48	Yes	Not applicable	SB/SB_{MSY}=0.70	Yes	Not applicable	Rice and Harley 2013	0.18 yr^{-1}	0.82 B_{MSY}
Silky Shark (EPO)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Cody et al. 2018	Unknown	Unknown
Longfin mako shark (N. Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Shortfin mako shark (N. Pacific)	F/F_{MSY}=0.62	No	Unknown	SA_{2016}/SA_{MSY}=1.36	No	Unknown	ISC 2018b	0.128 yr^{-1}	0.872 B_{MSY}
Common thresher shark (N. Pacific)	F/F_{MSY}=0.21	No	Unknown	SB/SB_{MSY}=1.4	No	Unknown	Teo et al. 2018	0.04 yr^{-1}	0.96 B_{MSY}
Bigeye thresher shark (N. Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Pelagic thresher shark (N. Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Stock	Overfishing reference point	Is overfishing occurring?	Approaching Overfishing (2 yr)	Overfished reference point	Is the stock overfished?	Approaching Overfished (2 yr)	Assessment results	Natural mortality[1]	MSST
Salmon shark (N. Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Mahimahi (Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Wahoo (Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Opah (Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Pomfret (family Bramidae, W. Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Black marlin (Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Shortbill spearfish (Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Sailfish (Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Kawakawa (Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Oilfish (family Gempylidae, Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Other tuna relatives (*Auxis* sp., *Allothunnus* sp., and	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Stock	Overfishing reference point	Is overfishing occurring?	Approaching Overfishing (2 yr)	Overfished reference point	Is the stock overfished?	Approaching Overfished (2 yr)	Assessment results	Natural mortality[1]	MSST
Scomber spp, Pacific)									
Squids (Pacific)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Source: WPFMC 2018 and those assessments listed in the "Assessment results" column.
[1] Estimates based on Boggs et al. 2000 or assumed in the assessments.
[2] NMFS has not determined the status of the stock from this assessment.
[3] NMFS has not determined this assessment to represent the best scientific information for making status determinations (NMFS 2018c). See Section 3.1.1 for more information.

3.1.1 Bigeye Tuna

WCPO

The Secretariat of the Pacific Community (SPC) prepared the most recent stock assessment for WCPO bigeye tuna in July 2017, which covers bigeye tuna from Indonesia in the far western Pacific, to the 150° W. meridian in the central Pacific Ocean (McKechnie, et al. 2017). The 2017 assessment updates the 2014 stock assessment by incorporating additional bigeye catch data from 2013-2015, and investigating alternative regional bigeye tuna stock structure in combination with a new bigeye tuna growth curve, which suggests bigeye tuna is more productive than previously assumed. Unlike the 2014 stock assessment, which identified four model variants that most plausibly reflected the condition of the stock, the 2017 stock assessment identifies 72 plausible model variants. The models make up a grid to explore the interactions among axes of uncertainty, known as a structural uncertainty grid.

The WCPFC Scientific Committee (SC) reviewed and endorsed the 2017 bigeye stock assessment at its Thirteenth Regular Session (SC13) as the most advanced and comprehensive assessment yet conducted for this species. The SC also endorsed the use of the assessment model uncertainty grid to characterize stock status and management advice and implications but noted the large variance in the assessment results, mainly due to the inclusion of the old and new regional structures and growth curves, for which some CCMs considered further investigation is necessary. The SC agreed to a weighting scheme for the assessment models in the uncertainty grid, which were increased to 144 model units. The consensus weighting considered all options within the four axes of uncertainty for steepness, tagging dispersion, size frequency and regional structure to be equally likely. For the growth axis of uncertainty, the new growth curve models (n=36 models, weight=3, 108 model weight units) were weighted three times more than the old growth curve models (n=36 models, weight=1, 36 model weight units). In total there were 144 model weight units. The resulting uncertainty grid was used to characterize stock status, to summarize reference points as provided in the assessment document SC13-SA-WP-05, and to calculate the probability of breaching the Commission-adopted spawning biomass limit reference point ($0.2*SB_{F=0}$) and the probability of F_{recent} being greater than F_{MSY}. The SC noted that the results would vary depending on the choice and/or weighting of grids, in particular the growth curve model, thus characterizations of central tendency of stock status need to be interpreted with caution (WCPFC 2017a).

Based on the uncertainty grid adopted by SC13, the WCPO bigeye tuna spawning biomass is likely above the MSST of the Pelagic FEP and the WCPFC's biomass LRP. Additionally, recent F is likely below F_{MSY} (MFMT). Therefore noting the level of uncertainties in the current assessment it appears that the stock is not experiencing overfishing (77% probability) and it appears that the stock is not in an overfished condition (84% probability). The central tendency of relative recent spawning biomass under the selected new and old growth curve model weightings in the absence of fishing was median ($SB_{recent}/SB_{F=0}$) = 0.32 with a range of 0.08 to 0.44 and (SB/SB_{MSY} = 1.45) with a range of 0.42 and 2.12 (Table 4). There was a roughly 16% probability (23 out of 144 model weight units) that the recent spawning biomass had breached the adopted LRP (WCPFC 2017a).

The central tendency of relative recent fishing mortality under the selected new and old growth curve model weightings was median (F_{recent}/F_{MSY}) = 0.83 with a range of 0.54 to 1.76 (Table 4). There was a roughly 23% probability (33 out of 144 model weight units) that the recent fishing mortality was above F_{MSY} (WCPFC 2017a).

Table 4: Summary of reference points using WCPFC SC structural uncertainty grid

	Mean	Median	Min	10%	90%	Max
C_{latest}	149,178	153,137	130,903	131,597	156,113	157,725
MSY	156,765	158,040	124,120	137,644	180,656	204,040
$Y_{Frecent}$	150,382	148,920	118,000	133,400	168,656	187,240
F_{mult}	1.21	1.20	0.57	0.76	1.63	1.85
F_{MSY}	0.05	0.05	0.04	0.04	0.05	0.06
F_{recent}/F_{MSY}	0.89	0.83	0.54	0.61	1.32	1.76
SB_{MSY}	457,162	454,100	219,500	285,530	598,210	710,000
SB_0	1,730,410	1,763,000	1,009,000	1,279,300	2,148,200	2,509,000
SB_{MSY}/SB_0	0.26	0.26	0.22	0.24	0.29	0.29
$SB_{F=0}$	1,915,184	1,953,841	1,317,336	1,584,593	2,170,899	2,460,411
$SB_{MSY}/SB_{F=0}$	0.24	0.24	0.17	0.18	0.27	0.29
SB_{latest}/SB_0	0.37	0.40	0.11	0.19	0.49	0.53
$SB_{latest}/SB_{F=0}$	0.34	0.37	0.08	0.15	0.46	0.49
SB_{latest}/SB_{MSY}	1.42	1.45	0.42	0.86	1.97	2.12
$SB_{recent}/SB_{F=0}$	0.30	0.32	0.08	0.15	0.41	0.44
SB_{recent}/SB_{MSY}	1.21	1.23	0.32	0.63	1.66	1.86

The SC determined that although the new assessment is a significant improvement in relation to the previous one, the SC advised that the amount of uncertainty in the stock status results for the 2017 assessment is higher than for the previous assessment due to the inclusion of new information on bigeye tuna growth and regional structures. The SC also noted continued higher levels of depletion in the equatorial and western Pacific (specifically Regions 3, 4, 7 and 8 of the stock assessment) and the associated higher levels of impact, especially on juvenile bigeye tuna, in these regions due to the associated purse-seine fisheries and the "other" fisheries within the western Pacific (WCPFC 2017a). Reviewers of the performance of the WCPFC recognized the disparity in effects to the stock between evaluated regions in the stock assessment and recommended that the WCPFC consider adopting spatial management measures to address overfishing of bigeye tuna (WCPFC 2011).

The majority of fishing effort by the U.S. longline fishery operating out of Hawaii occurs north of 20° N in Region 2 (Figure 1). Moreover, 98% of bigeye tuna caught by this fishery occurs north of 10° N, which is above the core equatorial zone of the heaviest purse seine and longline fishing (NMFS unpublished data). According to the Pelagic FEP LRPs, the WCPO bigeye tuna stock is not overfished or experiencing overfishing.

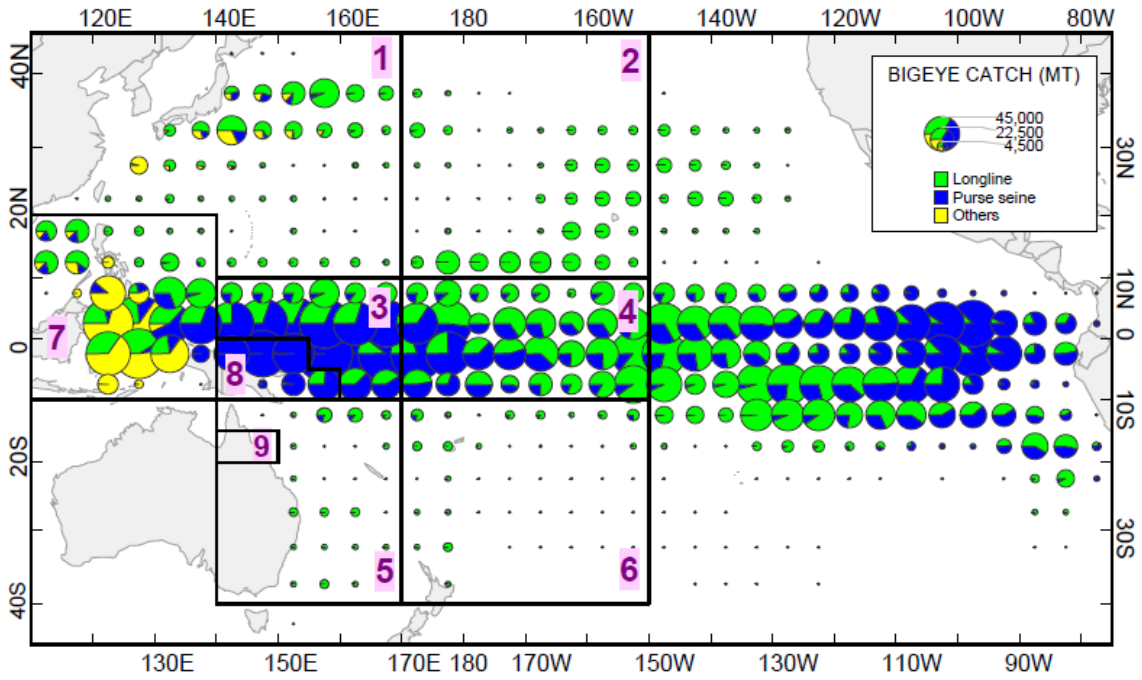

Figure 1. Distribution of cumulative bigeye tuna catch from 1990-2017 by 5-degree squares of latitude and longitude and by fishing gear in the nine sub-regions of the WCPO bigeye tuna assessment.

Figure 1 shows the sub-regional spatial stratification used in stock assessment for the Western and Central Pacific Convention Area (WCP–CA). The Hawaii deep-set longline fishery fishes predominately in Region 2.
Source: Williams and Reid 2018.

The SC13 determined that although the new assessment is a significant improvement in relation to the previous one, the SC advised that the amount of uncertainty in the stock status results for the 2017 assessment is higher than for the previous assessment due to the inclusion of new information on bigeye tuna growth and regional structures.

In 2018, SPC, at the request of SC13, incorporated an enhanced growth curve and updated the results of the structural uncertainty grid using the axes and weightings from SC13 (Vincent et al. 2018). The analysis also investigated the uncertainty in the spatial structure of the assessment by creating an additional model with an alternative stock structure for sensitivity testing. Including updated growth data for SC14 did not substantially impact the estimated growth curve or the assessed status of the stock compared to the 2017 assessment, but did reduce the uncertainty surrounding the growth curve (Vincent et al. 2018). The sensitivity evaluation of an alternative stock structure provided further support for keeping the boundary between Regions 1-2 and 3-4 at 10°N, rather than the historical boundary at 20°N (Vincent et al. 2018). While at the time of this writing stock status reference points for WCPO bigeye tuna based on SC14 decisions are not available, the results of including updated growth data indicate a slightly more optimistic stock status (Vincent et al. 2018).

EPO

The IATTC assessed bigeye tuna in the EPO in 2018 and the assessment results indicate F/F_{MSY} = 1.15 and $SB_{2014\text{-}2016}/SB_{MSY}$ = 1.02 (Xu et al. 2018). This substantial change in the reference points from the previous year's assessment (F/F_{MSY} = 0.87 and $SB_{2014\text{-}2016}/SB_{MSY}$ = 1.23; Aires-da-Silva et al. 2017) triggered IATTC to investigate the cause of the change. The authors attribute the change in status to new data for the indices of relative abundance, based on longline CPUE, which resulted in lower estimates of recent biomass. Such changes caused by the addition of new data indicate that the model is mis-specified (Maunder et al. 2018a). There is substantial uncertainty in the estimate of current fishing mortality and in the model assumptions used (Xu et al. 2018), but the relative contribution of assessment uncertainty and variability in the relationship between fleet capacity and fishing mortality to the overfishing reference point are unknown (Maunder et al. 2018).

The EPO bigeye tuna stock assessment (Xu et al. 2018) assumes a single stock that is randomly mixed within the EPO. Tagging data do not support this assumption. The pattern of recruitment evident in the EPO bigeye assessment in which recruitment suddenly increases in the mid-1990s, corresponding to a substantial increase in purse-seine catches in the equatorial region, could also indicate that this assumption contributes to assessment uncertainty (Valero et al. 2018).

IATTC scientists (Valero et al. 2018) explored the spatial structure of the EPO BET stock using a systematic division of the EPO and an integrated model. The integrated model divided the EPO based on a central area (between 5°N and 5°S from 110°W to 85°W) and re-defined the fisheries used in the most current assessment by their spatial overlap with this central area. Where enough data were available for the systematic division, larger biomass declines were modeled in the equatorial areas while other areas showed either flat biomass trajectories or smaller declines. In the integrated model, the spawning biomass ratio showed a steeper declining trend and a more depleted stock status in the central area than the current assessment estimates for the entire EPO (Valero et al. 2018).

Because the longline CPUE is the main driver of the stock's abundance estimate, increased purse-seine catch in the equatorial regions in the mid-1990s appears to force the model to increase recruitment to explain the increase in catch without a reduction in the abundance index. Models that reflect the localized dynamics of the longline and purse seine catches and the associated local longline CPUE indices do not show the increased recruitment in the mid-90s, and show greater depletion of the stocks in those areas (Valero et al. 2018). These results suggest that alternative spatial management measures should be evaluated (Valero et al. 2018).

Purse seiners rarely catch bigeye tuna north of 10°N in the EPO (Xu et al. 2018), and the majority of the U.S. longline fleet's fishing pressure occurs north of 20° N (Figure 1). The impact of the purse-seine fishery on the bigeye stock is far greater than that of the longline fishery (Xu et al. 2018). Because the usefulness of the current bigeye assessment (Xu et al. 2018) has been questioned, IATTC staff developed a suite of stock indicators for bigeye (Maunder et al. 2018b). These indicators, based on purse seine data, show increasing fishing mortality and reduced abundance over time, and are at or above their reference levels. The results indicate that additional purse seine measures are required (Maunder at el 2018b). NMFS has noted that the stock is under increasing fishing pressure, especially from the purse seine fish aggregating device

(FAD) fishery, but does not provide the information required by the Pelagic FEP for making a status determination (NMFS 2018c). In 2017, total bigeye tuna landings in the EPO by the longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 2,690 t (WPFMC 2018) or 2.8 percent of the estimated MSY of 95,491 t (Xu et al. 2018) and 2.8 percent of the total 2017 catch (IATTC 2018).

3.1.2 Yellowfin Tuna

WCPO

Tremblay-Boyer and others conducted the most recent stock assessment for yellowfin tuna in the WCPO (2017). Yellowfin is not subject to overfishing or overfished. Similar to the bigeye assessment, the SC endorsed a weighted assessment model uncertainty grid to characterize stock status. SC13 noted that the central tendency of relative recent spawning biomass was median ($SB_{recent}/SB_{F=0}$) = 0.33 with a probable range of 0.20 to 0.41 (80% probable range), and that there was a roughly 8% probability (4 out of 48 models) that the recent spawning biomass had breached the WCPFC limit reference point. The central tendency of relative recent fishing mortality was median (F_{recent}/F_{MSY}) = 0.74 with an 80% probability interval of 0.62 to 0.97, and there was a roughly 4% probability (2 out of 48 models) that the recent fishing mortality was above F_{MSY} (WCPFC 2017a). In 2017, total yellowfin tuna landings by the longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 2,587 t (Table 15) or less than 1 percent of the estimated MSY. Of the 2,587 t, the longline fleet based in Hawaii accounted for 1,761 t with the remainder landed by the American Samoa longline fishery.

EPO

The IATTC assessed yellowfin tuna in the EPO in 2018 and found that F/F_{MSY} = 1.01, and $SB_{2015\text{-}2017}/SB_{MSY}$=1.08 (Minte-Vera et al. 2018). In 2017, U.S. longline fisheries landed 530 t of yellowfin tuna in the EPO (WPFMC 2018), or less than one percent of the estimated MSY of 264,283 t (Minte-Vera et al. 2018). The 2017 U.S. longline total is 0.25 percent of the 2017 total catch of yellowfin in the EPO (IATTC 2018).

3.1.3 Skipjack Tuna

WCPO

McKechnie et al. (2016) conducted the most recent assessment of skipjack tuna in the WCPO using data up to 2015. The median estimates of current fishing mortality to fishing mortality at MSY ($F_{2011}/F_{MSY)}$ =0.48 indicate that overfishing of skipjack is not occurring in the WCPO. Nor is the stock in an overfished state with spawning biomass to spawning biomass at MSY (SB_{2011}/SB_{MSY}) = 2.15. Fishing pressure and recruitment variability (influenced by environmental conditions) will continue to be the primary influences on stock size and fishery performance McKechnie et al. (2016). McKechnie et al. (2016) estimate MSY at 1,875,600 t. In 2017, total skipjack tuna landings by the longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 254 t (Table 15), or less than 1 percent of the estimated MSY. Of the 254 t, the Hawaii longline fishery accounted for 157 t with the remainder landed by the American Samoa longline fishery.

EPO

A reliable index of abundance does not exist for EPO skipjack tuna, and nor do tagging studies comparable to studies that have occurred in the WCPO. In the absence of a stock assessment, IATTC infers the status of skipjack tuna in the EPO from bigeye tuna in the EPO, most recently based on the work of Maunder (2018). Biomass and recruitment of skipjack tuna have increased over the last 20 years; however, the exploitation rate has fluctuated around average since the mid-1990s. The data- and model-based indicators have yet to detect any adverse impacts of the fishery (Maunder 2018).

3.1.4 North Pacific Albacore

The International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) in 2017 completed the most recent stock assessment of North Pacific albacore, which uses data through 2015 (ISC 2017a). The assessment indicates that: a) the stock is likely not overfished relative to the limit reference point adopted by the WCPFC ($20\%SSB_{current}$, F=0), and b) no F-based reference points have been adopted to evaluate overfishing, but stock status was evaluated against seven potential reference points and current fishing intensity ($F_{2012\text{-}2014}$) is below six of the seven reference points except for $F_{50\%}$. In 2017, total albacore tuna landings in the North Pacific by the longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 90 t (Table 15), or less than 1 percent of the estimated MSY. The Hawaii longline fishery made nearly all of the landings.

3.1.5 South Pacific Albacore

Tremblay-Boyer et al. (2018) completed the most recent stock assessment of South Pacific albacore using data through 2016. The new assessment used previously unavailable operational level longline data, a simplified regional structure, a geostatistical model to standardize the CPUE, and reported results using a structural uncertainty grid in the same approach used for the most recent WCPO bigeye tuna assessment (Tremblay-Boyer et al. 2018).

The central tendency of relative recent (2013-2016) spawning biomass to spawning biomass in the absence of fishing, over all 72 models in the structural uncertainty grid, was median ($SB_{recent}/SB_{F=0}$) = 0.52 with a range of 0.32 to 0.72 and at MSY was median (SB_{recent}/SB_{MSY}) = 3.3 with a range of 1.58 to 9.67. The central tendency of relative recent fishing mortality was median (F_{recent}/F_{MSY}) = 0.2 with a range of 0.06 to 0.53 (Tremblay-Boyer et al. 2018). Results indicate the stock is not subject to overfishing and the stock is not overfished under the Pelagic FEP and WCPFC LRPs.

The 2018 assessment estimated MSY at an average of 100,074 t across all models in the structural uncertainty grid (Tremblay-Boyer et al. 2018). In 2017, total South Pacific albacore tuna landings by the longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 1,381 t (Table 15), or 1.4 percent of the estimated MSY. The American Samoa longline fishery accounted for all of the landings.

3.1.6 North Pacific Bluefin Tuna

Scientists consider Pacific bluefin tuna as a single North Pacific-wide stock. The most recent assessment of the status of Pacific bluefin tuna used data through 2016, and concluded that the stock is still experiencing overfishing and is overfished (ISC 2018a). The ISC assessment estimated the F/F_{MSY} = 1.17 and SB/MSST= 0.21. Current spawning biomass is estimated at 21,331 t in 2016, up from near a near historical low in 2010 (ISC 2018a).

The U.S. longline fleet rarely catches Pacific bluefin tuna (NMFS 2018). In 2017, total North Pacific bluefin tuna landings by all U.S. longline fisheries was 1 t (Table 15), or much less than one percent of current spawning biomass. At such a low percentage of fishing mortality, the relative impact of the U.S. longline fisheries on the stock is negligible and therefore overfishing of the stock is due to excessive international fishing pressure. NMFS continues to work with the Pacific and Western Pacific Councils and the State Department to ensure that WCPFC and IATTC adopt effective management measures to end overfishing and rebuild the stock.

3.1.7 North Pacific Swordfish

Based on the best scientific information available, the swordfish population in the North Pacific is comprised of two stocks, separated by a roughly diagonal boundary extending from Baja California, Mexico, to the Equator. These are the Western Central North Pacific Ocean (WCNPO) stock, distributed in the western and central Pacific Ocean, and the EPO stock, distributed in the eastern Pacific Ocean.

Hawaii-permitted deep-set fishing operations north of the equator may land no more than 25 swordfish per trip, if only circle hooks are used; and 10 swordfish per trip, if any other type of hook is used. These limits do not apply if an observer is on board.

WCNPO

The results of the most recent assessment (ISC 2018) support the conclusion that the WCNPO stock is not subject to overfishing because $F_{2013\text{-}2015}/F_{MSY}$ = 0.45, and is not overfished because SB_{2016}/SB_{MSY} =1.87. The 2018 stock assessment estimated MSY for the WCNPO stock at 14,941 t (ISC 2018c). In 2017, total landings of swordfish by all U.S. longline fisheries in the NPO, which may include a small percentage of EPO swordfish, was 1,617 t (WPFMC 2018), or approximately 11 percent of the estimated MSY. The Hawaii longline fishery made nearly all of the landings.

EPO

The results of the most recent assessment (ISC 2014), using data through 2012, support a conclusion that the EPO stock is now subject to overfishing because F_{2012}/F_{MSY} = 1.11, but is not overfished because B_{2012}/B_{MSY} =1.87. The 2014 stock assessment estimated MSY for the EPO stock at 5,490 t (ISC 2014). Based on federal logbook records, catch of swordfish by the U.S. longline vessels operating within the boundary of the EPO stock is less than 5 t annually, or less than 1 percent of the estimated MSY (NMFS unpublished data). At less than 1 percent of MSY, the relative impact of the U.S. longline fisheries on the stock is negligible.

In March of 2016, the Council responded to the requirement under the Magnuson-Stevens Act that the Council develop recommendations for domestic regulations to address the relative impact of the domestic fishing fleet on the stock, and develop recommendations to the Secretary of State and Congress for international actions to end overfishing of the EPO swordfish stock. The Council recommended continued logbook and observer program monitoring by NMFS of the incidental catch of swordfish in the EPO in the HI deep-set longline fishery, and noted that any non-retention of EPO swordfish is not warranted for the Hawaii deep-set longline fishery because (1) fishing mortality is primarily the result of overfishing pressure at the international level; (2) Hawaii fishermen harvest an insignificant fraction of EPO swordfish and (3) non-retention would disadvantage Hawaii fishermen while providing negligible conservation benefits. The WPFMC further recommended the US delegation to the IATTC put forward a proposal that the IATTC take action to eliminate overfishing on this stock by reducing the fishing mortality on North Pacific EPO swordfish by at least 10 percent. NMFS continues to work with the Pacific and Western Pacific Councils and the State Department to ensure that the IATTC adopt effective management measures to end overfishing and rebuild the stock.

3.1.8 Striped Marlin

Genetic and tagging studies suggest that striped marlin in the Pacific is comprised of three stocks: southwest Pacific Ocean, western and central North Pacific Ocean (WCNPO), and north east Pacific Ocean (NEPO). Stock assessments are available for the WCNPO stock (ISC 2015a) and the NEPO stock (Hinton and Maunder 2011).

WCNPO

The results of a 2015 stock assessment (ISC 2015a) indicate the WCNPO stock of striped marlin continues to be subject to overfishing (F/F_{MSY} is =1.49) and overfished (SB/SB_{MSY} = 0.39). The 2015 stock assessment estimated MSY at 5,657 t. CMM 2010-01 for North Pacific striped marlin adopted by the WCPFC requires members and cooperating non-members to limit striped marlin landings 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 measure. The highest striped marlin catch by U.S. fisheries between 2000 and 2003 is 571 t. Thus, a 20 percent reduction from 571 t is 457 t. The Hawaii longline fishery accounts for more than 90 percent of the total U.S. catch of this stock, with the remainder made by Hawaii small-scale troll fisheries. Since 2013, total landings of WCNPO striped marlin by all U.S. fisheries combined has never exceeded 425 t (NMFS 2018a).

In 2017, total WCNPO striped marlin (or striped marlin caught in the WCPO) landings by all U.S. fisheries was 336 t, with the Hawaii longline fishery accounting for 286 t, the American Samoa longline fishery accounting for 48 t, and the Hawaii troll fisheries accounting for 8 t (NMFS 2018a), or about 6 percent of MSY for all U.S. fisheries. Thus, overfishing of the stock is due to excessive international fishing pressure and the IATTC and WCPFC have inadequate measures in place to address the issue. Nonetheless, NMFS continues to work with the Pacific and Western Pacific Fishery Management Councils, and the State Department to ensure that the WCPFC and IATTC adopt effective management measures to end overfishing.

NEPO

The results of the 2011 stock assessment (Hinton and Maunder 2011) indicate that the NEPO striped marlin stock is not overfished or experiencing overfishing. The stock biomass has increased from a low of about 2,600 t in 2003, and was estimated to be about 5,100 t in 2009. There has been an increasing trend in the estimated ratio of the observed annual spawning biomasses to the spawning biomass (SB) in the unexploited stock, which has doubled from about 0.19 in 2003 to about 0.38 in 2009. The estimated ratio of spawning biomass in 2009 to that expected to provide catch at the level of MSY, $SB_{(2009)}/SB_{MSY}$, was about 1.5, which indicates that the spawning biomass was above the level expected to support MSY. The estimated recent levels of fishing effort (average 2007-2009) were below those expected at MSY. Between 2013 and 2017, Hawaii longline catches of NEPO striped marlin (or striped marlin caught in the EPO) ranged between 63 and 77 t annually, which is no greater than 3 percent of the stock's biomass (WPFMC 2018).

3.1.9 Pacific Blue Marlin

The 2016 stock assessment by the ISC Billfish Working Group (ISC 2016a), which uses data through 2014 indicates Pacific blue marlin is not experiencing overfishing ($F_{2014}/F_{MSY} = 0.88$).

Applying the 2014 spawning biomass estimates of 24,809 t, and the spawning biomass at MSY of 19,858 t, the ratio of SB/SB_{MSY} is 1.25 indicating the stock is not overfished. In 2017, total blue marlin landings by all longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 606 t (Table 15), or approximately 3 percent of the estimated MSY. Of the 606 t, the Hawaii longline fishery accounted for 485 t with the remainder caught by the American Samoa longline fishery.

3.1.10 North Pacific Blue Shark

The results of the 2017 assessment (ISC 2017b) indicate the North Pacific blue shark is not subject to overfishing ($F_{2012\text{-}2014}/F_{MSY} = 0.37$), and is not overfished ($SB_{2012\text{-}2014}/SB_{MSY} = 1.71$). The 2017 stock assessment estimated SB_{MSY} at 179,539 t. In 2017, total blue shark landings by all U.S. longline fisheries was 0 t (Table 15). Nearly all blue sharks caught in US longline fisheries are returned to the sea alive, with some discarded dead as well.

3.1.11 Oceanic Whitetip Shark

The oceanic whitetip shark is distributed worldwide in epipelagic tropical and subtropical waters between 30° N and 35° S. The species is a highly migratory species found offshore and in deep waters. Overall, global quantitative abundance estimates and trends are lacking for the oceanic whitetip. Fisheries predominately catch oceanic whitetip as bycatch, and the reporting requirements for bycatch species have changed over time and differ by organization, and have therefore affected the reported catch. In the eastern Pacific, oceanic whitetip sharks were historically the third most abundant shark species after blue sharks and silky sharks, and comprised approximately 20% of the total shark catch in the tropical tuna purse seine fishery. However, both nominal catches and encounters with oceanic whitetip sharks in all set types in the purse seine fishery have declined significantly since 1994. In fact, these declines are

compatible with an 80-95% population decline compared to the late 1990s, and the species has virtually disappeared from the fishing grounds in a seemingly north to south progression (Young et al. 2016; Hall and Roman 2013). Similar levels of decline have also been observed throughout the western and central Pacific Ocean (Young et al. 2016). The oceanic whitetip shark was once one of the most abundant pelagic shark species throughout the western and central Pacific Ocean, comprising up to 28% of the shark catch during the 1950s (Strasburg 1958).

The most recent stock assessment conducted in the WCPO estimated an 86% decline in spawning biomass from 1995 to 2009, with total biomass reduced to just 6.6% of the theoretical equilibrium virgin biomass. The assessment estimates current biomass of oceanic whitetip sharks in the WCPO to be 7,295 t and current catches at 2,001 t, which is lower than the MSY of 2,700 t (Rice and Harley 2012). Based on the results of the assessment, the WCPO stock is likely overfished and experiencing overfishing (Rice and Harley 2012). The biomass equivalence to individuals is estimated at approximately 200,000 individuals (FAO 2012). There is no assessment for EPO oceanic white tip shark. An updated analysis analyzing various abundance indices, including standardized CPUE, concluded that the oceanic whitetip shark continues to decline throughout the tropical waters of the western and central Pacific (Rice et al. 2015), indicating a severely depleted population of oceanic whitetip across the region with observations of the species becoming increasingly rare. Others have found similar results in analyses of CPUE data from the Hawaii-based pelagic longline fishery, where oceanic whitetip shark showed an approximately 90% decline in relative abundance (Clarke et al. 2012; Brodziak and Walsh 2013). An update of this time series indicates relative stability in the population size at the post-decline depressed state with no signs of recovery.

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. Bycatch from the WCPO longline fishery, comprised of fleets from several fishing nations, has the greatest impact on the stock, with lesser impacts from the target longline activities and purse seining in the WCPO. Under CMM 2011-04, the WCPFC has agreed to a non-retention measure to reduce fishing mortality and to rebuild spawning biomass of oceanic white tip shark; the IATTC prohibited retention in its convention area, effective in 2011. Specifically, regulations implementing CMM 2011-04 (50 CFR 300.226) prohibit U.S. fishing vessels from retaining any part or carcass of an oceanic whitetip shark, except to assist WCPFC observers in collection of samples. The regulations also require vessel operators to release any oceanic whitetip shark as soon as possible and take reasonable steps for safely releasing oceanic whitetip sharks. Similar conservation measures prohibiting retention and requiring safe release of oceanic whitetip sharks are in place in the IATTC convention area (50 CFR 300.24). Additionally, State and Federal regulations prohibiting shark finning, implemented between 1999 and 2002, resulted in most shark species caught in this fishery to be released alive since 2001. In 2016, total oceanic white tip shark landings by all U.S. longline fisheries was 0 t, demonstrating full compliance with the prohibition on retention (Table 15).

On January 30, 2018, NMFS issued a final rule (FR 83 4153) to list the oceanic white-tip shark as threatened under the ESA. NMFS has not proposed critical habitat or protective regulations under ESA section 4(d) at this time. Accordingly, ESA regulations do not prohibit incidental take of oceanic whitetips. Bycatch of oceanic whitetip shark in each of the U.S. and U.S. participating territory longline fisheries is discussed in section 3.3.4.

3.1.12 North Pacific Shortfin Mako Shark

In 2018, ISC concluded the first full stock assessment of shortfin mako shark in the North Pacific Ocean (ISC 2018b). Previous abundance indices showed conflicting trends from which stock status could not be determined (ISC 2015b). The new assessment used data through 2016, and assumed a single stock in the NPO (ISC 2018b). The results indicate that the stock is not subject to overfishing because $F_{2013\text{-}2015}/F_{MSY} = 0.62$, and is not overfished because $SA_{2016}/SA_{MSY} = 1.36$. Spawning abundance (SA) was used instead of spawning biomass because the size of mature female sharks does not appear to affect the number of pups produced (ISC 2018b).

ISC estimated the MSY at 3,127 t (ISC 2018b). In 2017, total mako shark landings by all U.S. longline fisheries in the North Pacific Ocean was 71 t (Table 15), or 2.3 percent of the MSY.

3.1.13 Silky shark

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 (Rice and Harley 2013). Research conflicts on stock boundaries of silky sharks, which complicates development of a pan-Pacific assessment model (Clarke et al. 2018a). Additionally, CPUE indices from WCPO and EPO fisheries show correlations with oceanographic conditions, so may not represent reliable indices of abundance and may bias indicators of stock status (Clarke et al. 2018a; Cody et al. 2018). Based on apparent declines in the absence of better scientific information, both the WCPFC and the IATTC implemented precautionary measures to prohibit vessels from retaining any part or carcass of a silky shark, except to assist WCPFC observers in collection of samples. A pan-Pacific assessment was completed in 2018, but the authors cautioned that estimates of stock status reference points for determining whether the stock is experiencing overfishing or is overfished are unreliable and should not be used as the basis for management advice (Clarke et al. 2018a).

WCPO

The assessment by Rice and Harley (2013) for the WCPO conclude that current catches are higher than the MSY (5,331 t versus 1,994 t), and further catch at current levels of fishing mortality would continue to deplete the stock below MSY. Overfishing is occurring because $F/F_{MSY} = 4.32$ and stock is overfished because $SB/SB_{MSY} = 0.72$. Bycatch from the longline fishery accounts for the greatest impact to the stock, but there are also impacts from the associated purse seine fishery, which catches predominantly juvenile individuals. Given the bycatch nature of fishery impacts, mitigation measures provide the best opportunity to improve the status of the silky shark population (Rice and Harley 2013) and SC9 recommended that the WCPFC also consider measures directed at targeted catch, such as from shark lines (WCPFC 2013). In 2017, total silky shark landings by all U.S. longline fisheries in the WCPO was 0 t (Table 15), demonstrating full compliance with requirements.

Clarke et al. (2018b) assessed silky sharks in the WCPO in 2018, given the difficulty of assessing a pan-Pacific stock. The assessment results were that $F_{2016}/F_{MSY} = 1.607$ and

$SB_{2016}/SB_0 = 0.469$, with a 72 percent probability that current biomass is above biomass at MSY (Clarke et al. 2018b).

EPO

Uncertainties in fishery data prevent the use of conventional stock assessment models to assess the EPO stock (Cody et al. 2018). Bycatch rates of silky shark north of the Equator in the EPO of all three size classes analyzed by Aires-da-Silva and others (2015) indicate a declining trend, which begins in the mid-2000s for the large size class. The standardized CPUE index shows a possible increase in recent years, preceded by a period of stability following a sharp decline in the mid-1990s. The recent increase could be a result of adults migrating into the area from the west or an effect of fishing closer to the coast. For the southern stock, a similar declining trend appears in bycatch rates. CPUE sharply declined during 1994-2004, and has remained stable since then (Aires-da-Silva et al. 2015).

3.2 U.S. Fisheries in the WCPO, including Fisheries of the U.S. Territories

U.S. and territorial longline fisheries comprise the Hawaii deep-set tuna longline fleet (including several vessels based on the U.S. West Coast), the Hawaii shallow-set swordfish longline fleet, the American Samoa deep-set albacore longline fleet, and several deep-set tuna longline vessels previously based in Guam and the CNMI, which may resume operations in the future. Longline is a type of fishing gear consisting of a mainline that exceeds 1 nm (6,076 ft) in length that is suspended horizontally in the water column, from which branchlines with hooks are attached. Longline deployment is referred to as "setting," and the gear, once deployed, is referred to as a "set." Sets are normally left drifting for several hours before they are retrieved, along with any catch. In shallow-set longline fishing, the gear is configured so that the hooks remain above 100 meters (m) in depth to target swordfish near the surface. In deep-set longline fishing, the gear is configured so that all of the hooks fall below 100 m to target deeper-dwelling tunas.

Troll and handline fishing also occurs on a commercial and non-commercial basis in Hawaii, American Samoa, Guam, and CNMI, representing relatively small annual catches of pelagic MUS compared to catches by domestic and foreign longline and purse seine fleets operating in the WCPO. Therefore, troll and handline catch are analyzed in this EA as part of the baseline condition affecting this stock. The proposed action is not expected to adversely affect the troll and handline vessels in terms of revenue, catch, effort, or area fished because the proposed catch and allocations would only apply to longline vessels. However, Hawaii troll and handline vessels may increase bigeye tuna targeting activity in the event of a longline closure. Therefore, catch and revenue from this fleet are discussed in this section. About 80 percent of troll and handline landings are made by Hawaii vessels (WPFMC 2018).

3.2.1 Mariana Archipelago Longline Fisheries

The area where longline fishing vessels based in the CNMI and Guam historically have operated is the EEZ around the CNMI and Guam. Historically, fewer than three longline companies have actively fished in the EEZ around Guam and the CNMI. For this reason catch and effort information is confidential. Since 2011, there has been no longline fishing activities around the CNMI or Guam, and NMFS does not expect longline fishing activities to occur in 2018 or the

foreseeable future. High operating costs associated with vessel docking along with poor market access may be contributing factors to the lack of longline fishing in the Marianas (WPFMC 2014).

3.2.2 American Samoa Longline Fishery

The longline fishery based in American Samoa is a limited access fishery with a maximum of 60 vessels under the federal permit program. Vessels range in size from under 40 to over 70 ft long. The fishery primarily targets albacore for canning in the local Pago Pago cannery, although the fishery also catches and retains other tunas (e.g., bigeye, yellowfin, and skipjack), and other PMUS (e.g., billfish, mahimahi, wahoo, oilfish, moonfish (opah), and sharks) for sale and home consumption. The target depth for albacore tuna is approximately 100–300 m (WPFMC 2009). 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 do not catch bigeye tuna.

3.2.2.1 Longline Fishing Area

American Samoa longline fishing vessels operate in the EEZ around American Samoa, on the high seas in international waters, and occasionally in the EEZs of countries adjacent to American Samoa. Additionally, around 25 American Samoa longline limited access permit holders also hold Hawaii longline limited access permits, the latter of which allows them to fish in the EEZ around Hawaii and land fish in Hawaii. As previously noted, vessels possessing both an American Samoa and a Hawaii longline limited access permit have an exception to fishery restrictions on the retention on bigeye tuna in the WCPO and may continue to land fish in Hawaii, if NMFS prohibits catch and retention of bigeye tuna in the WCPO when the fishery reaches the U.S. WCPO limit. Federal regulations prohibit fishing within the Large Vessel Prohibited Area for vessels greater than 50 feet in length (generally within 50 nm of emergent lands), and commercial fishing within marine national monuments. Figure 2 shows the distribution of fishing effort by the American deep-set longline fleet in millions of hooks in years 2007-2017.

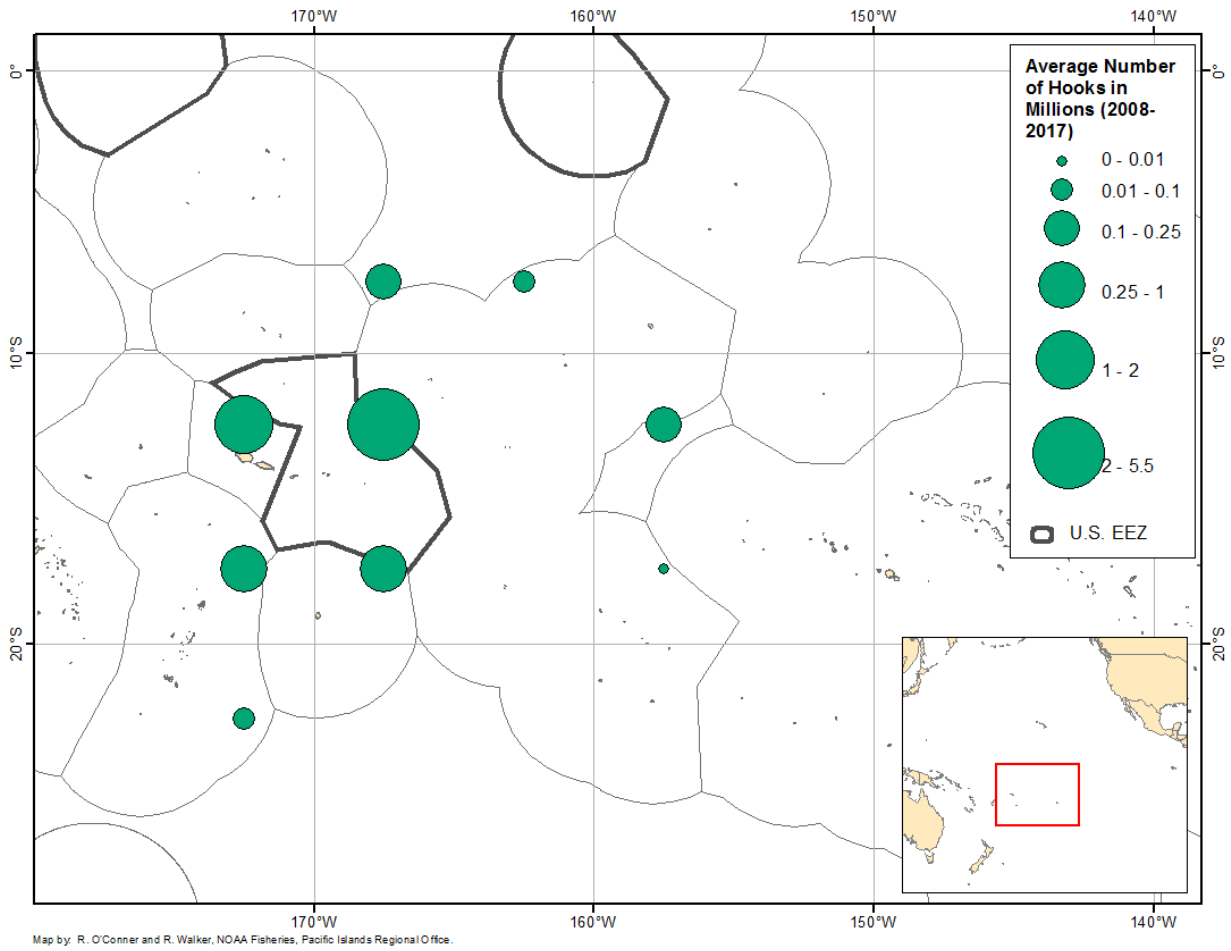

Figure 2. Operating area of the American Samoa longline fleet, shown in average number of hooks per five degree square for years 2008-2017.

3.2.2.2 Fishing Participation

As previously mentioned, NMFS manages the American Samoa pelagic longline fishery as a limited access fishery with a maximum of 60 vessel permits based on vessel length as follows:

- Class A Permits – less than or equal to 40 ft
- Class B Permits – over 40 ft to 50 ft
- Class C Permits – over 50 ft to 70 ft
- Class D Permits – over 70 ft

The limited access program also caps the maximum number of permits for each vessel size class that results in a limit of 60 vessels in the fishery. NMFS has fixed the maximum number of available permits for the fishery at 16 permits for Class A vessels, five permits for Class B vessels, 12 for Class C vessels, and 27 for Class D vessels. Since the permit program's inception, active participation in the fishery is primarily the larger Class C and D vessels. 15 permitted

vessels conducted longline fishing activities in American Samoa in 2017 (WPFMC 2018). Table 5 shows the number of permits of each class in the time period 2008-2017.

Table 5. Number of American Samoa permitted and active longline fishing vessels by size class from 2008-2017.

Year	Class A Permits	Class A Active	Class B Permits	Class B Active	Class C Permits	Class C Active	Class D Permits	Class D Active
2008	17	1	6	0	9	8	26	20
2009	16	1	5	0	8	8	26	17
2010	12	1	5	0	12	7	26	18
2011	12	1	5	0	12	8	27	15
2012	5	3	5	0	11	8	27	14
2013	5	1	5	0	11	7	26	14
2014	14	2	5	0	12	7	26	14
2015	7	3	3	0	12	6	27	12
2016	7	2	4	0	12	5	27	13
2017	7	1	3	0	11	5	27	9

Source: WPFMC 2018.

3.2.2.3 Fishing Effort

Effort in the American Samoa deep-set longline fishery peaked in 2007, when 29 of 59 permitted vessels participated and made 377 trips, deployed 5,920 sets with 17.6 million hooks. Since that time, fishery statistics across all categories have generally declined (Table 6). In 2017, 15 of 48 permitted vessels made 135 trips and deployed 2,333 sets with 6.62 million hooks (WPFMC 2018).

Table 6. Fishing effort in the American Samoa longline fishery, 2008-2017.

Year	Vessels making deep-sets	Deep-set fishing effort (hooks)	Deep-set fishing effort (trips)*	Deep-set fishing effort (sets)
2008	29	14,444	280	4,754
2009	26	15,076	195	4,910
2010	26	13,184	265	4,537
2011	24	11,074	276	3,891
2012	25	12,112	211	4,210
2013	22	10,184	104	3,411
2014	23	7,667	196	2,748
2015	21	7,806	169	2,786

2016	20	6,909	213	2,451
2017	15	6,623	135	2,333

Source: WPFMC 2018 unless otherwise noted.
*Note: Trip and set numbers in years 2008-2014 are from NMFS 2015b, year 2015 trip and set numbers are from WPFMC 2017a, and year 2016 trip and set numbers are from WPFMC 2017b.

3.2.2.4 Catch Information

The American Samoa longline fleet targets south Pacific albacore tuna, which makes up the majority of the landings in all years (Table 7). Table 7 provides catch statistics associated with the American Samoa-based longline fishery.

Table 7: American Samoa-based Longline Fishery Landings (t), 2013-2017.

	2017	**2016**	**2015**	**2014**	**2013**
Total Pelagic Landings (t)	2,155	2,167	2,405	2,192	2,828
South Pacific Albacore (t)	1,381	1,517	1,855	1,430	2,128
Yellowfin Tuna (t)	533	386	255	424	390
Bigeye Tuna (t)	64	72	116	82	84
Skipjack Tuna (t)	63	94	67	116	66
Wahoo (t)	48	47	58	75	87
Blue marlin (t)	38	30	25	28	31

Source: NMFS 2018
Note: all other species (e.g., mahimahi, swordfish, etc.) landed are less than one percent of total landings.

3.2.2.5 Revenue

In 2017, the American Samoa longline fleet landed approximately 4.8 million pounds of pelagic species with an estimated revenue of $4.7 million. Landings and revenue have generally declined over the last five years (Figure 3).

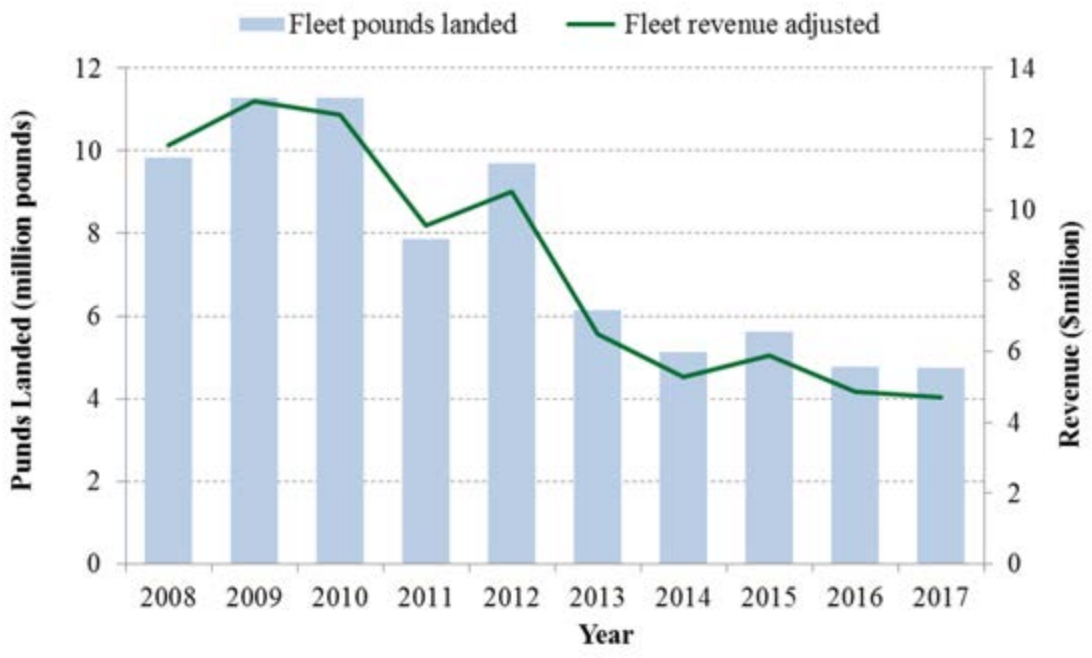

Figure 3. Landings, revenue, and price for American Samoa longline fishery from 2008-2017 adjusted to 2017 dollars.
Source: WPFMC 2018.

3.2.2.6 Non-Target Species and Bycatch

Table 8 shows the number of fish kept and released in the American Samoa longline fishery during 2016. Fish are released for various reasons including quality, size, handling and storage difficulties, and as well as marketing issues. Fishermen released nearly all sharks and oilfish and a high percentage of certain billfish, which are important to the non-commercial fishery. Overall, fishermen released 10 percent of the total number of fish caught.

Table 8: Number of fish kept, released and percent released for all American Samoa longline vessels during 2017

Species	Number Kept	Number Released	Total Caught	Percent Released
Skipjack tuna	10,228	52	10,280	0.5
Albacore tuna	76,857	490	77,347	0.6
Yellowfin tuna	24,855	216	25,071	0.9
Kawakawa	0	0	0	0.0
Bigeye tuna	2,483	9	2,492	0.4
Tunas (unknown)	8	0	8	0.0
Tuna PMUS Total	**114,431**	**767**	**115,198**	**0.7**
Mahimahi	1,399	17	1,416	1.2
Black marlin	1	1	2	50.0
Blue marlin	648	45	693	6.5
Striped marlin	58	16	74	21.6
Wahoo	4,718	35	4,753	0.7
Sharks (unknown coastal)	12	4,177	4,189	99.7
Swordfish	122	44	166	26.5
Sailfish	46	53	99	53.5
Spearfish	72	126	198	63.6
Moonfish	57	41	98	41.8
Oilfish	30	1,974	2,004	98.5
Pomfret	92	500	592	84.5
Non-Tuna PMUS Total	**7,255**	**7,029**	**14,284**	**49.2**
Barracudas	83	38	121	31.4
Rainbow runner	0	0	0	0.0
Dogtooth tuna	0	0	0	0.0
Non-PMUS Pelagics Total	**83**	**38**	**121**	**31.4**
Total Pelagics	**121,769**	**7,834**	**129,603**	**6.0**

Source: WPFMC 2018

3.2.3 Hawaii Longline Fisheries

Domestic longline fishing around Hawaii consists of two separately managed fisheries. The deep-set fishery targets bigeye tuna in the EEZ around Hawaii and on the high seas at an average target depth of 167 m (WPFMC 2009). The shallow-set fishery targets swordfish (*Xiphias gladius*) to the north of the Hawaiian Islands. NMFS and the Council manage the fisheries under a single limited access program. However, NMFS temporarily closed the Hawaii shallow-set pelagic longline fishery in compliance with an order of the U.S. District Court for the District of Hawaii, effective May 8, 2018 through December 31, 2018 (83 FR 21939, May 11, 2018). Some Hawaii-permitted vessels also hold American Samoa longline permits. The number of dual-permitted vessels has ranged between 13 and 25 over the last five years (NMFS unpublished data). Dual-permitted vessels land their catch in Hawaii or American Samoa.

3.2.3.1 Longline Fishing Area

Fishing locations may vary seasonally based on oceanographic conditions, catch rates of target species, and management measures, among others. The deep-set fishery operates in the deep, pelagic waters around the Hawaiian archipelago throughout the year, mostly within 300-400 nm (556-741 km) of the main Hawaiian Islands (MHI). However, federal regulations and other applicable laws prohibit longline fishing inside the 200 nm U.S. EEZ around the Northwestern Hawaiian Islands and within 50 to 75 nm from the shoreline in the MHI to minimize the potential for gear conflicts with small boat fisheries and interactions with protected species. Federal regulations also temporarily prohibit longline fishing in the Southern Exclusion Zone (SEZ), an area in the EEZ south of Hawaii, for the remainder of 2018 (83 FR 33484, July 18, 2018). This closure accords with regulations implementing the False Killer Whale Take Reduction Plan, which requires closure of the area if there are two or more observed serious injuries or mortalities of false killer whales in the EEZ in a given year. NMFS does not expect closing the SEZ to change fishing effort, and the deep-set fishery is still subject to the same catch limits. While the closure may redistribute effort to other areas, it is not expected to increase or decrease effort because longline fishing occurs predominately outside the closure areas. Some fishing also occurs in the EEZ around U.S. Pacific Remote Island Areas of Kingman Reef and Palmyra Atoll (5° N). Figure 4 shows the distribution of fishing effort by the Hawaii deep-set longline fleet in millions of hooks in years 2007-2017.

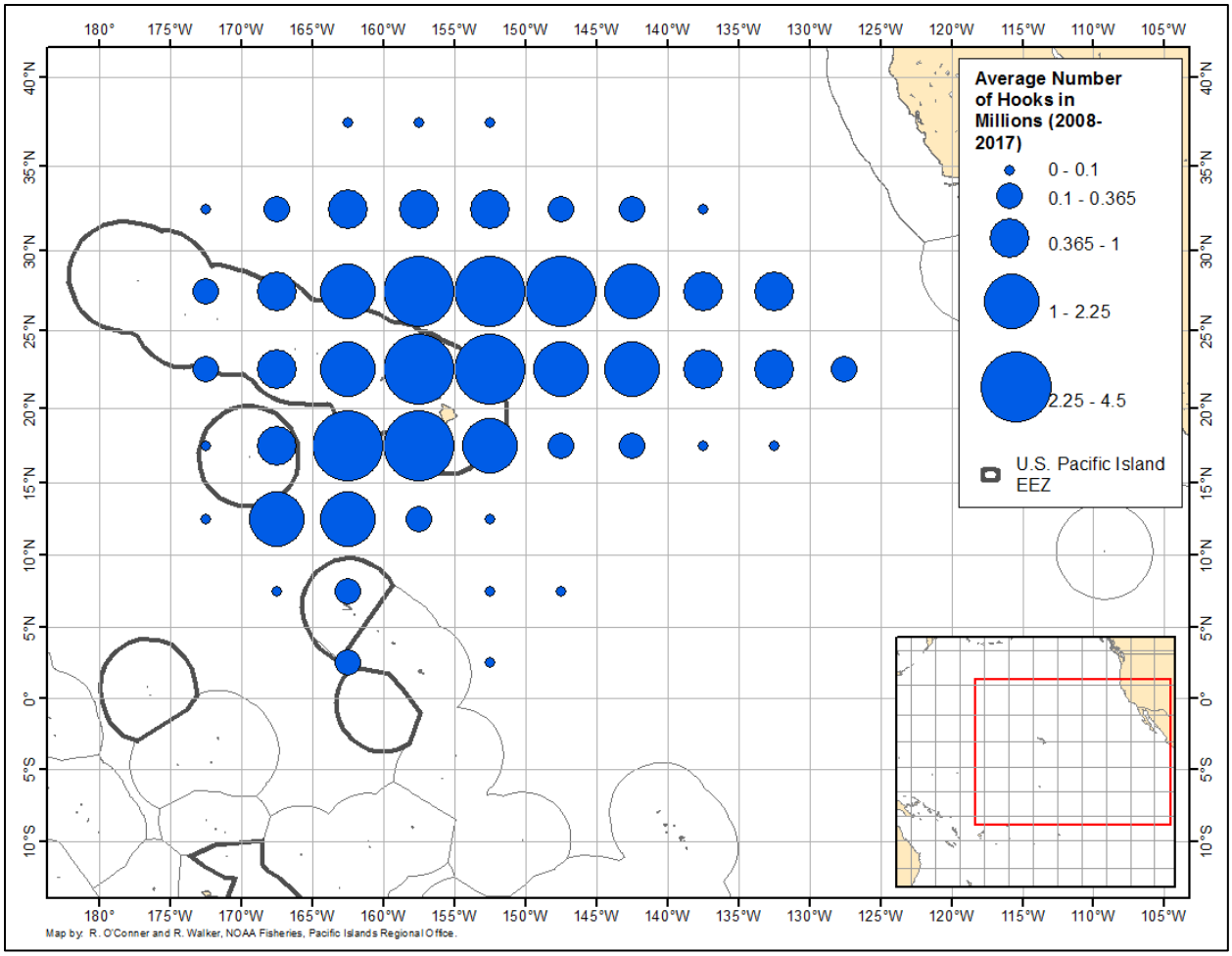

Figure 4. Operating area of the Hawaii deep-set longline fleet, shown in average number of hooks (millions) per five degree square for years 2008-2017.

In general, deep-set longline vessels operate out of Hawaii ports, with the vast majority based in Honolulu. Infrequently, deep-set trips originate from other ports such as Long Beach or San Francisco, California, or Pago Pago, American Samoa, and then fishermen land their catches in Hawaii. Fishermen departing from California begin fishing on the high seas, outside the EEZ. Fishermen departing from American Samoa usually begin fishing near the Equator or farther north in the North Pacific where they expect higher catch rates of bigeye tuna.

The shallow-set fishery operates in the U.S. EEZ around Hawaii and on the high seas to the north and northeast of the MHI seasonally (Figure 5). Effort typically increases in October and peaks in March, after which effort declines through the summer months.

For both the deep- and shallow-set fisheries, federal regulations prohibit the longline vessels from operating within any marine national monument, including monument areas encompassing the U.S. EEZ around Johnston Atoll, and Jarvis and Wake Islands, and specific areas in the EEZ around Hawaii to minimize potential for gear conflicts and interactions with protected marine species.

3.2.3.2 Fishing Participation

NMFS manages Hawaii's deep-set and shallow-set longline fishery under a single limited access fishery with a maximum of 164 vessel permits. Based on logbook data, 145 permitted vessels conducted longline fishing activities in 2017. Of these vessels, 29 were greater than 24 m in length, and 18 vessels participated in the Hawaii-based swordfish fishery. The swordfish fishery is closed for the remainder of 2018. In the event the fishery reaches both of the U.S. bigeye tuna catch limits and NMFS restricts fishing in the WCPO and the EPO, some of these vessels would not be able to fish for bigeye tuna in either zone. However, Hawaii-based longline vessels less than 24 m (102 in 2017) may fish in the EPO for the remainder of the year, as the restriction in the EPO would not apply to vessels less than 24 m.

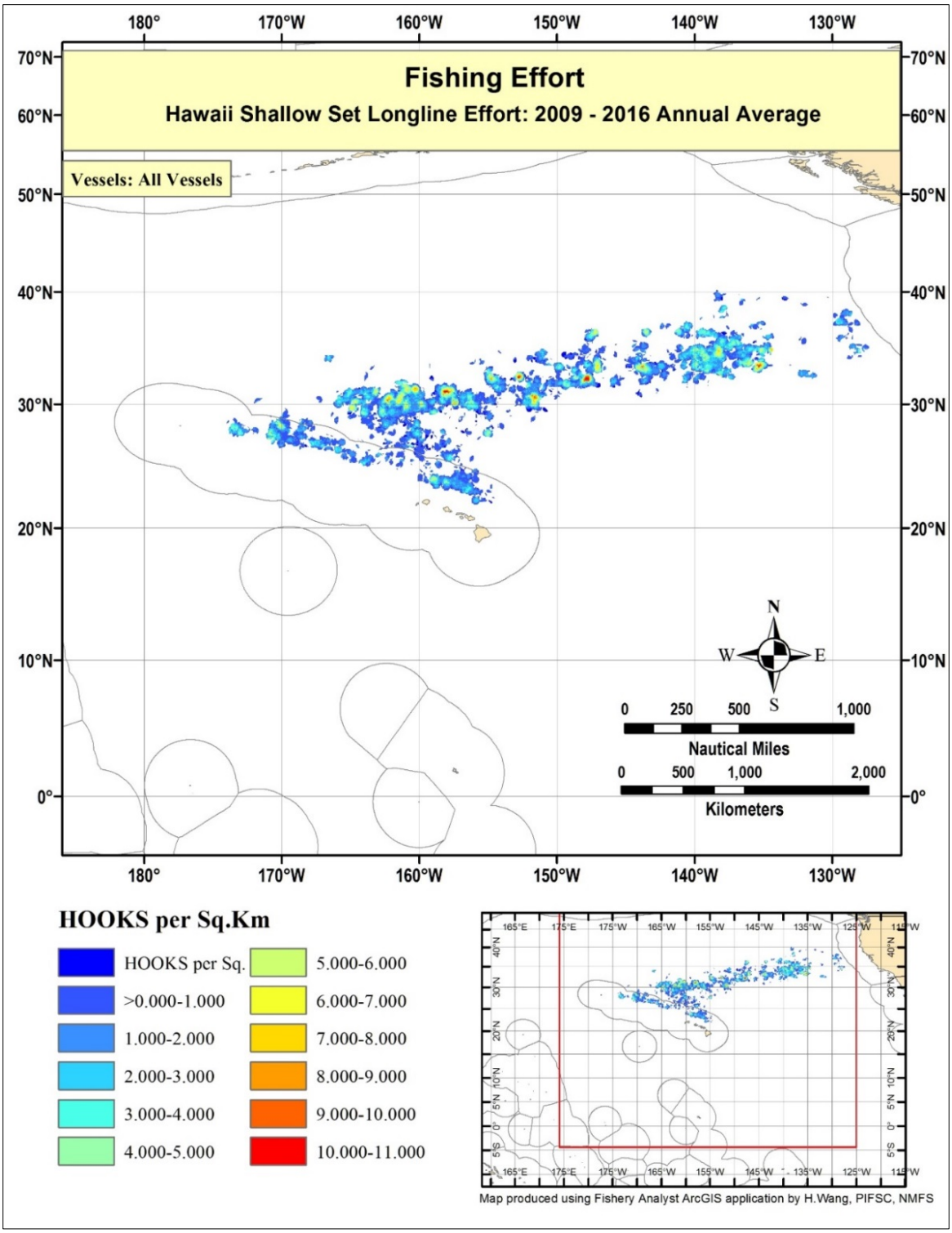

Figure 5. Location of shallow sets made by the Hawaii longline fishery from 2009– 2016. Some sets do not appear on the map due to confidentiality.
Source: PIFSC Fisheries Research and Monitoring Division, 5/9/2017.

3.2.3.3 Fishing Effort

From 2004-2012, the annual number of vessels that participated in the deep-set fishery remained relatively stable, ranging from 124 to 129. The number of active vessels has increased since 2012, with 145 vessels operating in 2017. In 2017, 145 deep-set longline vessels made 1,539 trips with 19,674 sets and deployed 53.5 million hooks (Table 9).

Table 9. Number of active longline vessels and fishing effort in the Hawaii deep-set fishery, 2008-2016 (includes effort in both WCPO and EPO).

Year	Vessels making deep-sets	Deep-set fishing effort (millions of hooks)	Deep-set fishing effort (trips)	Deep-set fishing effort (sets)
2008	127	40.1	1,384	17,923
2009	127	37.9	1,257	16,860
2010	122	37.4	1,211	16,152
2011	129	40.9	1,312	17,260
2012	128	44.3	1,365	18,180
2013	135	46.9	1,386	18,803
2014	139	45.8	1,355	17,831
2015	143	47.6	1,452	18,519
2016	142	51.2	1,480	19,391
2017	145	53.5	1539	19,674

Source: WPFMC 2018.

The number of vessels participating in the shallow-set fishery has declined over time from a high of 35 vessels in 2006 to a low of 15 vessels in 2016, whereas the numbers of trips and hooks have been more variable (Table 10).

Table 10. Number of active longline vessels and fishing effort in the Hawaii shallow-set fishery, 2008-2017 (includes effort in both WCPO and EPO).

Year	Active Vessels	Number of Trips	Number of Sets	Number of Hooks (millions)
2008	27	92	1,595	1.5
2009	28	112	1,762	1.7
2010	28	114	1,871	1.8
2011	20	82	1,447	1.5
2012	18	83	1,352	1.4
2013	15	58	961	1.1

Year	Active Vessels	Number of Trips	Number of Sets	Number of Hooks (millions)
2014	20	81	1,329	1.5
2015	22	69	1,130	1.3
2016	13	46	727	0.8
2017	18	61	949	1.0

Source: WPFMC 2018.

3.2.3.4 Catch Information

Table 11 shows the released catch, retained catch, and total catch of PMUS caught in Hawaii deep-set longline fishery, 2017.

Table 11. Released catch, retained catch, and total catch of PMUS (number of fish) and other fish caught in Hawaii deep-set longline fishery, 2017.

	Deep-set longline fishery			
	Released catch	Percent released	Retained catch	Total Catch
Tuna				
Albacore	21	0.5	4,087	4,108
Bigeye tuna	4,016	1.8	220,375	224,391
Bluefin tuna	2	15.4	11	13
Skipjack tuna	595	2.2	25,990	26,585
Yellowfin tuna	1,613	2.0	78,007	79,620
Other tuna	0	0.0	0	0
Total tunas	**6,247**	**1.9**	**328,470**	**334,717**
Billfish				
Swordfish	315	5.6	5,261	5,576
Blue marlin	32	0.4	7,986	8,018
Striped marlin	134	1.0	12,885	13,019
Spearfish	162	0.8	20,506	20,668
Other marlin	4	0.7	544	548
Total billfish	**647**	**1.4**	**47,182**	**47,829**
Other PMUS				
Mahimahi	344	0.7	45,802	46,146
Wahoo	128	0.5	25,298	25,426
Moonfish	121	0.5	24,673	24,794
Oilfish	2,099	11.5	16,153	18,252
Pomfret	346	0.5	67,390	67,736
Total other PMUS	**3,038**	**1.7**	**179,316**	**182,354**
Non-PMUS fish	3,634	89.2	442	4,076
Total non-shark	**13,566**	**2.4**	**555,410**	**568,976**
PMUS Sharks				
Blue shark	86,650	100.0	0	86,650
Mako shark	3,829	86.5	596	4,425
Thresher shark	7,092	99.5	39	7,131
Oceanic Whitetip shark	537	100.0	0	537
Silky shark	242	99.6	1	243
Total PMUS sharks	**98,350**	**99.4**	**636**	**98,986**
Non-PMUS sharks	721	99.7	2	723
Grand Total	**112,637**	**16.8**	**556,048**	**668,685**

Source: WPFMC 2018.

Bigeye tuna CPUE has ranged between 3.0 and 4.8 fish per 1,000 hooks over the years 2008-2017 (Figure 6).

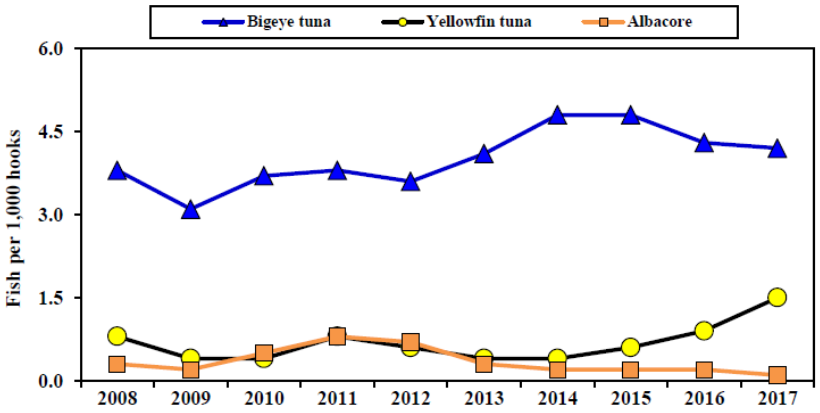

Figure 6: Tuna CPUE for the Hawai`i-permitted deep-set longline fishery, 2008-2018
Source: WPFMC 2018

Table 12 shows the released catch, retained catch, and total catch of PMUS caught in the Hawaii shallow-set longline fishery.

Table 12. Released catch, retained catch, and total catch of PMUS (number of fish) caught in the Hawaii shallow-set longline fishery, 2017.

	Shallow-set longline fishery			
	Released catch	Percent released	Retained catch	Total Catch
Tuna				
Albacore	32	11.1	255	287
Bigeye tuna	215	14.1	1,315	1,530
Bluefin tuna	0	0.0	1	1
Skipjack tuna	0	0.0	79	79
Yellowfin tuna	98	6.3	1,455	1,553
Other tuna	0	0.0	0	0
Total tunas	**345**	**10.0**	**3,105**	**3,450**
Billfish				
Swordfish	1,109	8.0	12,819	13,928
Blue marlin	4	6.9	54	58
Striped marlin	73	17.8	338	411
Spearfish	11	6.9	149	160
Other marlin	2	10.5	17	19
Total billfish	**1,199**	**8.2**	**13,377**	**14,576**
Other PMUS				
Mahimahi	41	3.2	1,260	1,301
Wahoo	0	0.0	74	74
Moonfish	47	10.9	384	431
Oilfish	344	45.1	418	762
Pomfret	9	23.1	30	39
Total other PMUS	**441**	**16.9**	**2,166**	**2,607**
Non-PMUS fish	**7**	**46.7**	**8**	**15**
Total non-shark	**1,992**	**9.6**	**18,656**	**20,648**
PMUS Sharks				
Blue shark	9,638	100.0	0	9,638
Mako shark	843	75.8	269	1,112
Thresher shark	71	97.3	2	73
Oceanic Whitetip shark	22	100.0	0	22
Silky shark	7	100.0	0	7
Total PMUS sharks	**10,581**	**97.5**	**271**	**10,852**
Non-PMUS sharks	**5**	**100.0**	**0**	**5**
Grand Total	**12,578**	**39.9**	**18,927**	**31,505**

Source: WPFMC 2018.

3.2.3.5 Revenue

In 2017, Hawaii-based longline vessels landed approximately 32.73 million pounds of pelagic fish valued at $96.1 million (Figure 7). The average catch over years 2008-2017 was 25.43 million pounds valued at $84.3 million (WPFMC 2018).

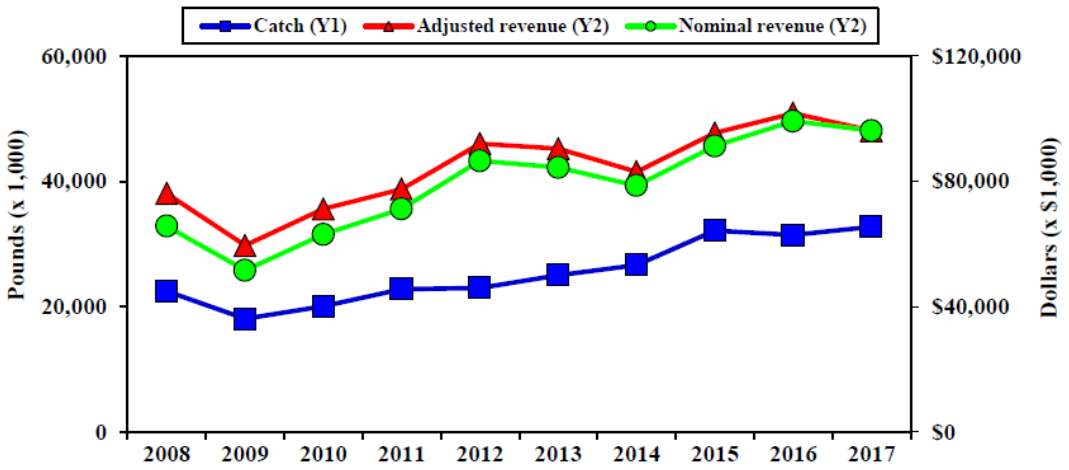

Figure 7. Catch and revenue for the Hawai`i-permitted deep-set longline fishery, 2008-2017
Source: WPFMC 2018.

In 2017, the Hawaii shallow-set longline fishery landed approximately 2.99 million pounds of PMUS valued at approximately $4.23 million (Figure 8). The average catch over years 2008-2017 was 3.13 million pounds valued at about $5.35 million (WPFMC 2018).

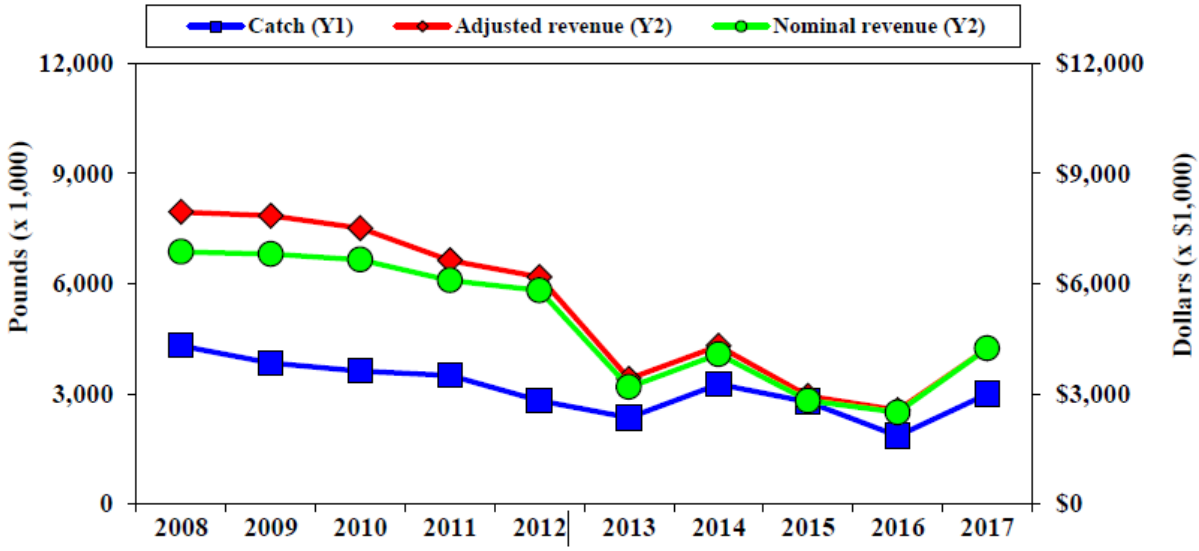

Figure 8. Catch and revenue for the Hawaii-permitted shallow-set longline fishery, 2008-2017.
Source: WPFMC 2018.

3.2.3.6 Non-Target Species and Bycatch

Table 11 in section 3.2.3.4 provides an estimate of bycatch species in the Hawaii deep-set longline fishery. The deep-set longline fishery released some 111,702 fish in 2017. Sharks accounted for 85 percent of the deep-set longline bycatch. With the exception for mako shark, there is almost no demand for sharks in Hawaii. Of all shark species combined, 99 percent of the deep-set longline shark catch was released, most alive. Conversely, bycatch rate for the deep-set longline fishery was only 2 percent for targeted and incidentally caught non-shark PMUS in 2017. Generally, most marketable species such as tuna and billfish have low discard rates. Although the fishery does not target striped marlin and other miscellaneous pelagic catch such as mahimahi, bluefin tuna, and wahoo, these species are highly marketable and have low rates of discard at less than 5 percent.

Table 12 in section 3.2.3.4 provides an estimate of bycatch species in the Hawaii shallow-set fishery. The shallow-set longline fishery released 12,008 fish in 2017. Sharks accounted for 91% of the shallow-set longline bycatch. Of all shark species combined, 99% of the shallow-set longline shark catch was released. Conversely, the bycatch rate for the shallow-set longline fishery was 9% for targeted and incidentally caught pelagic species in 2017. Since shallow-set longline trips are often longer than deep-set trips, the higher release rate by the shallow-set sector is to conserve space for swordfish and forego keeping other pelagic species due to their short shelf life.

3.2.4 Hawaii Troll and Handline Fishery

Trolling and, to lesser extent, handline fishing is the largest pelagic fishery in Hawaii in terms of participation, although it catches annually a relatively modest volume of fish compared to longline gear. Troll and handline catches are dominated by yellowfin tuna in Hawai`i. Other commonly caught troll catches include mahimahi, wahoo, and blue marlin. The number of days fished by MHI troll fishers has been dropping since a peak in 2012, with 1,394 fishers logging 20,742 days fished around the MHI in 2017. There were 484 MHI handline fishers that fished 4,526 days in 2017, both below their respective long-term averages (WPFMC 2018).

3.2.4.1 Catch and Revenue

In the years 2013-2017, U.S. tropical troll and handline fisheries caught between 139 and 541 t of bigeye tuna, compared to between 804 and 973 t of yellowfin tuna (NMFS 2018a). Total catch and revenue information for these fisheries are found in Table 13 and Table 14.

Table 13. Catch and revenue for the MHI troll fishery, 2008-2017.

Year	Catch (1,000 lbs)	Adjusted revenue ($1,000)	Nominal revenue ($1,000)	Honolulu CPI
2008	2,971	$6,324	$5,456	228.9
2009	2,958	$5,802	$5,030	230.0
2010	2,855	$6,110	$5,410	234.9
2011	2,966	$6,280	$5,766	243.6
2012	3,690	$9,138	$8,594	249.5
2013	3,117	$7,874	$7,350	253.9
2014	3,486	$8,837	$8,368	257.6
2015	3,094	$8,117	$7,763	260.2
2016	2,582	$7,750	$7,558	265.3
2017	2,146	$6,419	$6,419	272.0
Average	**2,986.5**	**$7,265.0**	**$6,771.4**	
SD	**429.8**	**$1,218.3**	**$1,314.9**	

Source: WPFMC 2018.

Table 14. Catch and revenue information for the MHI handline fishery, 2008-2017.

Year	Catch (1,000 lbs)	Adjusted revenue ($1,000)	Nominal revenue ($1,000)	Honolulu CPI
2008	701	$1,640	$1,415	228.9
2009	1,067	$2,019	$1,750	230.0
2010	933	$2,153	$1,906	234.9
2011	1,129	$2,322	$2,132	243.6
2012	1,602	$3,574	$3,361	249.5
2013	1,282	$3,606	$3,366	253.9
2014	1,161	$3,105	$2,940	257.6
2015	1,200	$3,028	$2,896	260.2
2016	785	$2,424	$2,364	265.3
2017	933	$2,835	$2,835	272.0
Average	**1,079.4**	**$2,670.5**	**$2,496.5**	
SD	**260.5**	**$664.3**	**$683.2**	

Source: WPFMC 2018.

3.2.5 Catches by U.S. Longline Vessels in the Pacific

The Hawaii deep-set longline fishery, and secondarily the American Samoa longline fishery, catch the majority of longline catches of PMUS in the Pacific. As described earlier, the CNMI and Guam longline fisheries are not active.

Table 15 shows the total U.S. catches of PMUS in the WCPO by Hawaii and U.S. territorial longline fisheries from 2015-2017. Table 16 provides a detailed breakdown of U.S. longline catches of bigeye tuna in the WCPO by U.S. longline fisheries based on data in Table 15.

Table 15. Longline landings (t) by species and species group for U.S. and U.S. participating territory longline vessels operating in the WCPFC statistical area, 2015-2017.

	U.S. in North Pacific Ocean			CNMI in North Pacific Ocean			Guam in North Pacific Ocean			American Samoa in North Pacific Ocean			American Samoa in South Pacific Ocean			Total		
	2017	**2016**	**2015**	**2017**	**2016**	**2015**	**2017**	**2016**	**2015**	**2017**	**2016**	**2015**	**2017**	**2016**	**2015**	**2017**	**2016**	**2015**
Vessels	136	133	135	119	117	117		118	112	118	23	22	15	20	21	150	151	156
Species																		
Albacore, North Pacific	74	208	197							16	34	19				90	243	217
Albacore, South Pacific			0										1,381	1,517	1,855	1,381	1,517	1,855
Bigeye tuna	2,968	3,747	3,427	997	879	999		932	856	1,330	586	441	64	72	116	5,358	6,216	5,840
Pacific bluefin tuna	0	0	0							0			1	0	6	2	1	6
Skipjack tuna	157	186	176							35	26	11	63	94	67	254	306	254
Yellowfin tuna	1,761	1,093	681							293	175	105	533	386	255	2,587	1,654	1,041
Other tuna		0	0								0						0	0
TOTAL TUNA	**4,960**	**5,234**	**4,482**	**997**	**879**	**999**		**932**	**856**	**1,674**	**821**	**577**	**2,042**	**2,069**	**2,299**	**9,673**	**9,936**	**9,214**
Black marlin	0	1	0							0		0	0			1	1	0
Blue marlin	485	419	445							84	57	55	38	30	25	606	506	525
Sailfish	9	15	11							2	2	2	1	2	2	12	19	15
Spearfish	206	251	188							26	28	15	2	2	1	234	281	204
Striped marlin, North Pacific	286	280	378							48	48	36				334	327	414
Striped marlin, South Pacific			0										2	2	3	2	2	3
Other marlins	1	1	1							0		0				1	1	1
Swordfish, North Pacific	924	596	665							49	43	24				973	639	690
Swordfish, South Pacific			0										6	6	8	6	6	8
TOTAL BILLFISH	**1,910**	**1,562**	**1,688**							**209**	**179**	**133**	**48**	**41**	**40**	**2,168**	**1,782**	**1,861**
Blue shark											0			1	1		1	1
Mako shark	30	37	35							5	9	4	0	0		35	46	39
Thresher	2	3	5							0	0	1	1	0		3	4	6
Other sharks	0	0											0	0		0	0	
Oceanic whitetip shark														0				
Silky shark	0															0		
Hammerhead shark		0															0	
Tiger shark																		
Porbeagle																		
TOTAL SHARKS	**32**	**40**	**40**							**6**	**10**	**5**	**1**	**1**	**1**	**39**	**51**	**45**
Mahimahi	147	202	199							22	28	21	14	4	6	183	234	226
Moonfish	258	304	279							61	74	55	1	2	2	321	380	336
Oilfish	93	160	165							21	29	20	0	2	0	115	191	185
Pomfret	261	339	380							38	46	39	0	0	0	299	386	419
Wahoo	218	309	256							35	47	27	48	47	58	301	403	340
Other fish	2	7	7							0	1	1	0	1	1	3	9	9

	U.S. in North Pacific Ocean			CNMI in North Pacific Ocean			Guam in North Pacific Ocean			American Samoa in North Pacific Ocean			American Samoa in South Pacific Ocean			Total		
	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015
TOTAL OTHER	**980**	**1,322**	**1,285**							**178**	**224**	**164**	**64**	**55**	**66**	**1,222**	**1,602**	**1,515**
GEAR TOTAL	**7,883**	**8,158**	**7,495**	**997**	**879**	**999**		**932**	**856**	**2,067**	**1,235**	**878**	**2,155**	**2,167**	**2,405**	**13,101**	**13,371**	**12,634**

Source: NMFS 2018a.

Table 16. Bigeye tuna catch (t) by U.S. Hawaii and U.S. Territorial longline fisheries in the WCPO (2015-2017).

Longline Fishery		**2017**	**2016**	**2015**	**Ave. 2017-2015**	**Ave. 2013-2016**
U.S. Hawaii longline permitted vessels	Catch Hawaii longline-permitted vessels applicable to the U.S. bigeye tuna catch limit	2,968	3,747	3,427	3,381	3,670
	Catch allocated to Hawaii longline-permitted vessels from a U.S. territory	1,807 (997 from the CNMI and 810 from American Samoa)	1,811 (879 from CNMI and 932 from Guam)	1,855 (999 from CNMI and 856 from Guam)	1,888	1,559
American Samoa longline permitted vessels	Catch by dual permitted U.S. Hawaii/American Samoa longline vessels on the high seas	520	586	441	452	422
	Catch by American Samoa longline permitted vessel in the EEZ around American Samoa	64	72	116	84	99
Total Catch in WCPO		5,358	6,216	5,840	5,805	5,750

Source: Table 15 above and NMFS unpublished data.

Table 17 and Table 18 show the total catches of bigeye tuna by gear type including contributions by the U.S. longline fishery as a percentage of the WCPO longline bigeye tuna catch (9.21 percent in 2017), the total EPO longline bigeye tuna catch (5.49 percent in 2016), the total WCPO bigeye tuna catch (4.22 percent in 2017), total EPO bigeye tuna catch (2.22 percent in 2016), and the total Pacific-wide bigeye tuna catch (3.47 percent in 2016), respectively.

Table 17: Bigeye tuna catch (t) by longline (LL), purse seine (PS), and other fisheries (OF) in the WCPO, EPO, and total combined contribution by U.S. longline (LL) vessels (Hawaii and US Territory including fishing agreements).

Year	WCPO							EPO						
	LL	PS	OF	Total	U.S. LL[1]	% LL	% Total	LL	PS	OF	Total	U.S. LL[2]	%LL	% Total
2007	76,661	50,124	11,871	138,656	5,599	7.30	4.04	29,876	63,450	44	94,260	417	1.40	0.44
2008	77,151	58,414	13,494	149,059	4,781	6.20	3.21	26,208	75,028	28	103,350	1,277	4.87	1.24
2009	76,107	58,543	13,016	147,666	3,990	5.24	2.70	31,422	76,799	15	109,255	730	2.32	0.67
2010	64,135	57,149	11,133	132,417	4,064	6.34	3.07	37,090	57,752	2	95,408	1,356	3.66	1.42
2011	69,820	74,051	10,927	154,798	4,829	6.92	3.12	32,317	56,512	0	89,460	1,050	3.25	1.17
2012	75,150	66,181	16,369	157,700	5,162	6.87	3.27	36,167	66,020	27	102,687	875	2.42	0.85
2013	55,574	73,323	16,815	145,712	4,534	8.16	3.11	36,204	49,487	99	86,063	2,043	5.64	2.37
2014	68,164	68,620	19,520	156,304	5,141	7.54	3.29	35,340	60,445	177	96,045	2,073	5.87	2.16
2015	65,571	51,018	20,274	136,863	5,840	8.91	4.27	41,644	62,913	21	104,755	3,050	7.32	2.91
2016	57,481	62,140	25,236	144,857	6,216	10.81	4.29	35,525	56,713	22	92,801	2,084	5.87	2.25
2017[3]	58,164	56,194	12,571	126,929	5,358	9.21	4.22	31,138	66,192	NA[4]	97,519	2,690	8.64	2.76

Sources: Table 89 from WCPFC 2017b for WCPO gear totals and Table A-2a from IATTC 2018 for EPO gear totals, unless otherwise noted.

[1]U.S. longline catches in the WCPO are from Tables 28-30 in WCPFC 2017b in years 2007-2011, NMFS 2017b in year 2012, and NMFS 2018a in years 2013-2017.

[2]U.S. longline catches in the EPO are from Table A-3e in IATTC 2018 in years 2007-2011, and WPFMC 2018 in 2012-2017.

[3]Total 2017 catches by LL, PS and OF in the WCPO are from Williams and Reid 2018 and are provisional.

[4]Not available.

Calculations: NMFS

Note: There is no catch of bigeye tuna in the EPO by U.S. territory longline vessels.

Table 18. Bigeye tuna catch (t) in the WCPO, EPO, and total combined contribution by U.S. longline (LL) vessels (Hawaii and US Territory including fishing agreements).

Year	WCPO	EPO	Total	U.S. LL Total[1]	% Total
2007	138,656	94,260	232,916	6,016	2.58
2008	149,059	103,350	252,409	6,058	2.40
2009	147,666	109,255	256,921	4,720	1.84
2010	132,417	95,408	227,825	5,420	2.38
2011	154,798	89,460	244,258	5,879	2.41
2012	157,700	102,687	260,387	6,037	2.32
2013	145,712	86,063	231,775	6,577	2.84
2014	152,186	96,045	252,349	7,214	2.86
2015	128,180	104,755	241,618	8,890	3.68
2016	156,806	92,801	237,658	8,300	3.49
2017[2]	126,929	97,519	224,448	8,048	3.59

Sources: Table 89 from WCPFC 2017b for WCPO total, Table A-2a from IATTC 2018 for EPO total, others noted.
[1]Total U.S. longline catch is the sum of U.S. longline catches in the WCPO and EPO. U.S. longline catches in the WCPO are from Tables 28-30 in WCPFC 2017b in years 2007-2011, NMFS 2017b in year 2012, and NMFS 2018a in years 2013-2017. U.S. longline catches in the EPO are from Table A-3e in IATTC 2018 in years 2007-2012 and WPFMC 2018 in 2013-2017.
[2] Total 2017 catch in the WCPO is from Williams and Reid 2018 and is provisional.
Calculations: NMFS
Note: There is no catch of bigeye tuna in the EPO by U.S. territory longline vessels.

3.2.6 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 reaching a

low of 13 vessels in 2006. From 2011 - 2017, participation 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 numbered at 34 vessels in 2017 (NMFS 2018a).

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 19).

Table 19. Number of vessels and tuna catch (t) by the U.S. purse seine fleet, 2013-2017.

Year	Vessels *	Skipjack		Yellowfin		Bigeye		Total tuna Catch (t)
		US reported Catch	SPC estimated catch	US reported Catch	SPC estimated catch	US reported Catch	SPC estimated catch	
2013	40	226,609	207,136	23,277	34,322	8,157	12,812	258,044* (254,271)+
2014	40	269,243	262,163	40,959	40,666	2,802	10,177	313,004* (313,005)+
2015	39	219,550	207,697	17,019	24,973	1,595	5,408	238,164* (238,077)+
2016	37	178,284	169,455	18,162	24,249	4,711	7,448	201,472* (201,152)+
2017	34	138,744	132,548	23,144	26,147	3,247	6,441	165,601* (165,136)+

Sources: SPC 2018 and NMFS 2018a.
Note: Estimates are based on aggregate data and raised logbook data with species composition adjusted using observer sampling with grab sample bias correction, which accounts for differences in the annual catch estimates provided by the U.S. (SPC 2018).
*US reported vessel numbers or purse seine catch.
+SPC estimated total US purse seine tuna catch.

3.2.7 Fishing Communities

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

communities to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic effects to such communities.

In 1999, the Council identified American Samoa, Guam, and the CNMI each as a fishing community. The Secretary of Commerce approved this definition on April 19, 1999 (64 FR 19067). In 2002, the Council identified each island -- Kauai, Niihau, Oahu, Maui, Molokai, Lanai, and Hawaii -- as a fishing community. The Secretary of Commerce subsequently approved these definitions on August 5, 2003 (68 FR 46112).

3.2.7.1 American Samoa Cultural Fishing Practices

A federal judge recently set aside a NMFS rulemaking that provided an exemption for longliners to fish within certain areas of the Large Vessel Prohibited Area. In her decision, the Court found that NMFS failed to consider its obligations under the Deeds of Cession of Chiefs of Tutuila to the United States Government (1900) and the Deeds of Cession of Manua'a Islands (1904) (collectively, the Instruments) codified at 48 U.S.C. § 1661.[5] In so holding, the Court determined that the Instruments of Cession constitute binding "other applicable law" for purposes of the Magnuson-Stevens Act, and that NMFS improperly failed to consider whether the LVPA rule protected and preserved American Samoan cultural fishing practices.

NMFS, however, disagrees that the Instruments - which make no mention of fishing rights or fishing practices in marine areas that were at the time part of the high seas - are binding applicable law. NMFS has appealed this decision to the Ninth Circuit Court of Appeals.

"Cultural fishing" is a relatively new term and is not readily defined (Kleiber and Leong 2017). It is widely held that cultures and societies change and evolve but also maintain central core values. As with other studies of culture, "cultural fishing" is context dependent – definitions from other areas may not be suitable for American Samoa. American Samoa culture is often framed in terms of Fa'a Samoa, or the "Samoan Way" which govern local social norms and practices. This includes core values and practices such as Tautua or "service" which involves the broad collective sharing of labor, resources, income, and social and political support to strengthen the Aiga (family groups), the village, and the role of chiefs in perpetuating Fa'a Samoa. In a fisheries context this may mean the distribution of catch within the Aiga, or the use of fish as specific ceremonial events. Cultural fishing also encompasses the day-to-day practices of subsistence. These values and practices endure in the face of significant technological change.

The Council has solicited comments from the American Samoan Government and from the American Samoan public on the meaning of cultural fishing during development of a revised LVPA action. The Pacific Islands Fisheries Science Center also conducted social science research and interviews in American Samoa on the meaning of cultural fishing. Some general themes that emerged from these public comments and research include: a) importance the catch being shared with the community in the form of Tautua in perpetuation of Fa'a Samoa, b)

[5] Order Granting in Part and Denying in Part Plaintiff's Motion for Summary Judgment and Denying Defendants' Counter-Motion for Summary Judgment at 39, *Territory of American Samoa v. National Marine Fisheries Service, et al.*., No. 1:16-cv-00095-LEK-KJM, (D. Haw. Mar. 20, 2017), ECF No. 45 [hereinafter, "Order"].

motivation for cultural fishing being linked to community service rather than profits, c) cultural fishing includes commercial fishing in order to pay for expenses associated with fishing, d), the offshore banks are important for alia vessels and other small vessels trolling and bottomfishing, e) fishing gear does not have to be limited to traditional methods and can modern gear including longline fishing, and f) not just indigenous Samoans engage in cultural fishing.

3.3 Protected Species

Longline and other pelagic fishing vessels operating in the western Pacific and targeting pelagic species have the potential to interact with a range of protected species (such as marine mammals, sea turtles, and seabirds). Table 20 lists the species listed as endangered or threatened under the Endangered Species Act (ESA) that have the potential to interact with longline fisheries managed under the Pelagic FEP. This section provides the recent annual estimated or observed interactions of the longline fisheries with protected species, and a summary of the effects of the standard operation of the longline fisheries permitted under the Pelagic FEP with a comparison to incidental take statements (ITS) where relevant. We consider recent interaction rates, based on recent effort levels, to be the baseline condition for comparison of environmental effects of the alternatives in Section 4.

Species Protected under the Endangered Species Act (ESA)

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 Service's biological opinion (BiOp). Federal agencies need not engage in formal consultation 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[6] of listed species except under limited circumstances. Western Pacific fisheries authorized under the Pelagic FEP operate in accordance with ITS set by ESA consultations, including applicable terms and conditions. The consultations consider the potential interactions of fisheries with listed species, the effects of interactions on the survival and recovery of listed species, and the protection of designated critical habitat.

[6] The definition of "take" includes to harass, harm, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. 50 CFR 402.02.

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

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.

Table 20. ESA-listed species with the potential to interact with longline vessels permitted under the Pelagic FEP

Species	**ESA status**
Sea Turtles	
Central North Pacific green turtle distinct population segment (DPS) (*Chelonia mydas*)	Threatened
East Pacific green turtle DPS (*Chelonia mydas*)	Threatened
Central South Pacific green turtle DPS (*Chelonia mydas*)	Endangered
Central West Pacific green turtle DPS (*Chelonia mydas*)	Endangered
East Indian-West Pacific green turtle DPS (*Chelonia mydas*)	Threatened
Southwest Pacific green turtle DPS (*Chelonia mydas*)	Threatened
Hawksbill turtle (*Eretmochelys imbricata*)	Endangered
Leatherback turtle (*Dermochelys coriacea*)	Endangered
North Pacific loggerhead turtle DPS (*Caretta caretta*)	Endangered
South Pacific loggerhead turtle DPS (*Caretta caretta*)	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 (*Neomonachus schauinslandi*)	Endangered
Main Hawaiian Islands insular false killer whale DPS (*Pseudorca crassidens*)	Endangered
North Pacific right whale (*Eubalaena japonica*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Guadalupe fur seal (*Arctocephalus townsendi*)	Threatened
Seabirds	
Hawaiian dark-rumped petrel (*Pterodroma phaeopygia sandwichensis*)	Endangered
Newell's shearwater (*Puffinus auricularis newelli*)	Threatened

Species	ESA status
Short-tailed albatross (*Phoebastria albatrus*)	Endangered
Sharks and Rays	
Scalloped hammerhead Indo-West Pacific DPS	Threatened
Scalloped hammerhead Eastern Pacific DPS	Endangered
Oceanic white tip (*Carcharhinus longimanus*)	Threatened
Giant manta ray (*Manta birostris*)	Threatened
Corals	
Acropora globiceps	Threatened
Acropora jacquelineae	Threatened
Acropora retusa	Threatened
Acropora rudis	Threatened
Acropora speciosa	Threatened
Euphyllia paradivisa	Threatened
Isopora crateriformis	Threatened
Seriatopora aculeata	Threatened

Source: http://www.nmfs.noaa.gov/pr/species/esa/listed.htm, accessed April 13, 2018.

The following list identifies the valid BiOps under which western Pacific longline fisheries currently operate. This section summarizes much of the information contained in these documents to describe baseline conditions. For further information, refer to the following documents on the NMFS website (http://www.fpir.noaa.gov/DIR/dir_public_documents.html) or by contacting NMFS using the contact information at the beginning of the document.

NMFS. 2001. Biological Opinion on Authorization of Pelagic Fisheries under the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region. This BiOp covers longline fisheries in Guam and the CNMI.

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.[7]

[7] On May 4, 2018, the portion of the 2012 BiOp pertaining to loggerhead turtles was vacated and remanded to NMFS under a stipulated settlement agreement and court order. *See Turtle Island Restoration Network et al.* v. *U.S. Dep't of Commerce*, et al.., No. 1:12-cv-00594-SOM-RLP (D. Haw., May 4, 2018), Dkt. No. 80.

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.

NMFS. 2014, Biological Opinion on Continued Operation of the Hawaii-based Deep-set Pelagic Longline Fishery.

NMFS 2015, Biological Opinion and Conference Opinion on Continued Operation of the American Samoa Longline Fishery.

NMFS. 2017, Supplement to the 2014 Biological Opinion on Continued Operation of the Hawaii-based Deep-set Pelagic Longline Fishery.

Analyses in the BiOps are comprised of several steps, designed to determine the effects of the fisheries on protected species. First, NMFS or USFWS identifies the probable risks the action poses to listed individuals that are likely exposed to an action's direct and indirect effects. The total annual number of interactions expected in the fishery, or an interaction rate, represents the probable risks. For some species, collisions with fishing vessels represent another potential stressor associated with the proposed action. NMFS or USFWS then integrates the individual risks to identify consequences to the populations those individuals represent, using methods appropriate to the populations under study. Finally, NMFS or USFWS determines the consequences of those population-level risks to the species those populations comprise.

Consultation for the Hawaii deep-set fishery was reinitiated on October 4, 2018, due to reaching several reinitiation triggers. The fishery exceeded the ITS for east Pacific green sea turtle DPS in mid-2018. Listing of the oceanic whitetip shark (83 FR 4153) and giant manta ray (83 FR 2916) as threatened species, and designation of main Hawaiian Islands insular false killer whale critical habitat (83 FR 35062) also triggered the requirement for reinitiated consultation.

Consultation for the Hawaii shallow-set longline fishery was reinitiated on April 20, 2018, due to reaching several reinitiation triggers. The fishery interacted with ESA-listed Guadalupe fur seals in 2016 and 2017, a species previously unknown to interact with the fishery, and exceeded the olive ridley sea turtle ITS in early 2018. NMFS's revision of the green turtle listing under distinct population segments (DPSs; 81 FR 20058), listing of the oceanic whitetip shark (83 FR 4153) and giant manta ray (83 FR 2916) as threatened species, and designation of main Hawaiian Islands insular false killer whale critical habitat (83 FR 35062) after the request for re-initiation also triggered the requirement for reinitiated consultation. Finally, on May 4, 2018, the portion of the 2012 BiOp pertaining to loggerhead turtles was vacated and remanded to NMFS under a stipulated settlement agreement and court order.

NMFS intends to promptly reinitiate consultation on the American Samoa longline fishery, due to the listing of the oceanic whitetip shark (83 FR 4153) and giant manta ray (83 FR 2916) as threatened species.

Species Protected under the Marine Mammal Protection Act (MMPA)

The 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 authorizes the Secretary of Commerce to protect

and conserve 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).

According to the 2018 List of Fisheries (83 FR 5349, February 7, 2018), the Hawaii deep-set longline fishery is a Category I fishery, and the Hawaii shallow-set longline fishery and American Samoa longline fishery are Category II fisheries. 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 take incidentally, 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.

Section 101(a)(5)(E) of the MMPA requires the Secretary of Commerce to allow the incidental, but not intentional, taking of individuals from marine mammal stocks that are designated as depleted because of a listing as threatened or endangered under the ESA in the course of commercial fishing operations if it is determined that three criteria are met:

1. Incidental mortality and serious injury will have a negligible impact on the affected species or stock;

2. A recovery plan has been developed or is being developed; and

3. Where required under Section 118 of the MMPA, a monitoring program has been established, vessels engaged in such fisheries are registered in accordance with Section 118 of the MMPA, and a take reduction plan has been developed or is being developed for such species or stock.

On October 16, 2014, NMFS authorized a permit under the MMPA section 101(a)(5)(E), addressing the shallow-set and deep-set fisheries' interactions with ESA-listed species or depleted stocks of marine mammals (79 FR 62106). The permit authorizes the incidental, but not intentional, taking of ESA-listed humpback whales (CNP stock), sperm whales (Hawaii stock), and MHI insular false killer whales to vessels registered in the Hawaii deep-set and shallow-set fisheries. In issuing this permit, NMFS determined that incidental taking by the Hawaii longline fisheries will have a negligible impact on the affected stocks of marine mammals. Since the issuance of this permit, the CNP humpback whale was designated a DPS and is not a listed species under the ESA (81 FR 62259, September 8, 2016).

Monitoring

NMFS monitors fishery interactions with protected species using at-sea observers, among other means. The NMFS Observer Program monitors interactions on 100 percent of shallow-set fishing trips and on approximately 20 percent of all Hawaii and American Samoa deep-set longline trips, although past coverage in the American Samoa was lower due to federal funding constraints. PIFSC generates fleet-wide estimates of interactions for the deep-set longline fisheries using methods described in McCracken (2009, 2010, 2011, 2012, 2013, 2014a, 2014b, 2014c, 2015a, 2016, 2017a, 2017b, 2017c, 2017d), when available. When these data are not available, NMFS estimates fleet-wide interactions by expanding observed takes using an expansion factor based on the observer coverage rate. For example, because the Hawaii deep-set longline fishery was observed at a 20.4 percent coverage rate in 2017, NMFS multiplied each observed interaction by 4.9 to estimate interactions at a 100 percent coverage rate.

3.3.1 Sea Turtles

All Pacific sea turtles are listed under the ESA as either threatened or endangered except for the flatback turtle (*Natator depressus*). This species is native to Australia and does not occur in the action area, and thus is not addressed in this document. The species which occur in the area of operation of the Pelagic FEP longline fleets can be found in Table 20. 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 status reviews, 5-year reviews, and recovery plans for each species on the NMFS species pages found at the following website: http://www.fpir.noaa.gov/PRD/prd_esa_section_4.html.

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 and American Samoa longline fisheries through hooking and entanglement. Other pelagic fisheries impacts are primarily limited to the potential for collisions with sea turtles.

The Council and NMFS manage the longline fisheries permitted under the Pelagic FEP through several measures that mitigate the potential for turtle interactions and injury if interactions occur. These measures include training and handling requirements for reducing the severity of interactions, the requirement to carry an observer on a fishing trip if requested, and a requirement for owners and operators of longline vessels to attend a protected species education workshop annually. Additionally, federal regulations require closure of the Hawaii shallow-set fishery once the fishery reaches loggerhead or leatherback hard cap limits and require the use of large circle hooks and mackerel-type fish bait when shallow-setting north of the Equator. Vessels in the American Samoa longline fleet that are longer than 40 m also have specific requirements for gear configuration which result in setting gear at a minimum depth of about 100 m.

After considering a range of potential effects to sea turtles, NMFS, in the 2001, 2010, 2012[8], 2014 as supplemented (2017), and 2015 BiOps listed above, determined that the pelagic fisheries of the western Pacific operating in accordance with the Pelagic FEP and implementing regulations, would not jeopardize the survival or recovery of any listed sea turtles. Within each BiOp, NMFS has authorized a certain level of interactions (incidental take) of species which the fishery may adversely affect through ITS for these fisheries.

3.3.1.1 Hawaii Deep-set Longline Fishery

Table 21 summarizes the fleet-wide sea turtle interaction estimates for the Hawaii deep-set longline fishery from 2008 through June of 2018.

Table 21. Annual sea turtles interactions expanded from observed data to fleet-wide estimates for the Hawaii deep-set longline fishery, 2008-2018.

Year	Sea Turtle Species				
	Green	Leatherback	N. Pacific Loggerhead	Olive Ridley	Unidentified hardshell
2008	0	11	0	18	0
2009	0	4	0	18	0
2010	1	6	6	10	0
2011	5	14	0	36	0
2012	0	6	0	34	0
2013	5	15	11	42	0
2014	16	38	0	50	0
2015	4	18	9	69	0
2016	5	15	7	162	5
2017	15	0	15	127	0
2018	10	11	0	28	0

Source: WPFMC 2018 and NMFS and WPFMC 2018a.

[8] On May 4, 2018, the portion of the 2012 BiOp on the operation of the shallow-set longline fishery pertaining to loggerhead turtles was vacated and remanded to NMFS under a stipulated settlement agreement and court order.

Note: 2017 estimates expanded by multiplying observed interactions by 4.9 as there was 20.4% observer coverage levels in 2017. Fractional estimates are rounded up to nearest whole number. 2018 estimates are calculated by quarter under 17.9% coverage in Quarter 1 and 22.0% coverage in Quarter 2.

On September 19, 2014, NMFS issued a no-jeopardy BiOp (2014 BiOp) for the deep-set longline fishery, which authorizes over a three-year period, the incidental take of green, leatherback, North Pacific loggerhead, and olive ridley sea turtles (NMFS 2014). ITS for green, loggerhead and olive ridley turtles were subsequently exceeded, and NMFS issued a no-jeopardy supplemental BiOp (2017 BiOp) on March 24, 2017, authorizing the incidental take of these species or DPS over a three-year period. NMFS in its 2014 BiOp as supplemented (2017) concluded that the Hawaii deep-set longline fishery as managed under the Pelagic FEP is not likely to jeopardize the continued existence or recovery of any sea turtle species.

The ITS from the 2014 BiOps as supplemented (2017) are shown in Table 22. There are two thresholds for incidental take in the fishery: the estimated number of interactions and the number of interactions that result in mortality over a three-year period. The ITS calculated in the 2014 BiOp were based on observed interaction data from 2008 through June 30, 2014 (end of 2nd quarter 2014). The ITS calculated in the supplement (2017) were based on observed interaction data from 2008 through June 30, 2016 (end of 2nd quarter 2016).

Table 22. The numbers of sea turtles estimated to be captured and/or killed in the Hawaii deep-set longline fishery over three consecutive years (3-year ITS) in the 2014 BiOp as supplemented (2017) for each DPS where applicable.

Sea turtle species	**3-year ITS in 2014 BiOp**		**3-year ITS in supplement**	
	Interactions	**Mortalities**	**Interactions**	**Mortalities**
Green	9	9	NA	NA
East Pacific DPS	NA	NA	12	12
Central North Pacific DPS	NA	NA	6	6
East Indian-West Pacific DPS	NA	NA	6	6
Southwest Pacific DPS	NA	NA	6	6
Central West Pacific DPS	NA	NA	3	3
Central South Pacific DPS	NA	NA	3	3
Leatherback	72	27	NA	NA
Loggerhead, North Pacific DPS	9	9	18	18
Olive Ridley	99	96	NA	NA
Mexico and eastern Pacific populations	NA	NA	141	134
Western Pacific population	NA	NA	42	40

Sources: NMFS 2014a and NMFS 2017a.

Based on NMFS observer data for the Hawaii deep-set longline fishery for the most recent quarters since the 2014 BiOp data cutoff of June 30, 2014, the fishery has not exceeded the ITS for leatherback turtles.

The new ITS for green turtle DPS's, olive ridley turtle populations and North Pacific DPS of loggerhead turtles in the supplement (2017) to the 2014 BiOp has a monitoring period starting in

July 1, 2016. From July 2017 through July 2018, the NMFS Observer Program reported seven fishery interactions with green sea turtles. These interactions, when expanded to the unobserved fishery and applying a genetic proration of 0.70 percent for the East Pacific DPS, exceeds the ITS of 12 interactions for the East Pacific DPS. NMFS reinitiated ESA Section 7 consultation for the Hawaii deep-set longline fishery on October 4, 2018 (NMFS and WPFMC 2018a).

In the October 4, 2018, request for reinitiation of ESA Section 7 consultation on the operation of the Hawaii deep-set longline fishery, NMFS found that the continued operation of the deep-set longline fleet is likely to adversely affect the east Pacific, central North Pacific, east Indian-west Pacific, southwest Pacific, central west Pacific, and central South Pacific DPS of the green turtle, western Pacific population of the leatherback, North Pacific loggerhead DPS, and eastern and western Pacific populations of olive ridley sea turtles.

NMFS estimated the Hawaii deep-set longline fishery could interact with up to 40 green, 43 leatherback, 28 loggerhead, and 179 olive ridley sea turtles annually (NMFS and WPFMC 2018a). These predictions, generated by PIFSC using Bayesian data analysis methods appropriate for count data (Marti McCracken, in prep), used observed interactions in the fishery from 2002-2017. The unidentified hardshell interactions in 2016 (Table 21) are accounted for proportionately amongst the green, loggerhead, and olive ridley 2016 interaction estimates. We considered the number of green sea turtles likely to die from boat collisions and found the number of mortalities to be effectively zero (0.09) and therefore discountable (NMFS and WPFMC 2018a).

Using post-hooking mortality criteria described in Ryder et al. (2006), NMFS estimated that 91.6 percent of all green turtle, 40.7 percent of leatherback, 62.4 percent of loggerhead, and 93.9 percent of olive ridley interactions would result in mortality (NMFS and WPRFMC 2018a). NMFS applied these post-hooking mortality rates to the interaction estimates to yield the annual number of mortalities expected to occur for each affected sea turtle population from the continued operation of the deep-set longline fleet (Table 23Table 23).

NMFS used methodologies appropriate for the available data to estimate interactions or mortalities for relevant populations of the sea turtle species. In order to estimate the interactions for each of the six green sea turtle DPS, NMFS allocated a portion of the expected take to each DPS in the same proportion present in historical observer samples attributed to each DPS. NMFS used the upper 95% confidence interval for each proportion to account for a small sample size of 14 turtles (NMFS and WPRFMC 2018a). The proportion attributed to each DPS was rounded up to the nearest whole number to calculate the anticipated interactions for each green sea turtle DPS. The expected take is 32 in the east Pacific, 18 in the central North Pacific, 12 in the east Indian-west Pacific, 10 each in the southwest Pacific and central South Pacific, and 8 in the central west Pacific DPS (NMFS and WPFMC 2018a).

NMFS expects almost all (95 percent) leatherback turtles directly affected by this action to belong to the western Pacific population with the remaining 5 percent attributed to the eastern Pacific population, based on genetic samples from 21 leatherbacks (NMFS and WPFMC 2018a). The North Pacific DPS is the only loggerhead DPS which has the potential to interact with the deep-set longline fishery (NMFS and WPFMC 2018a), so NMFS attributes all interactions and mortalities to this DPS.

For olive ridley sea turtles, NMFS estimated from genetic samples that 73 percent of the take occurs from the eastern Pacific DPS and 27 percent from the Western Pacific. NMFS used these proportions to attribute mortalities to the eastern and western Pacific DPSs. NMFS used the ratio from a sample size of 153 olive ridley turtles, which was substantially larger than the green turtle sample size. NMFS did not adjust the olive ridley DPS mortality estimates based on the upper 95% confidence interval. Table 23 shows interaction and mortality estimates for sea turtles.

In order to analyze the effect of sea turtle interactions at the population level, the BE compared the number of turtles that are predicted to die from the operation of the deep-set longline fleet that would have otherwise be expected to reach breeding age (adult nesting equivalency or ANE) to the total number of breeding females in each population. Counts of adult females on nesting beaches are the only abundance data available for sea turtles. In order to calculate the ANE, three adjustment factors are required: 1) adult equivalence of juveniles (probability of juveniles naturally surviving to become adults), 2) ratio of females in the population (female to male sex ratio), and 3) probability that a turtle will die if it interacts with the fishery. Risk to the population is also expressed in the number of years it takes to kill the equivalent of one adult female in each DPS. Where breeding female abundance is not available for a population, DPS or nesting population, NMFS determines the population effects based on the frequency of expected adult nester mortality.

Table 23 also shows the ANE, number of breeding females, proportion of nesting population where available, and years to kill the equivalent of one female in each turtle species, population, breeding population, or DPS. For more details on the process and rationale used to develop population level impacts, please see the 2014 BiOp as supplemented (2017) (NMFS 2014a, NMFS 2017a) and biological evaluation prepared for the reinitiation (NMFS and WPRFMC 2018a).

NMFS estimates that the fishery may kill between 0.001 percent (east Indian-west Pacific, southwest Pacific, and central west Pacific green turtle DPS) to 0.1 percent (western Pacific leatherback) of the population every year, with population impacts for the remaining nine sea turtle DPS falling in between. For context, a change in the population of 0.1% represents a change in the population growth rate (r) equivalent to 0.001; $r = 0.03$ is a typical growth rate for an increasing population. NMFS does not expect the fishery to cause more than a single adult female mortality ranging between every half year (for the north Pacific loggerhead DPS) to every 11 years (for the central west Pacific DPS) for green and loggerhead species. When considered at the population level for leatherbacks, NMFS does not expect adult female mortalities to occur greater than between once every four months and 4.5 years. No more than 13 (western Pacific DPS) and 35.7 (eastern Pacific DPS) olive ridley adult females are expected to die as a result of the fishery every year, and the proportion of nester abundance remains low. The information indicates that for each sea turtle species, adult female mortalities associated with the estimated annual level of interactions do not substantially affect the population growth rate.

Under the 2014 BiOp as supplemented (2017), the overall population for each sea turtle species was expected to remain large enough to maintain genetic heterogeneity, broad demographic representation, and successful reproduction, and to retain the potential for recovery. This conclusion remains valid for the impacts of the Hawaii deep-set longline fleet on all species and DPS of sea turtles. On October 4, 2018, NMFS determined that the conduct of the fishery during

the period of consultation will not violate ESA Sections 7(a)(2) and 7(d), documented in a memo to the record dated October 4, 2018. Based on the information in the updated BE analysis, NMFS expects the effect of the action on all sea turtle species to be insubstantial.

Table 23. Sea turtle interactions, mortalities, and population level impacts in the Hawaii deep-set longline fleet.

DPS	Annual Interactions	Annual Mortalities	ANE	Nester abundance	Proportion of nesting population	Years to adult female mortality
Green	40	37				
East Pacific DPS	32	NA	0.4	20,112	0.00002	2.5
Central North Pacific DPS	18	NA	0.2	3,846	0.00005	5
East Indian-West Pacific DPS	12	NA	0.14	77,009	0.00001	7.14
Southwest Pacific DPS	10	NA	0.11	83,058	0.00001	9.09
Central West Pacific DPS	8	NA	0.09	6,518	0.00001	11.11
Central South Pacific DPS	10	NA	0.11	2,677	0.00004	9.09
Leatherback						
Western Pacific	41	17	3.04	2,750	0.00111	0.33
Eastern Pacific	3	1	0.22	1,000	NA	4.55
North Pacific Loggerhead DPS	28	18	1.77	8,632	0.00019	0.56
Olive Ridley						
Eastern Pacific DPS	132	124	35.7	1,000,000	0.00004	0.03
Western Pacific DPS	48	45	13.0	205,000	0.00006	0.08

Source: NMFS and WPRFMC 2018a

3.3.1.2 Hawaii Shallow-set Longline Fishery

Table 24 summarizes the fleet-wide estimates for the Hawaii shallow-set longline fishery from 2004 to May 2018.

Table 24. Annual number of observed sets (based on begin set date) and observed interactions (based on interaction date) of loggerhead, leatherback, green and olive ridley turtles in the Hawaii shallow-set longline fishery, 2004-2018.

Year	Annual number of observed sets	Observed Interactions (100% Coverage)			
		Loggerhead	Leatherback	Green	Olive ridley
2004	135	1	1	0	0
2005	1645	12	8	0	0
2006	850	17[a]	2	0	0
2007	1570	15	5	0	1
2008	1605	0	2	1	2
2009	1761	3	9	1	0
2010	1875	7	8	0	0
2011	1463	12	16[b]	4	0
2012	1369	5	7	0	0
2013	961	5	11	0	0
2014	1337	15	16	1	1
2015	1156	13	5	0	1
2016	727	15	5	0	0
2017	973	21	4	2	4
2018[c]	TBA	33	6	1	1
Average (2005-2018)[d]	1,330	12.4	7.5	0.7	0.7

[a] Fishery closed on March 20, 2006, as a result of reaching the loggerhead hard cap of 17.
[b] Fishery closed on November 18, 2011 as a result of reaching the leatherback hard cap of 16.
[c] Fishery closed on May 8, 2018, pursuant to the stipulated settlement agreement and court order.
[d] 2004 data omitted from calculation of the long-term average due the fishery reopening after the peak fishing season.
Source: NMFS unpublished data

On March 31, 2012, NMFS issued a BiOp concluding that the Hawaii shallow-set longline fishery as managed under the Pelagic FEP is not likely to jeopardize the continued existence or recovery of any sea turtle species (NMFS 2012). Table 25 shows the ITS from the 2012 BiOp. The 1-year ITS for loggerhead and leatherback turtles are used as a hard cap for interactions in any given year, and NMFS closes the fishery when reached. The 2-year ITS are used for purposes of reinitiating ESA Section 7 consultation if fishery interactions reach these numbers in any given two-year time period.

Table 25. 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.

Sea turtle species	1-year	2-year

	Interactions	Mortalities	Interactions	Mortalities
N. Pacific loggerhead [a]	34	7	68	14
Leatherback	26	6	52	12
Olive ridley	2	1	4	2
Green	3	1	6	2

[a] The portion of the 2012 BiOp pertaining to loggerhead turtles was vacated and remanded to NMFS under a stipulated settlement agreement and court order on May 4, 2018.
Source: NMFS 2012.

Based on observer data over the monitoring period beginning in Quarter 1 of 2012, take of leatherback and green sea turtles has remained below the ITS for the shallow-set longline fishery.

On December 27, 2017, a Ninth Circuit panel issued a split 2-1 opinion finding that NMFS's 2012 BiOp's no-jeopardy determination and associated incidental take statement for the loggerhead turtle to be arbitrary and capricious. *Turtle Island Restoration Network, et al.* v. *U.S. Dept. of Commerce, et al..*, 878 F.3d 725, 740 (9th Cir. 2017). On May 4, 2018, the District Court approved a settlement vacating and remanding those portions of the 2012 biological opinion and ITS relating to North Pacific loggerheads, and the shallow-set fishery was closed through December 31, 2018 (see *Turtle Island Restoration Network et al.* v. *U.S. Dep't of Commerce,* et al.., No. 1:12-cv-00594-SOM-RLP [D. Haw., May 4, 2018], Dkt. No. 80). The shallow-set fishery will reopen on January 1, 2019, under an annual hard cap limit of 17 loggerheads (83 FR 49495), consistent with the ITS from the 2004 BiOp, unless or until superseded by a new BiOp and hard cap limit issued by NMFS. All remaining provisions of the 2012 BiOp remain in full force and effect.

The fishery exceeded the olive ridley ITS in early 2018. Additionally, described above, the loggerhead portion of the 2012 BiOp was vacated on May 4, 2018. ESA Section 7 consultation for the Hawaii shallow-set longline fishery was reinitiated on April 20, 2018.

In our request for reinitiation of ESA Section 7 consultation on the operation of the shallow-set longline fishery, NMFS found that the continued operation of the Hawaii shallow-set longline fleet is likely to adversely affect the central north Pacific DPS and east Pacific DPS of the green, western Pacific population of the leatherback, North Pacific loggerhead DPS, and eastern and western Pacific populations of olive ridley sea turtles. NMFS estimated the shallow-set fishery could interact with up to five green, 21 leatherback, 37 loggerhead, and five olive ridley sea turtles annually (NMFS and WPFMC 2018b). These predictions, generated by PIFSC using Bayesian data analysis methods appropriate for count data (Marti McCracken, in prep), used observed interactions in the fishery from January 1, 2005 through December 31, 2017. For North Pacific loggerhead sea turtles, the predictions are based on observed interactions from January 1, 2005 through January 31, 2018, to account for loggerhead interactions observed in the first month of 2018.

The population-level effects of the anticipated level of sea turtle interactions in the Hawaii shallow-set longline fishery is quantified in the BE as the number of adult females removed from the populations (ANE), using the same methods as NMFS used for the deep-set fishery. The resulting ANEs and proportion of nesting population are summarized in Table 26.

Table 26. Population level effect metrics for ESA-listed sea turtle populations over a 1-year period.

Species	Total Anticipated Annual Interactions	Annual Mortalities	ANE	Estimated Total Nesters	Proportion of Nesting Population	Years to adult female mortality*
Loggerhead turtle (North Pacific DPS)	37	6	0.676	8,632	0.000049	1.48
Leatherback turtle	21	5	1.502	2,750	0.00052	0.67
Olive ridley turtle (eastern Pacific population)	4	1	0.118	>1 million (annual)	< 0.000001	8.47
Olive ridley turtle (western Pacific population)	2	1	0.06	205,000	< 0.000001	16.67
Green turtle (eastern Pacific DPS)	3	1	0.006	20,062	< 0.000001	166.67
Green turtle (central North Pacific DPS)	3	1	0.006	3,846	0.000002	166.67

Source: NMFS and WPFMC 2018b unless otherwise noted.
*Calculated by the authors.

NMFS estimates that the fishery would kill between less than 0.0001 percent (for the eastern Pacific green DPS and eastern and western Pacific populations of the olive ridley) to 0.0052 percent (leatherback) of the population every year, with population impacts for North Pacific loggerhead and central North Pacific green DPS falling in between. For context, a change in the population of 0.1% represents a change in the population growth rate (r) equivalent to 0.001; r = 0.03 is a typical growth rate for an increasing population.

NMFS expects the fishery to cause a single adult female mortality ranging between every 0.67 (for leatherback) to every 166.67 years (for the eastern Pacific and central North Pacific green DPS) for green, leatherback and loggerhead species. The information indicates that for each sea turtle species, adult female mortalities associated with the estimated annual level of interactions do not substantially affect the population growth rate.

3.3.1.3 American Samoa Longline Fishery

Table 27 summarizes the fleet-wide sea turtle interaction estimates for the American Samoa longline fishery from 2006 through 2017.

Table 27. Annual sea turtle interactions expanded from observer data to fleet-wide estimates for the American Samoa Longline Fishery, from 2006-2017.

	Sea Turtle Species			
Year	**Green**	**Leatherback**	**Olive Ridley**	**Hawksbill**
2006	37	0	0	0
2007	14	0	0	0
2008	16	0	0	0
2009	39	0	0	0
2010	50	0	0	0
2011	32	4	4	0
2012	0	6	6	0
2013	19	13	4	0
2014	17	4	5	0
2015	0	22	6	0
2016	21	5	15	5
2017	20	5	10	0

Source: WPFMC 2018

Note: 2017 estimates expanded by multiplying observed interactions by 5 as there was 20% observer coverage levels in 2017. Fractional estimates rounded up to nearest whole number.

On October 30, 2015, NMFS issued a no-jeopardy biological opinion (2015 BiOp) for the American Samoa longline fishery, which authorizes over a three-year period, the incidental take of green, hawksbill, leatherback, loggerhead and olive ridley sea turtles (NMFS 2015a). These ITSs are shown in Table 28. NMFS began monitoring the American Samoa longline fishery ITS in the third quarter of 2015 and uses a rolling three-year period to track incidental take.

Table 28. 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 NMFS 2015 biological opinion.

	3-year Incidental Take Statement in 2015 BiOp	
Sea turtle species	**Interactions**	**Mortalities**
Loggerhead turtle (South Pacific DPS)	6	3
Leatherback turtle	69	49
Olive Ridley turtle	33	10
Green turtle[a]	60	54
Green turtle (Central South Pacific DPS)[a]	30	27
Green turtle (Southwest Pacific DPS)[a]	20	17.82
Green turtle (East Pacific DPS)[a]	7	6.48
Green turtle (Central West Pacific DPS)[a]	2	1.62
Green turtle (East Indian-West Pacific DPS)[a]	1	1.08
Hawksbill turtle	6	3

[a] The green turtle DPS-specific ITSs became effective in May 2016 when the DPS listings were finalized.
Source: NMFS 2015a.

The 2015 BiOp used the same methods to estimate population effects to sea turtles as those used in the 2014 BiOp, as supplemented (2017) for the Hawaii deep-set longline fishery. NMFS concluded that the American Samoa longline fishery as managed under the Pelagic FEP is not likely to jeopardize the continued existence or recovery of any sea turtle species. Based on NMFS observer data since the 2015 BiOp data cutoff of June 30, 2015, the fishery has not exceeded the ITS for sea turtles.

3.3.1.4 Guam and CNMI Longline Fisheries

NMFS concluded a formal consultation and issued a BiOp (2001 BiOp) for the pelagic fisheries in the western Pacific on March 29, 2001 (NMFS 2001). In the 2001 BiOp, 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 2001 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 29 for the number of sea turtle authorized to be taken in the Guam and CNMI longline fisheries.

Table 29: The number of sea turtles estimated to be annually 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 or CNMI; therefore, there have been no observed or reported interactions with a sea turtle. There were no observed or reported interactions with sea turtles in the CNMI longline fishery from the vessels that were active from 2008 to 2011.

3.3.2 Marine Mammals

ESA-listed marine mammal species that have been observed or may occur in the area where Pelagic FEP fisheries operate include the following species:

- Blue whale (*Balaenoptera musculus*)
- Fin whale (*Balaenoptera physalus*)
- Guadalupe fur seal (*Arctocephalus townsendi*)
- Hawaiian monk seal (*Neomonachus schauinslandi*)
- Humpback whale (*Megaptera novaeangliae*)
    - Mexico DPS (threatened)
    - Central America DPS (endangered)
    - Western North Pacific DPS (endangered)
- Main Hawaiian Islands insular false killer whale (MHI IFKW) DPS (*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: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region. Additional, recent information may be found on the NMFS species pages found at the following website: http://www.fpir.noaa.gov/PRD/prd_esa_section_4.html.

On September 8, 2016 (81 FR 62259), NMFS published a final rule to reclassify the humpback whale into 14 DPS under the ESA, of which four DPSs were listed as threatened or endangered. The remaining ten DPSs were not listed under the ESA, including the Hawaii DPS and the Oceania DPS, which occur in areas where the Hawaii and American Samoa longline fisheries operate, respectively. Based on research, observer, and logbook data, marine mammals not listed

under the ESA that may occur in the region and that may be affected by the fisheries managed under the Pelagic FEP include the following species:

- 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: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.

Marine mammals are primarily vulnerable to Hawaii and American Samoa longline fisheries through hooking and entanglement. Although blue whales, North Pacific right whales, and sei whales occur within the action area and could potentially interact with the Pelagic FEP fisheries, fishermen and observers have not reported any incidental hooking or entanglements of these species in these fisheries. Other potential impacts to marine mammals from the operation of fisheries include collisions with vessels, exposure to waste and discharge, and disturbance from human activity and equipment.

The Council and NMFS manage the longline fisheries permitted under the Pelagic FEP through several measures that mitigate the potential for marine mammal interactions and injury if interactions occur. These measures include the requirement to carry an observer on a fishing trip if requested, and a requirement for owners and operators of longline vessels to attend a protected species education workshop annually. Additionally, longline closed areas generally within 30 to 75 nm of each U.S. island archipelago serve as de facto protection for island-associated stocks of marine mammals.

After considering a range of potential effects to marine mammals, NMFS, in the 2012, 2014, and 2015 BiOps, determined that the pelagic fisheries of the western Pacific operating in accordance with the Pelagic FEP and implementing regulations would not jeopardize the survival or recovery of any listed marine mammals. Within each BiOp, NMFS has authorized a certain level of interactions (incidental take) of species which the fishery may adversely affect through ITS for these fisheries. NMFS determined that incidental taking by the Hawaii longline fisheries will have a negligible impact on the affected stocks of marine mammals through issuance of its MMPA section 101(a)(5)(E) permit.

3.3.2.1 Hawaii Deep-set Longline Fishery

Table 30 shows the fleet-wide marine mammal interaction estimates for the Hawaii deep-set longline fishery from 2008 through 2017.

Table 30. Estimated annual marine mammal interactions (including mortalities, and serious and non-serious injuries) with the Hawaii deep-set longline fishery from 2008-2017.

Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017[1]
Risso's dolphin	2	0	3	0	0	0	0	10	0	5
Short-finned pilot whale	5	0	0	0	0	4	0	4	0	0
False killer whale	11	55	19	10	15	22	55	21	35	39
Pantropical spotted dolphin	3	0	0	0	0	0	0	0	0	0
Striped dolphin	0	0	0	4	0	0	0	4	0	0
Bottlenose dolphin	0	5	4	0	0	11	0	0	5	5
Pigmy killer whale	0	0	0	0	0	5	0	0	0	0
Kogia species	0	0	0	0	0	0	10	0	0	0
Humpback whale	0	0	0	0	0	0	5	0	0	0
Sperm whale	0	0	0	6	0	0	0	0	0	0
Rough-toothed dolphin	0	0	0	0	0	5	0	0	5	0
Unidentified cetacean[2]	9	0	0	10	10	10	10	5	10	20
Unidentified whale[2]	9	15	14	0	0	0	0	0	0	0
Unidentified dolphin[2]	0	0	0	0	0	0	0	5	0	0

Sources: WPRMFC 2018.

[1] 2017 estimates expanded by multiplying observed interactions by 4.9 as there was 20.4% observer coverage levels in 2017. Fractional estimates rounded up to nearest whole number.

[2] Unidentified species identification based on PIRO Observer Program classifications. Unidentified cetacean species refers to a marine mammal not including pinnipeds (seal or sea lion); unidentified whale refers to a large whale; and unidentified dolphin refers to a small cetacean with a visible beak. Further classifications based on observer description, sketches, photos and videos may be available from PIFSC.

NMFS estimates the effect of the fishery on ESA-listed mammals by comparing the expected mortalities, derived from observed interactions, to the stock's PBR and relative proportion of the affected population, where data are available (NMFS and WPFMC 2018a). NMFS reinitiated consultation on the deep-set fishery on October 4, 2018.

In our request for reinitiation, NMFS estimated the deep-set fishery could interact with up to 3 sperm whales and 0.130 MHI IFKW. These predictions, generated by PIFSC using Bayesian data analysis methods appropriate for count data (Marti McCracken, in prep), used observed interactions in the fishery from 2002 through 2017. NMFS has assigned prorated interactions to the population of MHI IFKW based on interactions with pelagic false killer whales, and on interactions with false killer whales from unknown populations and unidentified blackfish.

NMFS estimated the number of mortalities and serious injuries (M&SI) for each marine mammal stock based on previous injury determinations for each stock of ESA-listed marine mammal. NMFS expects up to 2 sperm whale mortalities and 0.102 MHI IFKW mortalities, or one MHI IFKW mortality or serious injury approximately every 10 years.

The PBR for sperm whales is 14 animals and for MHI IFKWs is 0.3 animals annually (Carretta et al. 2018). M&SI estimates for both stocks of ESA-listed marine mammals are below PBR. The proportion of the sperm whale stock expected to be removed annually is 0.00086 or 0.086 percent of the stock, which can be considered negligible. The M&SI estimate for MHI false killer whales is just under PBR, but NMFS does not expect the mortality of one individual approximately every 10 years to increase the risk of extinction for this population. Table 32 shows the observed interactions since 2004, future level of annual interactions, expected M&SI, stock abundance, and PBR for the marine mammals analyzed in the request for reinitiation.

Table 31. ESA-listed marine mammal interactions and population impact metrics.

Species	Sperm whale	Main Hawaiian Islands Insular False Killer Whale
Observed Interactions (since 2004)	1	19 (includes blackfish)
Future level of annual interactions	3	0.130
Expected Mortalities and Serious Injuries	2	0.102
Stock Abundance	3,478	NA
Potential Biological Removal	14	0.3

Source: NMFS 2014a.

[1] No longer listed under ESA ((81 FR 62260, September 8, 2016)

For all species of endangered marine mammals expected to interact with the Hawaii deep-set longline fleet, the 2014 BiOp found that the continued operation of the Hawaii longline fleet would not result in an appreciable reduction in the numbers, distribution, or reproduction of the marine mammals. Based on the information, NMFS concluded that the Hawaii deep-set longline fishery as managed under the Pelagic FEP is not likely to jeopardize the continued existence or recovery of these ESA-listed marine mammals. Based on the information in the updated BE

analysis, NMFS expects the effect of the action on these ESA-listed marine mammal species to be insubstantial.

NMFS monitors the effects of the fishery on non-ESA listed marine mammals through comparison of the average level of interactions which result in M&SI to a stock's PBR. For most marine mammal stocks where the PBR is available, the number of observed takes of marine mammal species in the deep-set longline fishery inside the U.S. EEZ around Hawaii is well below the PBR in the time period covered by the most current stock assessment report (Table 33).

Table 32. Mean estimated annual mortality and serious injury (M&SI) and PBR by marine mammal stocks with observed interactions in the Hawaii deep-set longline fishery.

Stock	Years Included in draft 2017 SAR	Outside EEZ[a]	Inside EEZ[b]	
		Mean Estimated Annual M&SI	Mean Estimated Annual M&SI	PBR (Inside EEZ only)
Bottlenose dolphin, HI Pelagic	2011-2015	2.2	0	140
Pantropical spotted dolphin, HI Pelagic	2011-2015	0[c]	0[c]	403
Rough-toothed dolphin, HI	2011-2015	0	0	46
Risso's dolphin, HI	2011-2015	0.9	0.6	42
Striped dolphin, HI	2011-2015	0.8	0	154
Blainville's beaked whale, HI	2011-2015	0	0	11
Kogia sp. whale (Pygmy or dwarf sperm whale), HI	2007-2011	Pygmy = 0 Dwarf = 0	Pygmy = 0 Dwarf = 0	undetermined
Short-finned pilot whale, HI	2011-2015	1.0	0.1	70
Humpback whale, Central North Pacific	2009-2013	0		83[d]

Source: WPFMC 2018

[a] PBR estimates are not available for portions of the stock outside of the U.S. EEZ around Hawai`i, except for the Central North Pacific stock of humpback whales for which PBR applies to the entire stock.

[b] PBR estimates are only available for portions of the stock within the U.S. EEZ around Hawai`i.

[c] M&SI estimates were not included in the draft 2017 SARs because there were no known takes in 2011-2015 by the deep-set or shallow-set Hawai`i longline fisheries.

[d] PBR for the Central North Pacific stock for humpback whales apply to the entire stock.

According to the most recent estimates, M&SI for non-ESA-listed false killer whales (pelagic and Northwestern Hawaiian Islands) stocks are below PBR (Carretta et al. 2018). 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 of circle hooks, a permanently closed area, and an EEZ interaction limit, which, when reached, triggers a southern longline fishing exclusion zone (see 50 CFR 229.37). This interaction limit (two observed false killer whale serious injuries or mortalities within the U.S EEZ around Hawaii) was reached in 2018, triggering temporary closure of the southern exclusion zone to deep-set longline fishing for the remainder of 2018 (83 FR 33484, July 18, 2018).

3.3.2.2 Hawaii Shallow-set Longline Fishery

Table 34 provides total marine mammal interactions observed in the shallow-set fishery from 2008 through 2017.

Table 33. Observed annual marine mammal interactions (including mortalities, serious injuries, and non-serious injuries) with the Hawaii shallow-set longline fishery from 2008-2016.

Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Blackfish*	1	0	0	1	0	0	0	0	0	0
Short-beaked Common dolphin	0	0	0	1	0	0	1	0	0	0
Risso's dolphin	4	3	7	4	0	3	6	3	2	2
Blainville's beaked whale	0	0	0	1	0	0	0	0	0	0
Humpback whale	1	0	0	1	0	0	0	1	0	0
False killer whale	1	1	0	1	1	0	1	0	0	0
Striped dolphin	1	0	2	0	1	0	2	0	1	1
Bottlenose dolphin	0	0	2	2	1	2	4	2	1	0
Rough-toothed dolphin	0	0	0	0	0	1	0	0	0	0
Fin whale	0	0	0	0	0	0	0	1	0	0
Unidentified cetacean	0	1	1	0	1	0	0	1	0	0
Pygmy or dwarf sperm whale	1	0	0	0	0	0	0	0	0	0
Beaked whale, Mesoplodont	0	0	0	1	0	0	0	0	0	0
Ginkgo-toothed beaked whale	0	0	0	0	0	0	0	1	0	0
Unidentified beaked whale	0	0	0	1	0	2	0	1	0	0
Northern elephant seal	0	0	0	0	0	1	1	0	0	0
Guadalupe fur seal	0	0	0	0	0	0	0	0	1	3
Unidentified pinniped	0	0	0	0	0	0	0	3	0	0

Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Unidentified sea lion	0	0	0	0	0	0	1	2	0	0

Note: "Blackfish" include unidentified whales considered to be either false killer whales or short-finned pilot whales.
Source: WPFMC 2018

There has not been an interaction with a Hawaii sperm whale in the shallow-set longline fishery since the deep-set and shallow-set longline fisheries were split in 2004 for management purposes (NMFS 2014). Prior to the separation of the fisheries, there was an interaction in 1999 with a vessel that was targeting swordfish, and one in 2002 with an experimental fishery that was testing sea turtle mitigation gear similar to what is used in the shallow-set longline fishery now. The interaction occurred on a control set and the sperm whale was entangled in the mainline; the mainline was cut and the animal escaped with no line attached (Boggs 2002). There have been no observed interactions between the MHI IFKW stock and the shallow-set longline fishery.

On March 31, 2012, NMFS issued a no-jeopardy biological opinion (2012 BiOp; NMFS 2012) for the shallow-set longline fishery, and authorized incidental take of humpback whales (NMFS 2014). On September 8, 2016 (81 FR 62260), NMFS published a final rule dividing humpback whales into 14 DPS and delisted nine DPS from ESA. Hawaii humpback whale DPS is one of the nine stocks no longer warranted for listing under ESA, and therefore NMFS does not monitor take against the ITS.

On February 27, 2015, gear from a Hawaii shallow-set longline vessel entangled a fin whale slightly more than 200 miles from the coast of California. The crew released the animal with no gear attached. NMFS preliminarily determined that this interaction did not result in a serious injury because the crew and NMFS observer were able to disentangle the whale after they cut the mainline. The observer recorded only superficial wounds on the whale, the crew released the whale with no gear attached, and the observer saw the whale diving after release. NMFS previously determined that the shallow-set fishery was not likely to adversely affect fin whales based on the discountable likelihood that a fin whale would be hooked or entangled by the shallow-set fishery or hit by a vessel, and because of the low densities of these whales.

However, in response to this event, NMFS reinitiated ESA section 7 consultation to evaluate the potential impacts of Hawaii shallow-set longline fishery on fin whales. Given the long history of 100% observer coverage in the shallow-set fishery and the lack of observed or reported interaction with a fin whales, NMFS considers the recent interaction an isolated event. Additionally, given the low densities of fin whales in the action area of the shallow-set fishery (Caretta et al. 2014) NMFS considers it extremely unlikely that another interaction in the fishery would occur. For these reasons, NMFS determined that the Hawaii shallow-set longline fishery is not likely to adversely affect fin whales and documented its determination in a memorandum of concurrence dated September 16, 2015.

The Hawaii shallow-set longline fishery interacted with ESA-listed Guadalupe fur seals in 2016 and 2017, outside of the U.S. EEZ off the coast of California. This species was previously not known to interact with the shallow-set fishery and was not included in the 2012 BiOp. Consultation for this species was included in the ongoing consultation reinitiated on April 20, 2018 (NMFS and WPFMC 2018b).

In our request for reinitiation of ESA Section 7 consultation on the operation of the shallow-set longline fishery, NMFS estimated the shallow-set fishery could interact with up to 14 Guadalupe fur seals, including prorated unidentified pinniped and unidentified sea lions. These predictions, generated by PIFSC using Bayesian data analysis methods appropriate for count data (Marti McCracken, in prep), used observed interactions in the fishery from January 1, 2013 through December 31, 2017.

The abundance of Guadalupe fur seals is estimated at approximately 20,000 animals, and NMFS estimates the PBR to be 542 animals per year (Carretta et al. 2017). The fishery's anticipated level of mortality amounts to 13 Guadalupe fur seal mortalities in a given year or 2.39% of the current PBR of Guadalupe fur seals per year, and therefore has insubstantial impacts.

NMFS monitors the effects of the fishery on non-ESA listed marine mammals through comparison of the average level of interactions which result in (M&SI) to a stock's PBR. For marine mammal stocks where the PBR is available, the mean annual M&SI for the shallow-set longline fishery inside the EEZ around Hawaii is well below the corresponding PBR in the time period covered by the current stock assessment report (Table 35).

Table 34. Summary of mean annual mortality and serious injury (M&SI) and potential biological removal (PBR) by marine mammal stocks with observed interactions in the Hawaii shallow-set longline fishery.

Stock	Years Included in draft 2017 SARs	Outside EEZ[a]	Inside EEZ	
		Mean Annual M&SI	Mean Annual M&SI	PBR (Inside EEZ only)[c]
Bottlenose dolphin, HI Pelagic	2011-2015	2	0	140
Risso's dolphin, HI	2011-2015	3.2	0	82
Rough-toothed dolphin, HI	2011-2015	0	1	423
Striped dolphin, HI	2011-2015	0.6	0	449
Blainville's beaked whale, HI	2011-2015	0	0	10
False killer whale, HI Pelagic	2011-2015	0.1	0.1	9.3
Short-finned pilot whale, HI	2011-2015	0.1	0	106
Kogia sp. whale (Pygmy or dwarf sperm whale), HI	2007-2011	Pygmy = 0 Dwarf = 0	Pygmy = 0 Dwarf = 0	undetermined
Humpback whale, Central North Pacific	2009-2013	0.2[b]		83[b]
Fin whale, HI	2011-2015	0	0	0.1
Guadalupe fur seal, CA	2010-2014	0[d]		542[d]

Source: WPFMC 2018.

[a] PBR estimates are not available for portions of the stock outside of the U.S EEZ around Hawai`i, except for the Central North Pacific stock of humpback whales for which PBR applies to the entire stock.

[b] PBR and M&SI for the Central North Pacific stock for humpback whales apply to the entire stock.

[c] PBR estimates for Hawai`i stocks are only available for portions of the stock within the U.S. EEZ around Hawai`i.

[d] PBR and M&SI estimates for the Guadalupe fur seal use data from 2010-2014, which only include data from the U.S. West Coast and therefore do not include the seals taken in 2016 and 2017 in the Hawai`i shallow-set longline fishery. The M&SI estimate is only for the Hawai`i shallow-set longline fishery, and the PBR estimate applies to the entire population.

3.3.2.3 American Samoa Longline Fishery

Table 36 summarizes the fleet-wide marine mammal interactions in the American Samoa longline fishery from 2006-2017.

Table 35. Number of marine mammal interactions (including mortalities, and serious and non-serious injuries) observed in the American Samoa longline fishery, 2006-2017.

Species	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Rough-toothed dolphin	0	0	16	0	0	15	0	5	0	0	10	5
Cuvier's beaked whale	0	0	0	0	0	3	0	0	0	0	0	0
False killer whale	0	0	31	0	0	9	0	5	0	9	10	5
Short-finned pilot whale	0	0	0	0	0	0	0	0	5	0	0	0
Unidentified cetacean	0	0	0	0	0	6	0	0	0	0	0	0

Source: WPFMC 2018.
Note: 2017 estimates expanded by multiplying observed interactions by 5 as there was 20% observer coverage levels in 2017. Fractional estimates rounded up to nearest whole number.

To date, fishermen and observers have not reported any humpback, sperm, blue, fin, or sei whale interactions in the American Samoa longline fishery, and as such, this fishery is not likely to adversely affect ESA-listed marine mammals.

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 (coefficient of variation=0.6) and 7.8 false killer whales (coefficient of variation=1.7) (Carretta et al. 2017). No abundance estimates are available and PBR cannot be calculated for either of these stocks (Carretta et al. 2017) and, therefore, potential population impacts are unknown.

3.3.2.4 Guam and CNMI Longline Fisheries

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

3.3.3 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 WPFMC 2011). A comprehensive description of the species' distribution, population status, threats, and recovery strategy can be found in the species' recovery plans.[9]

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 DPS, 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 fisheries should continue to minimize black-footed albatross bycatch through implementing effective bycatch minimization measures, and concluded that Hawaii-based longline fishing is not a significant threat to the black-footed albatross.

All seabirds are protected under the Migratory Bird Treaty Act. In addition to the ESA-listed seabirds, the Hawaii longline fisheries occasionally interact with other seabirds such as albatrosses, Northern fulmar, sooty shearwaters, and gulls.

Seabirds are vulnerable to fisheries through hooking and entanglement, which may result in injury or mortality. 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. Twenty of the world's 21 albatross species are now at least near threatened with extinction according to the IUCN (IUCN 2018), and incidental catch in fisheries, especially longline fisheries, is considered one of the principal threats to many of these species (Veran et al. 2007).

The Council and NMFS manage the longline fisheries permitted under the Pelagic FEP through several measures that mitigate the potential for seabird interactions and injury to short-tailed albatross if interactions occur. These measures include the requirement to carry an observer on a

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

fishing trip if requested, and a requirement for owners and operators of longline vessels to attend a protected species education workshop annually.

Deep-set fishing operations north of 23º N latitude and all shallow-set vessels are required to comply with seabird mitigation regulations that the Council and NMFS intended to reduce interactions between seabirds and Hawaii longline fishing vessels (50 CFR parts 600 and 665). Longline fishermen must employ 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.

Shallow-set vessels must begin setting one hour after local sunset and 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. These measures resulted in a reduction of over 90% in total seabird interactions by 2006 in the deep-set and shallow-set fisheries combined (Van Fossen 2007).

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 Pelagic FEP. After considering a range of potential effects to seabirds, USFWS, in its 2012 BiOp, determined that the Hawaii deep-set and shallow-set fisheries of the western Pacific operating in accordance with the Pelagic FEP and implementing regulations, would not jeopardize the survival or recovery of any listed seabirds. USFWS has authorized a certain level of interactions (incidental take) of short-tailed albatross which the fishery may adversely affect through ITS for these fisheries.

3.3.3.1 Hawaii Deep-set Longline Fishery

Table 37 contains the numbers of albatross that have interacted with the Hawaii deep-set longline fisheries from 2005 through 2017 based on observed interactions by the NMFS Observer Program. In addition, from 2005 through 2017, based on expansions from observed sets, the deep-set fishery interacted with 22 red-footed boobies, four brown boobies, 200 unidentified shearwaters, seven unidentified albatrosses, one unidentified gull, and 65 sooty shearwaters (WPFMC 2018).

Table 36. Estimated total interactions with albatrosses in the Hawaii deep-set longline fisheries, 2005-2017.

Year	Laysan	Black-footed
2005	43	82
2006	7	70
2007	44	77
2008	55	118
2009	60	110
2010	155	65

Year	Laysan	Black-footed
2011	187	73
2012	136	167
2013	236	257
2014	77	175
2015	119	541
2016	166	485
2017	186	475

Source: WPFMC 2018.
Note: 2017 estimates in the deep-set fishery expanded by multiplying observed interactions by 4.9 as there was 20.4% observer coverage levels in 2017. Fractional estimates rounded up to nearest whole number.

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.

Gilman and others have linked recent increases in albatross interactions observed in the Hawaii deep-set longline fishery with reduced ocean productivity (2016). Results from an analysis of seabird interaction rates in the Hawai`i deep-set longline fishery indicate that seabird interaction rates significantly increased as annual mean multivariate ENSO index values increased, meaning that decreasing ocean productivity may have contributed to the increasing trend in seabird catch rates. The analysis also showed a significant increasing trend in the number of albatrosses attending vessels, which may also be contributing to the increasing seabird catch rates (Gilman et al. 2016).

NMFS consulted with the USFWS on effects to endangered species from the Hawaii longline fisheries in a 2012 BiOp (USFWS 2012). USFWS considered that the deep-set fishery might affect short-tailed albatross and authorized the take of two short-tailed albatrosses, even though there were no documented interactions with this species. For purposes of analysis, USFWS used the black-footed albatross as a proxy species, modeling annual take based on the average 2004-2010 rate of black-footed albatross interactions. USFWS estimated 76.9 annual injuries and mortalities of black-footed albatrosses.

Accounting for a fall-off rate (seabirds present observed hooked during gear setting but not upon retrieval) of 31% (Gilman et al. 2003, 2007), USFWS converted the average interactions to a proportion of the overall black-footed albatross population. USFWS adjusted this proportion for the short-tailed albatross population using the fraction of the short-tailed albatross range that overlaps with the Hawaii-based longline fishery and the most recent population assessment comparable to black-footed albatross data. The estimated take of short-tailed albatrosses based on historical data, scaled to the area of overlap between the species' range and the fishery, is 0.21 albatross per year or more than one (1.07) albatross over five years (USFWS 2012). This is 0.0066 percent of the population (proportion of the population = 0.21/3181 = .000066).

USFWS conducted a population viability analysis in 1999, which found that an annual loss of about 82 subadults and 12 adults would lead to eventual extinction of the species based on a population size at that time of 1,362 birds. The population had increased to 3,181 birds at the time of the 2012 BiOp, and the current total annual estimated loss of reproductive contribution due to adverse effects by US fisheries fell short of 94 birds (three birds over five years in Hawaii

fisheries and three per year in Alaska). Based on this information, USFWS concluded that the deep-set longline fishery in Hawaii may slow population growth of short-tailed albatross, but is not anticipated to jeopardize the continued existence of the species (USFWS 2012).

3.3.3.2 Hawaii Shallow-set Longline Fishery

Table 38 contains the numbers of albatross that have interacted with the Hawaii shallow-set longline fisheries from 2005 through 2017 based on observed interactions by the NMFS Observer Program. In addition, from 2004 through 2017, based on observed sets, the shallow-set fishery interacted with one northern fulmar, four sooty shearwaters, and one unidentified gull (WPFMC 2018).

Table 37. Number of albatross interactions observed in the Hawaii shallow-set longline fishery, 2005- 2016.

Year	Laysan	Black-footed
2005	62	7
2006	8	3
2007	39	8
2008	33	6
2009	81	29
2010	40	39
2011	49	19
2012	61	37
2013	46	28
2014	36	29
2015	45	41
2016	26	40
2017	6	51

Source: WPFMC 2018

In 2012, the USFWS issued a special permit for the shallow-set fishery under the Migratory Bird Treaty Act (MBTA). This permit authorizes incidental take of certain seabirds in the Hawaii shallow-set fishery over a period of three years (USFWS 2012). The permit and ITS were renewed in 2015 (Table 39).

Table 38. Total incidental take authorized under the three-year MBTA Special Purpose Permit for the Hawaii shallow-set longline fishery.

Species	Authorized incidental take (N)
Black-footed albatross	191 per three years (2015-2017)
Laysan albatross	430 per three years (2015-2017)
Short-tailed albatross	1 (not to exceed 1 per 5 years)
Sooty shearwater	10 per year
Northern fulmar	10 per year

Source: USFWS 2012.

On December 27, 2017, the Ninth Circuit Court of Appeals issued a split decision that reversed the district court's decision upholding the MBTA permit. *Turtle Island Restoration Network* v. *NMFS & FWS*, 13-17123 (9th Cir. 2017). The Ninth Circuit majority opinion found that FWS improperly relied upon the special use permit to authorize the incidental take of sea birds by a commercial fishery. The permit expired on its own terms in March 2018 and NMFS determined that it would not reapply for the permit.

NMFS consulted with the USFWS on effects to endangered species from the Hawaii longline fisheries in a 2012 BiOp (USFWS 2012). USFWS considered that the shallow-set fishery might affect short-tailed albatross and authorized the take of one short-tailed albatross every five years, even though there were no documented interactions with this species. For purposes of analysis, USFWS used the same methods described for the deep-set fishery in section 3.3.3.1. USFWS estimated 13.1 annual injuries and mortalities of black-footed albatrosses in the shallow-set longline fleet, which results in an estimated take of 0.034 short-tailed albatross per year or less than one (0.17) albatross over five years (USFWS 2012). This is 0.001 percent of the population (proportion of the population = 0.034/3,181 = .00001).

USFWS conducted a population viability analysis in 1999, which found that an annual loss of about 82 subadults and 12 adults would lead to eventual extinction of the species based on a population size at that time of 1,362 birds. The population had increased to 3,181 birds at the time of the 2012 BiOp, and the current total annual estimated loss of reproductive contribution due to adverse effects by US fisheries fell short of 94 birds (three birds over five years in Hawaii fisheries and three per year in Alaska). Based on this information, USFWS concluded that the shallow-set longline fishery in Hawaii may slow population growth of short-tailed albatross, but is not anticipated to jeopardize the continued existence of the species (USFWS 2012).

3.3.3.3 American Samoa Longline Fishery

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, one unidentified frigate bird, and 13 black-footed albatross in the American Samoa longline fishery from 2006-2017 (WPFMC 2018).

3.3.3.4 Guam and CNMI Longline Fisheries

Seabird interactions have not been reported or observed in the Guam or CNMI longline fisheries. Since 2012, there have been no active longline vessels in Guam or CNMI. Thus, there are no reports of interactions with seabirds.

3.3.4 Sharks and Rays

On July 3, 2014, NMFS issued a final rule to list under the ESA, the Indo-West Pacific scalloped hammerhead shark DPS, and the Eastern Pacific scalloped hammerhead shark DPS as threatened and endangered, respectively (79 FR 38213). The Indo-West Pacific DPS includes areas around most of the U.S. Pacific territories and possessions. The Eastern Pacific DPS generally includes the eastern Pacific, east of 140° W. Detailed information on the scalloped hammerhead sharks including the range, abundance, status, and threats to the species can be found in the 2014 BiOp for the deep-set longline fishery (NMFS 2014), the 2014 Status Review Report and the 2014

Final Rule (79 FR 38213). NMFS has determined that protective regulations under ESA section 4(d) are not necessary or appropriate for the Indio-West Pacific scalloped hammerhead shark DPS at this time.

On January 30, 2018, NMFS issued a final rule to list the oceanic whitetip shark as a threatened species under the ESA (83 FR 4153). The oceanic whitetip shark is distributed worldwide in epipelagic tropical and subtropical waters between 30° North latitude and 35° South latitude. The species is a highly migratory species that is usually found offshore and in deep waters. As described in the final rule listing (83 FR 4153), the oceanic whitetip shark is not subject to the take prohibitions in Section 9 of the ESA because NMFS has determined that protective regulations under Section 4(d) are not deemed necessary and appropriate for the conservation of that species. Detailed information on the oceanic whitetip sharks including the range, abundance, status and threats to the species can be found in the 2016 Status Review Report (Young et al. 2016) and the 2016 Proposed Rule (81 FR 96304).

Additionally, January 22, 2018, NMFS issued a final rule to list the giant manta ray as a threatened species under the ESA (83 FR 2916). The giant manta ray occurs worldwide in tropical, subtropical, and temperate bodies of water. The species is considered a migratory species, with estimated distances travelled of up to 1,500 km. As described in the final rule listing (83 FR 2916), the giant manta ray is not subject to the take prohibitions in Section 9 of the ESA because NMFS has determined that protective regulations under Section 4(d) are not deemed necessary and appropriate for the conservation of that species. Detailed information on the giant manta ray including the range, abundance, status and threats to the species can be found in the 2017 Status Review Report (Miller & Klimovich 2016) and the 2016 Proposed Rule (82 FR 3694).

Sharks and rays are vulnerable to longline fisheries through hooking and entanglement.

The Council and NMFS manage the longline fisheries permitted under the Pelagic FEP through several measures that mitigate the potential for shark interaction. These measures include the requirement to carry an observer on a fishing trip if requested, and a requirement for owners and operators of longline vessels to attend a protected species education workshop annually. Additionally, in accordance with WCPFC CMM 2011-01, Hawaii and American Samoa longline vessels release all oceanic white tip sharks incidentally caught in the WCPO. Because oceanic whitetip shark has no market value, and federal regulations have prohibited shark finning since 2002, fishermen release oceanic whitetip shark caught in the EPO and WCPO.

After considering a range of potential effects to scalloped hammerhead shark, NMFS, in its 2014 and 2015 BiOps, determined that the Hawaii and American Samoa deep-set fisheries operating in accordance with the Pelagic FEP and implementing regulations, would not jeopardize the survival or recovery of scalloped hammerhead sharks. NMFS has authorized a certain level of interactions (incidental take) of scalloped hammerhead sharks which the fishery may interact with through ITS for these fisheries.

On April 20, 2018, NMFS reinitiated formal consultation for the Hawaii shallow-set longline fishery to evaluate the impact of the fishery on oceanic whitetip shark and giant manta ray, among other reasons. On October 4, 2018, NMFS reinitiated formal consultation for the Hawaii

deep-set longline fishery to evaluate the impact of the fishery on oceanic whitetip shark and giant manta ray, among other reasons. NMFS intends to promptly reinitiate formal consultation for the American Samoa longline fishery, as required by 50 CFR 402.16.

3.3.4.1 Hawaii Deep-set Longline Fishery

Table 40 shows the fleet-wide interaction estimates for the Hawaii deep-set longline fishery from 2006-2017.

Table 39. Estimated total ESA-listed shark and ray interactions with the Hawaii deep-set longline fishery for 2004-2017.

Year	Scalloped Hammerhead	Oceanic Whitetip	Giant Manta Ray
2004	9	1764	4
2005	0	1307	8
2006	0	1561	9
2007	5	1303	10
2018	0	664	9
2009	0	1184	19
2010	0	1199	81
2011	0	1108	5
2012	0	843	10
2013	0	961	5
2014	0	1798	14
2015	0	2578	10
2016	0	2104	20
2017	0	1186	5

Source: WPFMC 2018.

Scalloped hammerhead shark interactions in the Hawaii deep-set fishery are rare, unpredictable events. Since 2004, there have been three observed interactions with scalloped hammerhead sharks in the Hawaii deep-set fishery in the area of the threatened Indo-West Pacific DPS (NMFS 2014a). NMFS has no records of any interactions with scalloped hammerhead sharks from the Eastern Pacific DPS (NMFS Observer Program, unpublished data). NMFS in its no-jeopardy 2014 BiOp authorized the take of six Indo-West Pacific scalloped hammerhead sharks, with up to three mortalities over a three year period (NMFS 2014a).

In the request for reinitiation of ESA Section 7 consultation for the Hawaii deep-set longline fishery, NMFS estimated that there could be up to 5 interactions with scalloped hammerhead sharks annually in the fishery. At a 65.7 percent post-release survival rate, we anticipate that 4 (5 x 0.657 = 3.2, rounded to 4) of the 5 sharks would be released alive while one would be released dead (NMFS and WPFMC 2018a).

Based on a population estimate of 11,280 adults, NMFS estimates one annual mortality represents 0.009 percent (1/11,280*100=0.00886) of the population. In the 2014 BiOp, NMFS determined the takes of scalloped hammerhead sharks associated with the operation of the fishery are not expected to cause an appreciable reduction in the likelihood of both the survival

and recovery of the DPS (NMFS 2014). Due to the small level of take NMFS considered the fishery's effects on the Indo-West Pacific scalloped hammerhead shark DPS from the Hawaii deep-set longline fishing operations to be negligible (NMFS and WPFMC 2018a).

Consultation for the oceanic whitetip shark and giant manta ray were included in the ongoing consultation reinitiated on October 4, 2018 (NMFS and WPFMC 2018b). In our request for reinitiation of ESA Section 7 consultation on the operation of the Hawaii deep-set longline fishery, NMFS estimated the fishery could interact with up to 3,185 oceanic white tips sharks and 84 giant manta rays. The observer interaction data also includes other mobulidae categories that may include giant manta rays. These categories are "unidentified ray" and "manta/mobula," which NMFS prorates to provide an estimate of giant manta ray interactions. These predictions, generated by PIFSC using Bayesian data analysis methods appropriate for count data (Marti McCracken, in prep), used observed interactions in the fishery from 2002-2017.

The stock assessment for the oceanic whitetip shark (Rice and Harley 2012) estimated current biomass of oceanic whitetip sharks in the WCPO to be 7,295 t and current catch at 2,001 t annually. The FAO (2012) estimates 7,295 t of shark biomass would be equivalent to roughly 200,000 individuals. At an average 76.9 percent post-release survival rate, NMFS estimates that the anticipated level of interactions in any given year of equal to or less than 3,185 oceanic whitetip sharks represents 735 mortalities or 0.367% (735/200,000*100) of the estimated number of individuals in the WCPO (NMFS and WPFMC 2018a). Population estimates of oceanic whitetip sharks in the EPO are unavailable, and thus this population-level impact is a conservative estimate.

A preliminary analysis of annual standardized catch per unit of effort (CPUE) for oceanic whitetip shark for 1995-2014 conducted as part of the 2016 Status Review Report (Young et al. 2016) indicated that the population in the area of the Hawaii longline fishery operation might have stabilized in recent years. Observer data from 2015 and 2016 indicate that the nominal CPUE was approximately the same or slightly higher than 2014 (NMFS Observer data, unpublished), but these data are not standardized and should be interpreted with caution. Based on this information, the negligible proportion of the population that may be affected by the operation of the longline fleet, and the high proportion of sharks released alive, the impact of the Hawaii deep-set longline fishery on the oceanic whitetip shark population is likely to be minimal.

NMFS estimates in the BE that the anticipated level of interactions for giant manta rays in any given year of equal to or less than 84 would lead to 6 giant manta ray mortalities, based on a 92.7 percent post-release survival rate. There is no historical or current global abundance estimates or stock assessments for giant manta rays. Most estimates of subpopulations are based on anecdotal observations, and range from around 100-1,500 (Miller and Klimovich 2016). Little information is available on the abundance of giant manta rays in the high seas area in the central north Pacific where the Hawaii shallow-set longline fishery operates. Nevertheless, the 2016 NMFS Status Review Report for the giant manta ray concluded that the incidental catch of this species in U.S. longline fisheries are likely to have minimal effects on the population (Miller and Klimovich 2016).

3.3.4.2 Hawaii Shallow-set Longline Fishery

Table 41 shows the fleet-wide observed interactions of ESA-listed sharks and rays for the Hawaii shallow-set longline fishery from 2004-2017.

Table 40. Total ESA-listed shark and ray interactions with the Hawaii shallow-set longline fishery for 2004-2017.

Year	Scalloped Hammerhead	Oceanic Whitetip	Giant Manta Ray
2004	0	3	0
2005	0	348	0
2006	0	1	0
2007	0	98	5
2018	0	47	0
2009	0	54	0
2010	0	90	6
2011	0	78	3
2012	0	24	0
2013	0	27	0
2014	0	21	1
2015	0	22	0
2016	0	32	0
2017	0	29	2

Source: WPFMC 2018.

The Hawaii shallow-set longline fishery generally occurs within the range of the Central Pacific DPS of scalloped hammerhead shark; this DPS was not listed under the ESA. The shallow-set fishery does not occur within the range of the Indo-West Pacific DPS; however a portion of the shallow-set fishery does fall within the range of the Eastern Pacific DPS. There have been no recorded or observed takes of hammerhead sharks in the shallow-set longline fishery in the area of the Eastern Pacific DPS.

Consultation for the oceanic whitetip shark and giant manta ray were included in the ongoing consultation reinitiated on April 20, 2018 (NMFS and WPFMC 2018b). In our request for reinitiation of ESA Section 7 consultation on the operation of the shallow-set longline fishery, NMFS estimated the shallow-set fishery could interact with up to 227 oceanic white tips sharks and 10 giant manta rays, including prorated manta/mobula. Manta/mobula is used when a fisheries observer is unable to distinguish whether the ray is a Manta (giant or reef) or a Mobula, or if the observer is able to confirm it is a Reef Manta (*Manta alfredi*). These predictions, generated by PIFSC using Bayesian data analysis methods appropriate for count data (Marti McCracken, in prep), used observed interactions in the fishery from January 1, 2013 through November 18, 2017, as not all relevant catch records were available through the end of 2017.

The stock assessment for the oceanic whitetip shark (Rice and Harley 2012) estimated current biomass of oceanic whitetip sharks in the WCPO to be 7,295 t and current catch at 2,001 t annually. The FAO (2012) estimates 7,295 t of shark biomass would be equivalent to roughly 200,000 individuals. At an average 87.1 percent post-release survival rate, NMFS estimates that

the anticipated level of interactions in any given year of equal to or less than 227 oceanic whitetip sharks represents 29 mortalities or 0.0145% (29/200,000*100) of the estimated number of individuals in the WCPO (NMFS and WPFMC 2018a). Population estimates of oceanic whitetip sharks in the EPO are unavailable, and thus this population-level impact is a conservative estimate. Based on the negligible proportion of the population that this fishery may affect and the high proportion of sharks released alive, the impact of the Hawaii shallow-set longline fishery on the oceanic whitetip shark population is likely to be minimal.

NMFS estimates in the BE that the anticipated level of interactions for giant manta rays in any given year of equal to or less than 10 would lead to 3 giant manta ray mortalities. There is no historical or current global abundance estimates or stock assessments for giant manta rays. Most estimates of subpopulations are based on anecdotal observations, and range from around 100-1,500 (Miller and Klimovich 2016). Little information is available on the abundance of giant manta rays in the high seas area in the central north Pacific where the Hawaii shallow-set longline fishery operates. Nevertheless, the 2016 NMFS Status Review Report for the giant manta ray concluded that the incidental catch of this species in U.S. longline fisheries are likely to have minimal effects on the population (Miller and Klimovich 2016).

3.3.4.3 American Samoa Longline Fishery

Table 42 shows the fleet-wide interaction estimates for the American Samoa longline fishery from 2006-2017.

Table 41. Estimated total ESA-listed shark and ray interactions with the American Samoa longline fishery for 2006-2017.

Year	Scalloped Hammerhead	Oceanic Whitetip	Giant Manta Ray
2006	13	568	0
2007	15	873	0
2018	0	750	0
2009	0	584	13
2010	17	520	12
2011	7	348	9
2012	0	359	15
2013	0	454	10
2014	6	536	5
2015	3	764	0
2016	5	1015	0
2017	5	315	0

Source: WPFMC 2018.

Scalloped hammerhead shark interactions in the American Samoa longline fishery are rare, unpredictable events. Since 2006, there have been ten observed interactions with Indo-West Pacific scalloped hammerhead sharks in the American Samoa longline fishery (NMFS 2015a). In the 2015 BiOp for the American Samoa longline fishery, NMFS estimated that there could be up to twelve interactions with scalloped hammerhead sharks annually in the American Samoa longline fishery and authorized the fishery to interact with up to 36 Indo-Western Pacific

scalloped hammerhead sharks, with up to 12 mortalities over a three year period (NMFS 2015a). Applying a conservative population size of 11,280 adults, NMFS estimated four annual mortalities represent 0.04 percent (4/11,280*100=0.03546) of the population. Due to the small level of take NMFS considered the risk to the scalloped hammerhead shark DPS from the American Samoa longline fishery to be negligible (NMFS 2015a). NMFS in its 2015 BiOp concluded that the American Samoa longline fishery as managed under the Pelagic FEP is not likely to jeopardize the continued existence or recovery of the Indo-West Pacific scalloped hammerhead DPS.

The stock assessment for the oceanic whitetip shark (Rice and Harley 2012) estimated current biomass of oceanic whitetip sharks in the WCPO to be 7,295 t and current catch at 2,001 t annually. The FAO (2012) estimates 7,295 t of shark biomass would be equivalent to roughly 200,000 individuals. The American Samoa longline fishery caught an average of 591 oceanic whitetip sharks annually during 2006-2017. At an average 68% post-release survival rate (NMFS unpublished data), NMFS estimates the anticipated level of interactions in any given year of equal to or less than 591 sharks represents 189 mortalities or 0.0945% (189/200,000*100) of the estimated number of individuals in the WCPO. Based on the negligible proportion of the population affected by the operation of the longline fleet and the high proportion of sharks released alive, the impact of the American Samoa longline fishery on the oceanic whitetip shark population is likely to be minimal.

The American Samoa longline fishery caught an average of 5.33 giant manta rays annually during 2006-2017. Based on an average post-release survival rate of 99%, NMFS expects up to one mortality annually (5.33 x 0.01 = 0.05, rounded to 1) (NMFS unpublished data). There is no historical or current global abundance estimates or stock assessments for giant manta rays. Most estimates of subpopulations are based on anecdotal observations, and range from around 100-1,500 (Miller and Klimovich 2016). Little information is available on the abundance of giant manta rays in U.S. EEZ around American Samoa here the American Samoa longline fishery operates. Nevertheless, the 2016 NMFS Status Review Report for the giant manta ray concluded that the incidental catch of this species in U.S. longline fisheries are likely to have minimal effects on the population (Miller and Klimovich 2016).

3.3.4.4 Guam and CNMI Longline Fisheries

Since 2012, there have been no active longline vessels in Guam or CNMI. Thus, there are no reports of interactions with sharks or rays.

3.3.5 Corals

On September 10, 2014, NMFS issued a final rule to list 20 species of corals as threatened under the ESA (79 FR 53851). Fifteen of the newly listed species occur in the Indo-Pacific, and five in the Caribbean. Of those that occur in the Indo-Pacific, NMFS assumes only eight occur in waters under U.S. jurisdiction (79 FR 53851).

Coral reefs form on solid substrate but only within suitable environmental conditions that allow the deposition rates of corals and other reef calcifiers to exceed the rates of physical, chemical,

and biological erosion. In the U.S. Pacific Islands, coral reef habitat occurs immediately within waters from 0-3 nm of shore, although some coral reef habitat can be found further offshore.

In contrast, pelagic fisheries generally operate dozens to a thousand of miles offshore, far away from the islands and coral reef habitat areas, to target pelagic fish species in the water column. Federal regulations prohibit longline fishing generally within 50-75 nm from shoreline of Hawaii, 50 nm from the shoreline of Guam, and 30 nm from the shoreline of the CNMI. In American Samoa, federal regulations prohibit all fishing vessels greater than 50 ft in length, including longline vessels, from fishing generally within 50 nm of the shoreline. In the Pacific Remote Islands, federal regulations prohibit all commercial fishing generally within 50 nm of all islands.

To access fishing grounds, pelagic fishing vessel have to transit areas where ESA-listed corals may occur. While pelagic troll vessels may deploy surface lures during transit, the activity does not occur in coral reef habitat. Pelagic longline vessels do not deploy gear in transit.

Additionally, pelagic fishing activities do not involve anchoring and, therefore, there is no potential for anchor damage during fishing activities.

3.3.6 Marine Habitats, Critical Habitat, and Essential Fish Habitat

3.3.7 Leatherback Sea Turtle Critical Habitat

On January 26, 2012, NMFS designated critical habitat for leatherback sea turtles off the west coast of the U.S., including areas off WA, OR, and CA (77 FR 4170). Because Hawaii longline vessels may occasionally transit through the U.S. EEZ to and from west coast ports, NMFS evaluated the fishery for potential effects to leatherback sea turtle critical habitat in the 2014 BiOp for the deep-set fishery (NMFS 2014). Because NMFS prohibits longline fishing within the EEZ off the west coast, NMFS determined that the deep-set longline fishery may affect, but is not likely to adversely modify designated critical habitat for leatherback sea turtles.

3.3.8 Monk Seal Critical Habitat

On August 21, 2015, NMFS published a final rule (80 FR 50926) designating critical habitat for the Hawaiian monk seal (*Neomonachus schauinslandi*) in the MHI and expanding monk seal critical habitat in the Northwestern Hawaiian Islands (NWHI). NMFS identified features that are essential for the conservation of monk seals, including areas preferred for pupping and nursing, areas that support adequate prey quality and quantity for foraging, and areas for hauling out, resting, or molting. Accordingly, NMFS identified critical habitat in certain areas in the MHI, and around designated islands in the NWHI, to include, generally, from the beach to the 200-m depth contour and the seafloor and the waters and habitat within 10 m of the seafloor. Please consult the final rule for specific critical habitat boundaries.

In response to the critical habitat designation, NMFS reinitiated ESA Section 7 consultation to evaluate the potential effects of the Hawaii deep-set longline fishery on monk seal critical habitat. Because monk seals do not prey on species targeted by the Hawaii deep-set longline fishery and longline vessels are prohibited from fishing within 50 to 75 nm around all Hawaiian Islands, NMFS determined that the Hawaii deep-set longline fishery may affect, but is not likely

to adversely modify monk seal critical habitat. NMFS documented its determinations in a memorandum of concurrence dated September 16, 2015.

3.3.9 Main Hawaiian Islands Insular False Killer Whale Critical Habitat

On July 24, 2018, NMFS published a final rule (83 FR 35062) to designate critical habitat for the MHI insular false killer whale (IFKW) DPS. The proposed critical habitat area encompasses waters from 45 to 3,200 m deep around the MHI. Based on considerations of economic and national security impacts, NMFS excluded certain areas from designation because the benefits of exclusion outweigh the benefits of inclusion, and exclusion would not result in extinction of the species. NMFS identified a single essential feature with four characteristics that describe how island-associated marine habitat is essential to MHI IFKWs, as follows:

1. Adequate space for movement and use within shelf and slope habitat;
2. Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth;
3. Waters free of pollutants of a type and amount harmful to insular false killer whales; and
4. Sound levels that will not significantly impair false killer whales' use or occupancy.

Additional details are available in the Biological Report (NMFS 2017b) and draft Economic Report (available at http://www.fpir.noaa.gov/PRD/prd_mhi_false_killer_whale.html) associated with the final rule.

Federal regulations prohibit longline fishing in the MHI longline prohibited area, which extends about 50 to 75 nm around the MHI, depending on the location (Figure 9). This results in an effective closure of the deep-set longline fishery in most of MHI IFKW range.

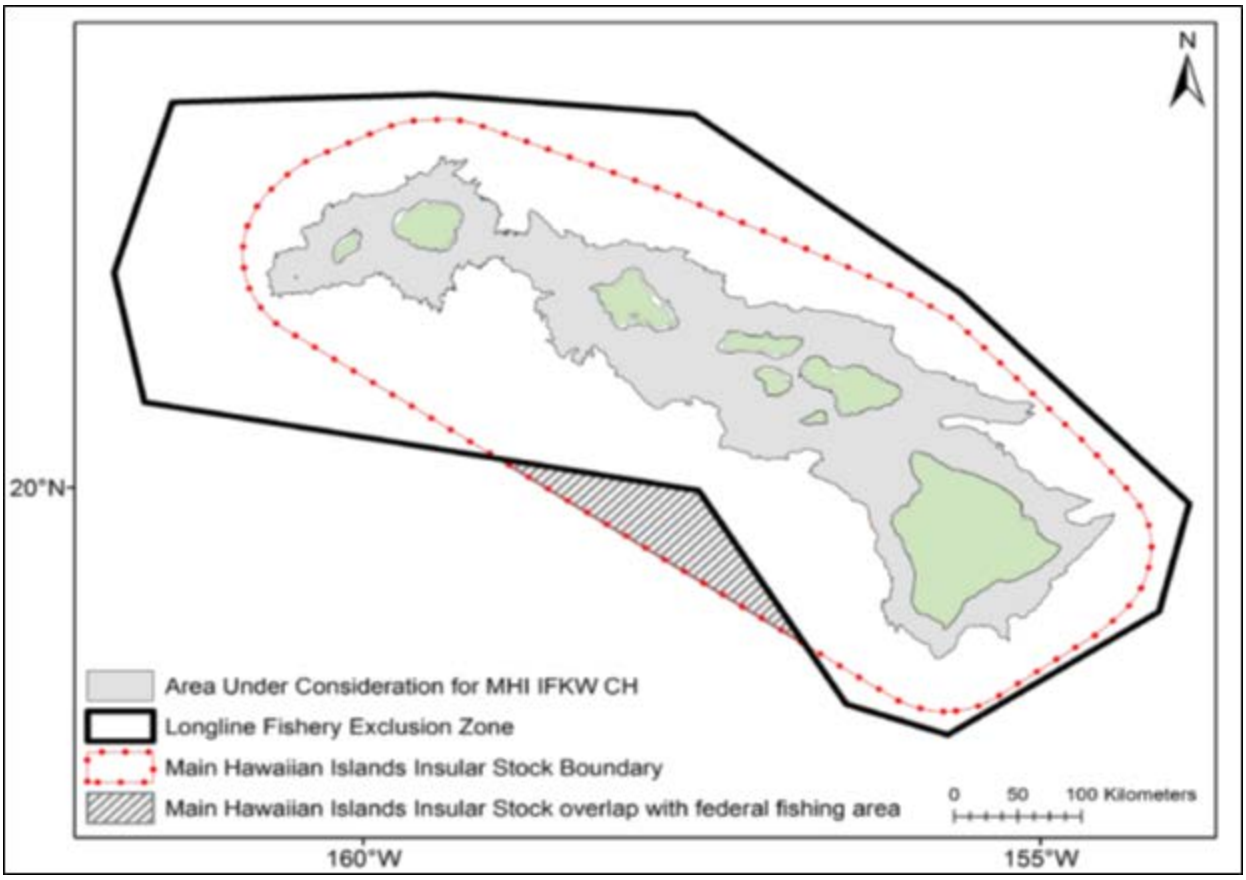

Figure 9. Map depicting the overlap of federal longline fishing area with the MHI IFKW range.

Fishing activities that may affect MHI IFKW DPS critical habitat include those that reduce the quantity, quality, or availability of MHI IFKW DPS prey species. The 2010 MHI IFKW DPS Status Review indicated that fisheries might affect MHI IFKW prey resources in two ways: (1) by removing potential prey in the immediate vicinity of false killer whales, and (2) by contributing to the long-term reduction of prey biomass over the range of the fish stocks that these whales encounter (Oleson et al. 2010).

MHI IFKW critical habitat was included in the request for reinitiation for the Hawaii deep-set and shallow-set longline fisheries. Overlapping species in longline fishery catches and the MHI IFKW diet include opah, wahoo, mahimahi, monchong, swordfish, blue marlin, and bigeye, skipjack, yellowfin, and albacore tuna Available information on the stock status of pelagic fish species known to be part of MHI IFKW prey indicate that stocks are generally stable or improving (see Section 3.1). U.S. landings in the WCPO compared to each stock's total estimated biomass are less than one percent for prey species with estimated biomass (NMFS 2018b), and international and domestic management measures strive to ensure the sustainability of these stocks. Additionally, the diversity in IFKW diet likely indicates the whales shift to available prey items to meet their energetic needs. The longline fisheries do not harvest MHI IFKW prey in the area designated as critical habitat.

Based on this available information, NMFS does not expect that the Hawaii longline fisheries to contribute to the long-term reduction in quantity, quality, or availability of MHI IFKW prey species over the range of the fish stocks that these whales encounter.

3.3.10 Essential Fish Habitat

The Magnuson-Stevens Act defines essential fish habitat (EFH) as those waters and substrate necessary for federally managed species to spawn, breed, feed, and/or grow to maturity. Federal agencies whose action may adversely affect EFH must consult with NMFS in order to conserve and enhance federal fisheries habitat. Habitat areas of particular concern (HAPC) are subsets of EFH that merit special conservation attention because they meet at least one of the following four consideration:

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.

In 1999, the Council developed and NMFS approved EFH and HAPC designations for management unit species (MUS) of the Bottomfish and Seamount Groundfish (FMP) (Amendment 6), Crustacean FMP (Amendment 10), Pelagic FMP (Amendment 8), and Precious Corals FMP (Amendment 4) (74 FR 19067, April 19, 1999). NMFS approved additional EFH and HAPC designations for coral reef ecosystem species in 2004 as part of the implementation of the Coral Reef Ecosystem FMP (69 FR 8336, February 24, 2004). NMFS also approved EFH designations for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

Ten years later, in 2009, the Council developed and NMFS approved five archipelagic-based fishery ecosystem plans (FEP). The FEP incorporated and reorganized elements of the Councils' species-based FMPs into a spatially oriented management plan (75 FR 2198, January 14, 2010). EFH definitions and related provisions for all FMP fishery resources were subsequently carried forward into the respective FEPs. NMFS considers all EFH in determining whether a proposed

fishery management action may affect EFH. Table 43 provides the designated areas of EFH and Table 44 provides the HAPC for all FEP MUS by life stage[10].

[10]EFH designations for crustacean, precious coral, and coral reef ecosystem MUS in American Samoa and coral reef ecosystem MUS in Hawaii may be removed as a result of a separate Council and NMFS action to reclassify MUS as ecosystem component species. NMFS published a Notice of Availability for this action on August 8, 2018 (83 FR 39039) and a proposed rule on September 13, 2018 (83 FR 46466).(.

Table 42. EFH designations for all MUS of Western Pacific FEPS.

FEP	Fishery	Stock or Stock Complex	Life Stage(s)	EFH Designation (Status Quo)
Pelagic	All pelagic fisheries	Tropical and temperate	Egg/larval	The water column down to a depth of 200 m (100 fm) from the shoreline to the outer limit of the EEZ
			Juvenile/adult	The water column down to a depth of 1,000 m (500 fm)
American Samoa, Pacific Remote Island Areas, and Mariana	Bottomfish	Shallow-water and deep-water complexes	Egg/larval	The water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm)
			Juvenile/adult	The water column and all bottom habitat extending from the shoreline to a depth of 400 m (200 fm)
American Samoa, Pacific Remote Island Areas, Mariana, and Hawaii	Coral Reef Ecosystem	Currently harvested coral reef taxa, Labridae	Egg/larval	The water column and all bottom habitat from the shoreline to the outer boundary of the EEZ to a depth of 100 m (50 fm)
		Currently harvested coral reef taxa, Octopodidae	Egg	All coral, rocky, and sand-bottom areas from 0 to 100 m (50 fm)
		Currently harvested coral reef taxa , Carcharhinidae	Egg/larval	No designation
		All other currently harvested coral reef taxa	Egg/larval Egg/larval/juvenile – Kyphosidae only Larval – Octopodidae only	The water column from the shoreline to the outer boundary of the EEZ to a depth of 100 m (50 fm)
		Currently harvested coral reef taxa, Carcharhinidae, Labridae	Juvenile/adult	All bottom habitat and the adjacent water column from 0 to 100 m (50 fm) to the outer extent of the EEZ.
		Currently harvested coral reef taxa, Holocentridae and Muraenidae	Juvenile/adult	All rocky and coral areas and the adjacent water column from 0 to 100 m (50 fm)

		Currently harvested coral reef taxa, Kuhliidae	Juvenile/adult	All bottom habitat and the adjacent water column from 0 to 50 m (25 fm)
American Samoa, Pacific Remote Island Areas, Mariana, and Hawaii	Coral Reef Ecosystem	Currently harvested coral reef taxa, Kyphosidae	Adult	All rocky and coral bottom habitat and the adjacent water column from 0 to 30 m (15 fm)
		Currently harvested coral reef taxa, Mullidae, Octopodidae, Polynemidae, Priacanthidae	Juvenile/adult	All rocky/coral bottom and sand bottom habitat and the adjacent water column from 0 to 100 m (50 fm)
		Currently harvested coral reef taxa, Mugilidae	Juvenile/adult	All sand and mud bottom and the adjacent water column from 0 to 50 m (25 fm)
American Samoa, Pacific Remote Island Areas, Mariana, and Hawaii	Coral Reef Ecosystem	Currently harvested coral reef taxa, Scombridae (dogtooth tuna), Sphyraenidae	Juvenile/adult	Only the water column from the shoreline to the outer boundary of the EEZ to a depth of 100 m (50 fm)
		Currently harvested coral reef taxa, Aquarium Species/Taxa	Juvenile/adult	Coral, rubble, and other hard-bottom features and the adjacent water column from 0 to 100 m (50 fm)
		All other currently harvested coral reef taxa	Juvenile/adult	All bottom habitat and the adjacent water column from 0 to 100 m (50 fm)
		Potentially harvested coral reef taxa	All life stages	The water column and all bottom habitat from the shoreline to the outer boundary of the EEZ to a depth of 100 m (50 fm)
	Crustaceans	Crustaceans, Spiny and slipper lobsters, Kona crab	Egg/larval	The water column from the shoreline to the outer limit of the EEZ down to a depth of 150 m (75 fm)
			Juvenile/adult	All of the bottom habitat from the shoreline to a depth of 100 m (50 fm)
		Deepwater shrimp	Egg/larval	The water column and associated outer reef slopes between 550 and 700 m
			Juvenile/adult	The outer reef slopes at depths between 300-700 m
Hawaii	Bottomfish	Shallow stocks: *Aprion virescens, Lutjanus kasmira, Caranx ignobilis*	Egg	Pelagic zone of the water column in depths from the surface to 240 m, extending from the official US baseline to a line on which each point is 50 miles from the baseline

Hawaii	Bottomfish	Shallow stocks: *Aprion virescens, Lutjanus kasmira, Caranx ignobilis*	Post-hatch pelagic	Pelagic zone of the water column in depths from the surface to 240 m, extending from the official US baseline to the EEZ boundary
			Post-settlement	Benthic or benthopelagic zones, including all bottom habitats, in depths from the surface to 240 m bounded by the official US baseline and 240 m isobath
			Sub-adult/adult	Benthopelagic zone, including all bottom habitats, in depths from the surface to 240 m bounded by the official US baseline and 240 m isobath.
		Intermediate stocks: *Aphareus rutilans, Pristipomoides filamentosus, Caranx lugubris, Pseudocaranx cheilio, Seriola dumerili*	Eggs	Pelagic zone of the water column in depths from the surface to 280 m (*A. rutilans* and *P. filamentosus*) or 320 m (*H. quernus*) extending from the official US baseline to a line on which each point is 50 miles from the baseline
		Intermediate stocks: *Aphareus rutilans, Pristipomoides filamentosus, Hyporthodus quernus, Caranx lugubris, Pseudocaranx cheilio, Seriola dumerili*	Post-hatch pelagic	Pelagic zone of the water column in depths from the surface 280 m (*A. rutilans* and *P. filamentosus*) or 320 m (*H. quernus*), extending from the official US baseline to the EEZ boundary
			Post-settlement	Benthic (*H. quernus* and *A. rutilans*) or benthopelagic (*A. rutilans* and *P. filamentosus)* zones, including all bottom habitats, in depths from the surface to 280 m (*A. rutilans* and *P. filamentosus*) or 320 m (*H. quernus*) bounded by the 40 m isobath and 100 m (*P. filamentosus),* 280 m (*A. rutilans*) or 320 m (*H. quernus*) isobaths
Hawaii	Bottomfish	Intermediate stocks: *Aphareus rutilans, Pristipomoides filamentosus, Hyporthodus*	Sub-adult/adult Sub-adult/adult	Benthic (*H. quernus*) or benthopelagic (*A. rutilans* and *P. filamentosus)* zones, including all bottom habitats, in depths from the surface to 280 m (*A. rutilans* and

		quernus, Caranx lugubris, Pseudocaranx cheilio, Seriola dumerili		*P. filamentosus*) or 320 m (*H. quernus*) bounded by the 40 m isobath and 280 m (*A. rutilans and P. filamentosus*) or 320 m (*H. quernus*) isobaths
		Deep stocks: *Etelis carbunculus, Etelis coruscans, Prisipmoides auricilla, Pristipomoides seiboldii, Pristipomoides zonatus*	Eggs	Pelagic zone of the water column in depths from the surface to 400 m, extending from the official US baseline to a line on which each point is 50 miles from the baseline
			Post-hatch pelagic	Pelagic zone of the water column in depths from the surface to 400 m, extending from the official US baseline to the EEZ boundary
			Post-settlement	Benthic zone, including all bottom habitats, in depths from 80 to 400 m bounded by the official US baseline and 400 m isobath
			Sub-adult/adult	Benthic (*E. carbunculus* and *P. zonatus*) or benthopelagic (*E. coruscans*, and *P. sieboldii*) zones, including all bottom habitats, in depths from 80 to 400 m bounded by the official US baseline and 400 m isobaths
Hawaii	Bottomfish	Seamount groundfish	Eggs and post-hatch pelagic	Pelagic zone of the water column in depths from the surface to 600 m, bounded by the official US baseline and 600 m isobath, in waters within the EEZ that are west of 180°W and north of 28°N
		Seamount groundfish	Post-settlement Post-settlement	Benthic or benthopelagic zone in depths from 120 m to 600 m bounded by the 120 m and 600 m isobaths, in all waters and bottom habitat, within the EEZ that are west of 180°W and north of 28°N

			Sub-adult/adult	Benthopelagic zone in depths from 120 m to 600 m bounded by the 120 m and 600 m isobaths, in all waters and bottom habitat, within the EEZ that are west of 180°W and north of 28°N
Hawaii	Precious Coral	Deep-water	Benthic	Six known precious coral beds located off Keahole Point, Makapuu, Kaena Point, Wespac bed, Brooks Bank, and 180 Fathom Bank
		Shallow-water	Benthic	Three beds known for black corals in the MHI between Milolii and South Point on the Big Island, the Auau Channel, and the southern border of Kauai

Table 43. Habitat areas of particular concern for MUS of all Western Pacific FEPs.

FEP	Fishery	Stock or Stock Complex	HAPC
Pelagic	All pelagic fisheries	Temperate and tropical species	Water column from the surface down to a depth of 1,000 m (500 fm) above all seamounts and banks with summits shallower that 2,000 m (1,000 fm) within the EEZ
American Samoa, Mariana	Bottomfish	Shallow- and deep-water	All slopes and escarpments between 40 m and 280 m (20 and 140 fm)
American Samoa	Coral Reef Ecosystem	Currently and potentially harvested coral reef taxa	Fagatele Bay, Larsen Bay, Step's Point, National Park of American Samoa on the north coast of Tutuila and marine areas at Tau Island and south coast of Ofu, Aunuu Island, Rose Atoll, Aua Transect in Pago Pago harbor
Mariana – CNMI	Coral Reef Ecosystem	Currently and potentially harvested coral reef taxa	Saipan Lagoon
Mariana-Guam	Coral Reef Ecosystem	Currently and potentially harvested coral reef taxa	Cocos Lagoon, Ritidian Point, Jade Shoals, Orote Point and Haputo Point Ecological Reserve Areas
Pacific Remote Island Areas	Coral Reef Ecosystem	Currently and potentially harvested coral reef taxa	All coral reef habitat in the Pacific Remote Island Areas
Hawaii	Coral Reef Ecosystem	Currently and potentially harvested coral reef taxa	Kaula Rock (entire bank); Lehua Island, Niihau; Kaliu Point, Kauai; Makapuu Head/Tide Pool Reef Area, Kaneohe Bay, Kaena Point, Kahe Reef, Oahu; Molokini, Olowalo Reef Area, Ahikihi Kinau Natural Area Reserve, Maui; South shore reefs, Molokai; Halope Bay, Manele Bay, Five Needles, Lanai; Kealakekua, Hawaii Island; all long-term research sites; all Coral Reef Assessment and Monitoring Program sites; all Marine Life Conservation Districts: Pupukea, Shark's Cove, and Waikiki, Oahu; Honolua-Mokuleia Bay, Maui; Lapakahi Bay State Park, Puako Bay and Reef, Waialea Bay, Kawaihae Harbor-Old Kona Airport, Hawaii Island
	Crustaceans	Spiny and slipper lobsters, Kona crab	All banks in the NWHI with summits less than or equal to 30 m (15 fm) from the surface[1]
	Precious Coral	Deep-water	Makapuu, Wespac, and Brooks Bank bed
		Shallow-water	Auau Channel bed

FEP	Fishery	Stock or Stock Complex	HAPC
Hawaii	Bottomfish	All bottomfish stocks	Discrete areas at Kaena Point, Kaneohe Bay, Makapuu Point, Penguin Bank, Pailolo Channel, North Kahoolawe, and Hilo (please see Amendment 4 to the Hawaii Archipelago FEP, Section 3.3.3 for GPS coordinates of the locations and Appendix 2 for maps)
	Bottomfish	All bottomfish stocks	
	Bottomfish	Seamount groundfish	Congruent with EFH (See Table).

[1] In the text of the amendment designating EFH (Sustainable Fisheries Act Amendments, 1998), only banks with summits shallower than 30 m in the northwestern Hawaiian Islands (NWHI) were identified as HAPC for the crustacean MUS (p. 47); whereas maps in Appendix 4 of that document depicted HAPC as all banks and pinnacles with summits less than 30 m in the NWHI, Guam, the CNMI, and American Samoa. While the Mariana and American Samoa FEPs identify all banks with summits less than 30 m as HAPC for crustacean MUS, the Council did not recommend modifications to its EFH and HAPC designations at the time that it restructured the fishery management plans into FEPs. If there are differences between the descriptions of EFH in text, maps, and tables, the textual description is ultimately determinative of the limits of EFH (67 FR 2343 at 2377).

3.4 Administration and Enforcement

NMFS conducts three administrative processes relevant to this action: in-season catch monitoring, enforcement, and publication of catch limits, specified fishing agreements, and closures.

The administrative burden for the government involves PIFSC 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 in the WCPO or EPO, territory attributed catch, or American Samoa catch by dual permitted vessels. 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 (WPFMC 2014).

Regarding enforcement, all alternatives require PIFSC tracking the fishery and projecting the date the U.S. fisheries will reach the bigeye tuna limits, 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 boarding at sea. Under Alternatives 2 and 3, PIFSC would also need to forecast the date the fisheries would reach territorial catch limit and allocation limits. The administrative activities associated with closing fisheries that reach the U.S. or territorial limits involves publishing specified fishing agreements and notifying permit holders of closures.

3.5 Resources Eliminated from Detailed Study

There are presently no known districts, sites, highways, cultural resources, structures or objects listed in or eligible for listing in the National Register of Historic Places in the EEZ around American Samoa, Guam, CNMI, and Hawaii, or in adjacent areas of the high seas in international waters where pelagic longline fishing activities are conducted. Additionally, longline fishing activities are not known to result in adverse effects to scientific, historic, archeological, or cultural resources because fishing activities occur generally miles offshore. Therefore, the proposed action is not likely to affect historic resources.

The pelagic longline fleets under the proposed action do not operate within estuarine waters or have the potential to affect wetlands. Because pelagic longline fishing activities authorized occur offshore and in deep oceanic waters away from land, populated areas, and marine protected areas such as marine national monuments, the alternatives considered would not have an effect on air/water quality, coral reefs, or benthic marine habitats.

Longline fishing is not known to be a potential vector for spreading alien species as most vessels fish far away from coastal areas offshore. The proposed action would not increase the potential for the spread of alien species into or within nearshore waters in Hawaii or any of the U.S. participating territories.

NMFS is not aware of studies that show effects from pelagic longline fisheries to species fecundity or negative predator/prey relationships that result in adverse changes to food web dynamics. Without management to ensure fishing is sustainable, the removal of top predator pelagic species such as bigeye tuna, yellowfin tuna, and billfish above natural mortality rates has

the potential to cause major imbalances or wide-ranging change to ecosystem functions and habitats. However, both international and domestic fishery managers are controlling catches throughout the Pacific. NMFS expects such control to improve stock status and prevent imbalances or wide-ranging changes to ecosystem function. Additionally, NMFS does not expect the proposed action to result in fishing effort above baseline levels of operation. Therefore, NMFS does not analyze effects on biodiversity and/or ecosystem function in this assessment.

4 ENVIRONMENTAL EFFECTS OF THE ALTERNATIVES

This chapter describes the potential environmental consequences that could result from the alternatives considered. The analysis relies on the information described in Chapter 3 as the baseline to evaluate the effects of the management alternatives considered herein. 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 effects to fishery participants, fishing communities, and enforcement and administration. We discuss climate change impacts in the cumulative effects section.

Changes to fisheries in the U.S. participating territories may occur in the future if the proposed action is approved, and funding provided through specified fishing agreements under this action becomes available to support NMFS-approved fisheries development projects identified in a U.S. participating territory's MCP. However, it would be speculative at this time to attempt to evaluate environmental effects of potential projects without specific information on the type or scope of the funded projects. For this reason, potential effects of future fishery development projects are not analyzed in detail in this EA. Such projects are subject to separate environmental review when project details are known.

Due to the similarities in potential impacts under Alternatives 2 and 3, where appropriate, the following analysis often groups the action alternatives in consideration of effects to resource categories.

4.1 Potential Effects on Target and Non-target Stocks

The analysis of the alternatives under this topic includes effects to target and non-target stocks, with a focus on bigeye tuna. To evaluate the potential effects of the alternatives on bigeye tuna, Council staff with assistance from NMFS PIFSC and SPC conducted an analysis to evaluate the effects of the various catch limit specifications under the Council's consideration on future WCPO bigeye stock status (Kingma and Bigelow 2018, Appendix A).

At the WCPFC's 14th Regular Session held December 3–7, 2017, in Manila, Philippines, the SPC presented an evaluation of the outcomes of CMM 2016-01 on bigeye tuna stock status in year 2045 with defined management options for the tropical tuna fishery (purse seine and longline) from the August 2018 Intersessional Meeting to Progress the Draft Bridging CMM on Tropical Tuna (SPC 2017a). This evaluation was based on the 2017 bigeye tuna stock assessment (McKechnie et al. 2017) and utilized deterministic projections across a range of weighted models as agreed to by the SC at its 13th meeting held August in 2017 (WCPFC 2017a). The SPC conducted a thirty-year projection from 2016, rather than a 20-year projection,

because the stock would not reach equilibrium within 20 years under the purse seine effort, longline catch, and recruitment assumptions used (G. Piling. SPC, pers. comm. January 2018).

The analysis presented in Kingma and Bigelow (2018) utilizes the same modeling framework as utilized by the SPC in the evaluation for the WCPFC14 (SPC 2017a). Due to the computational complexity of the 144 weighted models within the structural uncertainty grid, only deterministic projections were conducted based on scalars applied to the assumed bigeye tuna longline catch per region under each fishery outcome. The alternative scenarios assume full implementation of CMM 2017-01, including the 3-month purse seine fish aggregation device (FAD) closure within EEZs and the high seas and an additional two sequential months on the high seas by member countries. For longline catches, the alternative scenarios assume that countries with specified annual longline bigeye limits in excess of 2,000 t would each catch their full annual limit, even if actual catches have been less (e.g., Japan and Indonesia). Japan, for example, caught nearly 6,000 t less than its limit in 2016, and Indonesia reported catches of 8 t in 2016, whereas its limit under CMM 2017-01 is maintained at 5,889 t. Therefore, the analysis of alternatives is conservative, assuming greater effects to WCPO bigeye under full implementation of CMM 2017-01 than have been realized in recent years. For member countries that have bigeye longline catches less than 2,000 t and for SIDS and PTs without limits specified in CMM 2017-01, SPC assumed that the catches of these fleets would continue at their average 2013-2015 levels. Under all these assumptions, the SPC estimated that the total WCPO longline bigeye catch under CMM 2017-01 is 9.6 percent higher than the 2013-2015.

Stock projections indicate the F_{2045}/F_{MSY} increases from 0.927 to 0.983 assuming full implementation of CMM 2017-01 (SPC 2017a). In other words, if CMM 2017-01 were fully implemented, bigeye tuna would not be subject to overfishing in 2045 under the Pelagic FEP and WCPFC LRPs. With respect to spawning biomass and total biomass in 2045 versus biomass at MSY, SPC (2017a) did not calculate these values, focusing instead on the spawning biomass ratio in the absence of fishing ($SB_{2045}/SB_{F=0}$), which is WCPFC's adopted interim LRP for bigeye tuna. Because Kingma and Bigelow (2018) applies the same modeling approach used by SPC (2017a), they could not generate SB/SB_{MSY} projections under the alternatives considered in this EA. However, the SC13 summary report indicated that recent $SB_{2011-2014}/SB_{MSY}$ had a mean of 1.21 (WCPFC 2017a), which is well above the established overfished reference point (0.6 SB/SB_{MSY}) for bigeye tuna under the Pelagic FEP.

SPC conducted fifteen model scenario runs for Kingma and Bigelow (2018). The baseline scenario reflects the average catch of all purse seine and longline fisheries from 2013-2015, and 2015 bigeye catch for Hawaii-permitted longline vessels inclusive of two specified fishing agreements in 2015. The alternative scenarios include the same assumptions for non-U.S. longline and purse seine fleets, but applies scalars on the 2015 U.S. longline or territorial bigeye catch components to account for increased catch by the Hawai'i-based longline fleet. The Alternative 1 scenario represents no action and no transfers of U.S. participating territory allocation to Hawaii longline vessels, thus, the Alternative 1 projection includes lower U.S. longline and U.S. territory catch than the 2015 level. The four potential outcomes for Alternative 2 include total catch limits of 2,000 t per U.S. participating territory and allocation limits of 1,000, 2,000, or 3,000 metric tons of bigeye to permitted U.S. longline vessels from 1, 2, or 3 territories (A-C, respectively). Alternative 2 scenarios also include full utilization of territorial catch limits up to a maximum of 6,000 metric tons (D). Effects from Alternative 3 that reflect the

implementation of fewer than 3 agreements or allocation limits below the maximum are within the range provided under Outcomes E or F and for brevity are not repeated. Because the scenarios in the model did not explicitly include Outcomes E and F under Alternative 3, this analysis uses similar scenarios from the Council/PIFSC paper to characterize potential effects on bigeye tuna based on upper and lower, or bracketed, theoretical catches of bigeye tuna. Table 45 provides the results of the analysis with respect to the alternatives and potential outcomes.

Table 44. F/FMSY, SB/SBF=0 values in 2045 based on SPC projections for each of the alternatives.

	Alternative 1: No Action		**Alternative 2: 2,000 t Catch Limit and 1,000 t Allocation Limit for each U.S. Territory**								**Alternative 3: 2,000 t Catch Limit and 2,000 t Allocation Limit for each U.S. Territory**			
			Potential Outcome A		***Potential Outcome B***		***Potential Outcome C***		***Potential Outcome D***		***Lower Bracket Scenario***		***Upper Bracket Scenario***	
No. of Specified Fishing Agreements	No Fishing Agreements and No BET Transfers		1 Fishing Agreement and 1,000 t of BET Transfers		2 Fishing Agreements and 2,000 t of BET Transfers		3 Fishing Agreements and 3,000 t of BET Transfers		3 Fishing Agreement and 3,000 t of BET transfers and Full Utilization of BET in Territories		3 Fishing Agreements and 4,500 m of BET Transfers		3 Fishing Agreements and 6,000 t of BET Transfers	
Scaled U.S. Longline BET Catch (Regions 2 and 4)	3,963 t HI: 3,554 HI/AS Dual: 409 Transfers: 0		4,963 t HI: 3,554 HI/AS Dual: 409 Transfers: 1,000		5,963 t HI: 3,554 HI/AS Dual: 409 Transfers: 2,000		6,963 t HI: 3,554 HI/AS Dual: 409 Transfers: 3,000		9,554 t HI: 3,554 AS: 1,000 GU: 1,000 CNMI: 1,000 Transfers: 3,000		8463 t HI: 3,554 HI/AS Dual: 409 Transfers: 4,500		9,963 t HI: 3,554 HI/AS Dual: 409 Transfers: 6,000	
		Percent Change		Percent Change		Percent Change		Percent Change		Percent Change		Percent Change		Percent Change
F_{2045}/F_{MSY}	0.983	0.00	0.988	0.5	0.994	1.1	1.000	1.7	1.014	3.2	1.008	2.5	1.016	3.4
$SB_{2045}/SB_{F=0}$	0.286	0.00	0.283	-1.0	0.280	-2.1	0.278	-2.8	0.271	-5.2	0.274	-4.2	0.270	-5.6

Note: Under the Pelagic FEP, a stock is experiencing overfishing when $F/F_{MSY} > 1.0$. Because Kingma and Bigelow 2018 could not generate an MSY-based biomass reference point, we use the WCPFC's adopted limit reference point to evaluate impacts to the bigeye tuna stock. WCPFC considers bigeye tuna overfished when $SB/SB_{F=0} < 0.2$.

Source: Kingma and Bigelow 2018.

4.1.1 Potential Effects of Alternative 1 (No Management Action)

Under Alternative 1, NMFS would not specify a bigeye tuna catch or allocation limit for any U.S. participating territory in 2018. Under this alternative, the U.S. longline fishery based mostly in Hawaii would be subject to an annual longline WCPO bigeye tuna limit of 3,554 t in 2018. When the fishery reaches these limits, NMFS would prohibit catch and retention of longline caught bigeye tuna in the WCPO through the end of the year. Based on recent levels of bigeye tuna catch by vessels to which the limit applies, the fishery may reach the bigeye tuna limit of 3,554 t October 2018 or earlier.

Based on historical fishery performance, NMFS expects vessels operating in the longline fisheries of American Samoa to catch about 529 t of bigeye tuna in 2018. This is the average level of catch for the period 2011-2016. No active longline vessels are based in CNMI and Guam currently.

Without specified fishing agreements, the combined 2018 catch of bigeye tuna by the longline fisheries of the U.S. territories American Samoa (529 t), Guam (0 t) and the CNMI (0 t) and the U.S. longline fisheries (3,554 t) in the WCPO is expected to be 4,083 t, (529 + 0 + 0 + 3,554 = 4,083 t).

4.1.1.1 Potential Effects to Bigeye Tuna

Under Alternative 1 (No Management Action), the Council/PIFSC analysis, (Appendix A, Table 43) indicates that the F_{2045}/F_{MSY} would be 0.983. This supports a conclusion that, under Alternative 1, in combination with the full implementation of CMM 2017-01, WCPO bigeye tuna would not be subject to overfishing in 2045.

With respect to spawning biomass, the analysis indicates that $SB_{2045}/SB_{F=0}$ is 0.286, which is above the WCPFC LRP ($SB_{2045}/SB_{F=0}$ = 0.20) and Pelagic FEP's MSST (B/B_{MSY} 0.6).[11] These values are above the MSST of 0.6 and above the level necessary to produce MSY on a continuing basis. Under this alternative, bigeye stock status would not be in an overfished condition when projected to 2045.

Under Alternative 1, it is likely that the fishery would reach the U.S. bigeye limit of 3,554 t by November 2018 or earlier. If this occurs, NMFS would restrict retention of bigeye tuna in the WCPO by Hawaii longline fishing vessels. However, in accordance with federal regulations at 50 CFR 300, Subpart O, the limit does not apply to bigeye tuna caught by longline gear in the EPO (generally east of 150° W. long.). The regulations also provide vessels operating in the longline fisheries of the U.S. participating territories with an exception to the restriction. The exception includes vessels that land bigeye tuna in a U.S. territory, vessels included in a specified fishing agreement under 50 CFR 665.819(d), and vessels that have an American Samoa and Hawaii longline permit (dual AS/HI longline permitted vessel) and lands in Hawaii, provided the fish was not caught in the EEZ around Hawaii. NMFS attributes catches of bigeye

[11] Under the Pelagic FEP, WCPO bigeye tuna is overfished when SB/SB_{MSY} = 0.6. This is equivalent to $SB/SB_{F=0}$ = 0.14.

tuna by exempted vessels to the applicable U.S. participating territory to which the vessel is associated in accordance with 50 CFR 300, Subpart O.

During a restriction in the WCPO, we would expect some U.S. longline vessels based in Hawaii to shift effort into the EPO. However, vessels 24 m in length and greater that fish for bigeye tuna in the EPO would be subject to the U.S. EPO bigeye tuna limit of 750 t established by the IATTC. When the fishery reaches the EPO limit, NMFS would restrict retention of bigeye tuna by vessels longer than 24 m. Within the last five years, the U.S. EPO limit adopted by the IATTC was 500 t. During that time, when the limit was reached, vessels longer than 24 m were restricted from retaining bigeye tuna in the EPO between 50 and 141 days of the year; for the EPO and WCPO both, these vessels were restricted between 32 and 61 days of the year (Ayers et al. 2018). Between 2013 and 2016, under various closure scenarios, catch of U.S. longline bigeye tuna ranged between 2,056 and 3,053 t or less than 3 percent of the overall fishing mortality on bigeye tuna in the EPO (Table 17).

In the year 2016, NMFS closed the WCPO for a third of the year (113 days), which is comparable, in terms of shifting effort, to the fishery closing in September for the remainder of the year under this alternative. Total U.S. longline catch in the EPO during 2016 was 2,087 t, or 2.22 percent of total bigeye tuna fishing mortality for that year in the EPO (Table 17). Given the U.S. longline fleet's small contribution to overall fishing mortality, NMFS does not anticipate that the Hawaii-based longline fleet would influence stock dynamics of bigeye tuna in the EPO and therefore, does not expect the no-management alternative to negatively affect the EPO bigeye tuna stock. The IATTC has not restricted the catch of vessels shorter than 24 m in the EPO.

During a catch and retention restriction in the WCPO, NMFS expects that fish vendors would import an increased amount of foreign caught bigeye tuna to Honolulu to fill any market gaps. Fresh bigeye tuna imports into Hawaii showed a significant increase in 2012, which has remained stable through 2016, indicating that there is substantial market demand for bigeye tuna in Hawaii, and vendors will likely find alternative sources when U.S. vessels cannot provide tuna.

A potential consequence of Alternative 1 is that when U.S. fisheries are closed, less monitored and less environmentally friendly foreign fisheries targeting bigeye tuna would fill market gaps left by U.S. fisheries that are constrained by federal regulations (See Chan and Pan 2016). Chan and Pan (2016) and Rausser et al. (2009) describe this "market transfer" effect for closures in the shallow-set longline fishery. Factors other than the absence of U.S. caught fish in the market may cause foreign fleets to increase catch of target species (Scorse et al. 2017). In this EA, we estimate that all countries fishing for bigeye tuna would adhere to their internationally established limits, so Alternative 1 would not have adverse effects on bigeye tuna stocks in the WCPO or the EPO.

4.1.1.2 Potential Effects to Non-Target Stocks

CNMI and Guam longline fisheries

As noted in Section 3.2.1, there has been no longline fishing in the EEZ around the CNMI or Guam since 2011, and NMFS does not expect longline fishing activities to occur in 2018. High operating costs associated with vessel docking along with poor market access may be contributing factors to the lack of longline fishing in the Marianas (WPFMC 2014).

Without an active fishery in Guam or the CNMI, Alternative 1 is not expected to result in changes in the conduct of longline fisheries in Guam or the CNMI in 2018, including target or non-target species, area fished, seasonality, or intensity of fishing.

American Samoa longline fishery

As described in Chapter 3.2.2, the largest pelagic fishery in American Samoa is the commercial longline fishery targeting albacore tuna, which vessels sell to the local Pago Pago cannery. The amount of albacore landed by the American Samoa longline fishery in 2016 was 3,433,832 lb (1,558 t). WCPFC estimated the 2016 WCPO catch of south Pacific albacore at 71,407 t, thus the American Samoa longline fishery represents approximately 2.2 percent of the total annual south Pacific albacore catch. The stock of south Pacific albacore is not overfished and overfishing is not occurring, but catch rates have declined over the last decade, resulting in difficult operating conditions for the American Samoa-based longline fleet.

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). Some vessels holding Class B, C, and D American Samoa permits are also registered to a Hawaii longline permit, which allows them to fishing in the EEZ around Hawaii and adjacent high seas and land fish in Hawaii.

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 Alternative 1 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 the Pelagic FEP caps participation in 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 at this time. For these reasons, there would be no additional large effects to target or non-target stocks.

NMFS strives to achieve an annual observer coverage rate of 20 percent in the American Samoa longline fishery. Bycatch of non-target species in the fishery is comprised mostly of sharks and other pelagic species, which fishermen do not retained due to little or no market value and mostly return alive. Bycatch levels are shown in Section 3.2.3. The majority of sharks caught in the fishery are returned alive to the sea. NMFS does not expect the current level of bycatch to increase under Alternative 1.

Hawaii deep-set longline fishery

As described in Section 3.2.4, the combined Hawaii longline fishery (deep-set and shallow-set) is the largest fishery in terms of volume and value in Hawaii. Because the shallow-set fishery is closed for the remainder of 2018 and these proposed specifications are effective for 2018 only, this EA does not analyze the effects of the alternatives on the shallow-set fishery. 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. Additionally, as the larger of the two longline fisheries, effort for bigeye tuna in the deep-set fishery influences catches of non-target species for the longline fishery as a whole.

NMFS expects that if the fishery reaches the WCPO U.S. longline limit for bigeye tuna and NMFS subsequently restricts retention of the species, a number of Hawaii longline vessels would likely shift fishing effort for bigeye tuna to the EPO, while other vessels may stop fishing altogether until January 1, 2019. NMFS expects the catch of non-target species to be reduced in the WCPO if less fishing occurs or if fishing effort is similar to recent levels. Effort for bigeye tuna drives the catch of non-target species. Under Alternative 1, a shift to the EPO may potentially result in increased catch of EPO stocks.

Because the Council and NMFS closely monitor catches based on landings data, we expect to detect changes in the catch of non-target stocks and develop additional management measures, as appropriate.

Given the limited entry status of the Hawaii longline fisheries (both deep-set and shallow-set), there is a low likelihood of the fisheries expanding under Alternative 1, and thus substantial increases in catches of target or non-target species are not anticipated under this alternative. 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 would consider recommending future management measures to the Secretary of Commerce to rebuild the stock or reduce fishing mortality in consideration of the relative impact of the U.S. fleet on the stock.

4.1.2 Potential Effects of Alternative 2 (Status Quo/Council recommended)

Under Alternative 2, longline fisheries in the U.S. participating territories would each be subject to a 2,000 t catch limit for bigeye tuna. Additionally, each U.S. participating territory would be able to allocate up to 1,000 t of its 2,000 t bigeye tuna catch limit to Pelagic FEP-permitted longline vessels under specified fishing agreements. Specified fishing agreements under Alternative 2 would support responsible fisheries development in the U.S. participating territories by providing project funds for approved MCPs.

This EA analyses four possible fishery outcomes for Alternative 2, depending on the number of specified fishing agreements that are authorized in 2018 and the behavior of territorial fisheries.

4.1.2.1 Potential Effects to WCPO Bigeye Tuna

Outcome A: One specified fishing agreement

Based on the information described in Section 2.2, under one specified fishing agreement, NMFS expects the combined catch of bigeye tuna by the longline fisheries of the U.S. territories (American Samoa, Guam, and the CNMI) and the longline fisheries of Hawaii, including catch under one specified fishing agreement to be 5,083 t in 2018 (409 for dual-permitted vessels + 120 for the American Samoa-based longline fleet = 529 + 0 + 0 + 3,554 + 1,000 = 5,083 t).

Under Outcome A, the Council/PIFSC's analysis indicates that the projected F_{2045}/F_{MSY} = 0.988, $SB_{2045}/SB_{F=0}$ = 0.283. These values indicate bigeye tuna would not be subject to overfishing and not overfished in 2045.

Compared to Alternative 1, Alternative 2 Outcome A would result in a slight increase in the fishing mortality rate (F_{2045}/F_{MSY} = 0.988 vs 0.983 under Alternative 1) and a slight decrease in spawning biomass ($SB_{2045}/SB_{F=o}$ = 0.283 vs 0.286 under Alternative 1). However, these changes are minor, such that the effects do not represent a change in the status of bigeye tuna stocks compared to Alternative 1.

Outcome B: Two specified fishing agreements

Based on the information described in Section 2.2, two specified fishing agreements would allow allocation of up to 2,000 t of bigeye tuna from two U.S. participating territories. Therefore, under Outcome B, the combined catch of bigeye tuna would be 6,083 t, which includes the longline fisheries of the U.S. territories of American Samoa (529 t), Guam (0 t), and the CNMI (0 t), plus the U.S. longline fisheries based in Hawaii (3,554 t) and the allocation of 2,000 t (529 t + 0 + 0 + 3,554 + 2,000 = 6,083 t).

Applying the Council/PIFSC analysis to Alternative 2 Outcome B, the projected F_{2045}/F_{MSY} = 0.994, $SB_{2045}/SB_{F=0}$ = 0.280. These values are similar to projected values under one specified fishing agreement (described above). Compared to Alternative 1, Alternative 2 Outcome B would result in a slight increase in the fishing mortality rate (F_{2045}/F_{MSY} = 0.994 vs. 0.983 under Alternative 1) and a slight decrease in spawning biomass ($SB_{2045}/SB_{F=0}$ = 0.280 vs. 0.286 under Alternative 1). These changes are minor, such that the effects do not represent a change in the status of bigeye tuna stocks compared to Alternative 1. The projections associated with Outcome B indicate bigeye tuna would not be subject to overfishing and not overfished in 2045.

Outcome C: Three specified fishing agreements and Partial Utilization of Territorial Limits

Based on the information described in Section 2.2, three specified fishing agreements would allocate up to 3,000 t of bigeye tuna from three U.S. participating territories. Therefore, under Alternative 2 Outcome C, the combined catch of bigeye tuna in 2018 would be 7,083 t. This figure represents the longline fisheries of the U.S. territories, American Samoa (529 t), Guam (0 t) and the CNMI (0 t), plus the U.S. longline fisheries in Hawaii (3,554 t), and the allocation (3,000 t) (529 + 0 + 0 + 3,554 + 3,000 = 7,083 t).

Applying the Council/PIFSC analysis Alternative 2 Outcome C, the projected F_{2045}/F_{MSY} = 1.00 and spawning biomass would be $SB_{2045}/SB_{F=0}$ = 0.278. Compared to Alternative 1, Alternative 2 Outcome C would result in a slight increase in the fishing mortality rate (F_{2045}/F_{MSY} = 1.00 vs. 0.983 under Alternative 1) and a slight decrease in spawning biomass ($SB_{2045}/SB_{F=0}$ = 0.278 vs 0.286 under Alternative 1). These values are less favorable for bigeye tuna compared to the recruitment projections under Outcomes A and B. However, these changes are minor, such that the effects do not represent a change in the status of bigeye tuna stocks compared to Alternative 1. The projections associated with Outcome C indicate bigeye tuna would not be subject to overfishing and not overfished in 2045.

Outcome D: Three specified fishing agreements and Full Utilization of Territorial Limits

Under this outcome, NMFS assumes three specified fishing agreements would allocate 3,000 t of bigeye and each territory would fully utilize the remaining 1,000 t of their 2,000 t limit. In Alternative 2 Outcome D, the 2018 expected bigeye catch would be 9,554 t, which represents an assumed catch of the U.S. territories non-allocated limits, American Samoa (1,000 t), Guam (1,000 t), and the CNMI (1,000 t), added to the catch by U.S. longline fisheries from Hawaii (3,554 t), plus 3,000 t allocated under three specified fishing agreement (1,000 + 1,000 + 1,000 + 3,554 + 3,000 = 9,554 t).

Applying the Council/PIFSC's analysis Alternative 2-Outcome D, the projected F_{2045}/F_{MSY} = 1.014 and the projected $SB_{2045}/SB_{F=0}$ = 0.271. Although the fishing mortality rate under Outcome D would be F_{2045}/F_{MSY} = 1.014, this value is statistically indistinguishable from the overfishing threshold of $F/F_{MSY} > 1.0$. The stock would not be overfished in 2045 as a result of Potential Outcome D. These values are less favorable for bigeye tuna when considered with the projections under Outcomes A, B and C of Alternative 2; however, this outcome is unlikely to occur. This is because it requires longline fisheries in each of the U.S. territories to each catch 1,000 t of bigeye tuna (i.e., 3,000 t combined) in 2018. As previously discussed, NMFS does not expect longline vessels in CNMI or Guam to catch bigeye tuna in 2018 because there are currently no active longline vessels based in those islands. Additionally, it is unlikely that American Samoa permitted vessels would increase their catch to 1,000 t.

Compared to Alternative 1, Alternative 2 Outcome D would result in a small increase in the fishing mortality rate (F_{2045}/F_{MSY} = 1.014 vs. 0.983 under Alternative 1) and a decrease in spawning biomass ($SB2_{045}/SB_{F=0}$ = 0.271 vs 0.286 under Alternative 1). Although these values are less favorable for bigeye tuna compared to the values under Alternative 1, the effects of Alternative 2-Outcome D do not represent a change in the status of bigeye tuna stocks and the WCPO stock would remain not subject to overfishing and not overfished in 2045; the same as under Alternative 1.

4.1.2.2 Potential Effects to EPO Bigeye Tuna

Hawaii longline vessels operating under specified fishing agreements under the proposed action 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.

Under Alternative 2, catch of EPO bigeye tuna is not expected to increase by any appreciable amount compared to recent levels when the fishery operated under a specified fishing agreement. This is because Hawaii longline vessels would likely remain in the WCPO (generally west of 150° W. long.) and not fish in the EPO. Because the EPO is distant from the Port of Honolulu, which increases the cost of fishing (Ayers et al. 2018), NMFS expects fishing effort in the EPO to be lower when the WCPO is available for targeting bigeye tuna as vessels seek to keep fuel and other operating costs low.

The most recent stock assessment of bigeye tuna in the EPO indicates that $F/F_{MSY} = 1.15$ and $SB_{2014\text{-}2016}/SB_{MSY} = 1.02$ (Xu et al. 2018). These results are uncertain (see Section 3.1.1), and NMFS has not accepted the assessment for purposes of stock status determinations due to uncertainties raised by the IATTC Scientific Advisory Committee. In 2017, total bigeye tuna landings in the EPO by the longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 2,690 t (WPFMC 2018) or 2.8 percent of the estimated MSY of 95,491 t (Xu et al. 2018) and 2.8 percent of the total 2017 catch of 97,519 t (IATTC 2018). The impact of the purse-seine fishery on the bigeye stock is far greater than that of the longline fishery (Xu et al. 2018). Given the U.S. longline fleet's small contribution to overall fishing mortality, NMFS does not anticipate that the Hawaii-based longline fleet would influence stock dynamics of bigeye tuna in the EPO and therefore, does not expect Alternative 2 to affect negatively the EPO bigeye tuna stock. Compared to Alternative 1, NMFS expects less EPO bigeye tuna mortality because vessels would fish preferentially in the WCPO as long as the WCPO remains open.

4.1.3 Potential Effects of Alternative 3

Under Alternatives 2 and 3, longline fisheries in the U.S. territories would be subject to a catch limit of 2,000 t per territory and could allocate up to 2,000 t per year apiece to FEP-permitted longline vessels under specified fishing agreements.

This EA analyzes two possible outcomes under this Alternative. Outcome E is all three territories each allocate their entire 2,000 t limit (maximum allocation). Outcome F is that CNMI and Guam allocate their entire 2,000 t limit while American Samoa reserves 500 t for its local fleet and allocates the remaining 1,500 t to vessels identified in specified fishing agreements. We analyzed the outcomes associated with these assumptions because both represent the maximum impact on bigeye tuna, and the first scenario represents the maximum impact on the American Samoa longline fishery. The second scenario is more reasonable because American Samoa has an active longline fleet that lands bigeye tuna.

4.1.3.1 Potential Effects to WCPO Bigeye Tuna

Outcome E: Three specified fishing agreements, maximum allocation

Under Alternative 3 Outcome E, with three specified fishing agreements totaling 6,000 t in allocation, the combined catch of bigeye tuna would be 9,554 t. This figure represents the longline fisheries of the U.S. territories, American Samoa (0 t), Guam (0 t) and the CNMI (0 t), plus the U.S. longline fisheries in Hawaii (3,554 t), and the allocation (6,000 t) (0 + 0 + 0 + 3,554 + 6,000 = 9,554 t). This scenario was not evaluated in the Council/PIFSC analysis, as the model scales catch to the region in which it is caught under Alternative 1 Outcome D, which has

the same total catch as this scenario but different regional catches. However, two similar scenarios that bracket the Outcome E catch level were included in the Council/PIFSC analysis.

Specifically, the Council/PIFSC analysis included an upper bracket scenario, where all three territories each allocate their entire 2,000 t limit (e.g., 6,000 t of allocations) and American Samoa vessels also maintains catch of 529 t and the U.S. fleet catches 3,554 t. Therefore, the combined catch of bigeye tuna under this upper bracket scenario would be 10,083. This figure represents the longline fisheries of the U.S. territories, American Samoa (529 t), Guam (0 t) and the CNMI (0 t), plus the U.S. longline fisheries in Hawaii (3,554 t), and maximum allocations under three fishing agreements (6,000 t) (529 + 0 + 0 + 3,554 + 6,000 = 10,083 t).

Applying the Council/PIFSC analysis, in the upper bracket scenario the projected F_{2045}/F_{MSY} = 1.016 and spawning biomass would be $SB_{2045}/SB_{F=0}$ = 0.270. Although the fishing mortality rate under Outcome D would be F_{2045}/F_{MSY} = 1.016, this value is statistically indistinguishable from the overfishing threshold of $F/F_{MSY} > 1.0$. The stock would not be overfished in 2045 as a result of Potential Outcome E. Compared to Alternative 1, this scenario would result in an increase in the fishing mortality rate (F_{2045}/F_{MSY} = 1.014 vs. 0.983 under Alternative 1) and a decrease in spawning biomass ($SB_{2045}/SB_{F=0}$ = 0.270 vs 0.286 under Alternative 1).

The Council/PIFSC analysis also included a lower bracket scenario, where all three territories would each allocate 1,500 t (4,500 t allocations) and American Samoa vessels also maintains catch of 529 t and the U.S. fleet catches 3,554 t. Therefore, the combined catch of bigeye tuna under this lower bracket scenario would be 8,583 t. This figure represents the longline fisheries of the U.S. territories, American Samoa (529 t), Guam (0 t) and the CNMI (0 t), plus the U.S. longline fisheries in Hawaii (3,554 t), and the 1,500 t allocation under three specified fishing agreements (4,500 t) (529 + 0 + 0 + 3,554 + 4,500 = 8,583 t).

Applying the Council/PIFSC analysis, under the lower bracket scenario, the projected F_{2045}/F_{MSY} = 1.008 and spawning biomass would be $SB_{2045}/SB_{F=0}$ = 0.274. Although the fishing mortality rate under Outcome D would be F_{2045}/F_{MSY} = 1.008, this value is statistically indistinguishable from the overfishing threshold of $F/F_{MSY} > 1.0$. The stock would not be overfished in 2045 as a result of this scenario. Compared to Alternative 1, this scenario would result in a slight increase in the fishing mortality rate (F_{2045}/F_{MSY} = 1.008 vs. 0.983 under Alternative 1) and a slight decrease in spawning biomass ($SB_{2045}/SB_{F=0}$ = 0.274 vs 0.286 under Alternative 1).

The fishing mortality rate and spawning biomass ratios under Outcome E would fall within the values identified in the two bracket scenarios described above. Thus, the effects on bigeye tuna associated with Outcome E indicate the WCPO bigeye tuna stock would not experience overfishing (F_{2045}/F_{MSY} would be somewhere between 1.008 and 1.014, which is statistically indistinguishable from the overfishing threshold of $F/F_{MSY} > 1.0$), and would not be overfished ($SB_{2045}/SB_{F=0}$ would range between 0.270 and 0.274). Although the fishing mortality rate and spawning biomass values are less favorable for bigeye tuna compared to the values under Alternative 1, the effects of Alternative 2-Outcomes E do not represent a change in the status of bigeye tuna stocks and the stock would remain not subject to overfishing and not overfished in 2045; the same as under Alternative 1.

Outcome F: Three specified fishing agreements, maximum allocation for Guam and CNMI, 1,500 allocation for American Samoa

Under Alternative 2 Outcome F, with three specified fishing agreements totaling 5,500 t in allocation (2,000 t each allocation for Guam and CNMI, and 1,500 t allocation for American Samoa with 500 t reserved for catch limit) , the combined catch of bigeye tuna would be 9,554 t. This figure represents the longline fisheries of the U.S. territories, American Samoa (500 t), Guam (0 t) and the CNMI (0 t), plus the U.S. longline fisheries in Hawaii (3,554 t), and the allocation (5,500 t) (500 + 0 + 0 + 3,554 + 5,500 = 9,554 t). Council and NMFS staff did not evaluate this scenario, as the model scales catch to the region in which it is caught under Alternative 1 Outcome D, which has the same total catch as this scenario but different regional catches. However, two similar scenarios that bracket Outcome F catch levels were included in the analysis. These are described above and are not repeated here for brevity. The fishing mortality rate and spawning biomass ratios under Outcome F would fall within the values identified in the two bracket scenarios described above. Thus, the effects on bigeye tuna associated with Outcome F indicate the WCPO bigeye tuna stock would be similar to Outcome E.

4.1.3.2 Potential Effects to EPO Bigeye Tuna

Hawaii longline vessels operating under specified fishing agreements under the proposed action 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.

Under Alternative 3, catch of EPO bigeye tuna is not expected to increase by any appreciable amount compared to recent levels when the fishery operated under a specified fishing agreement. This is because Hawaii longline vessels would likely remain in the WCPO (generally west of 150° W. long.) and not fish in the EPO. Because the EPO is distant from the Port of Honolulu, which increases the cost of fishing (Ayers et al. 2018), NMFS expects fishing effort in the EPO to be lower when the WCPO is available for targeting bigeye tuna as vessels seek to keep fuel and other operating costs low.

The most recent stock assessment of bigeye tuna in the EPO indicates that $F/F_{MSY} = 1.15$ and $SB_{2014\text{-}2016}/SB_{MSY} = 1.02$ (Xu et al. 2018). These results are uncertain (see Section 3.1.1), and NMFS has not accepted the assessment for purposes of stock status determinations due to uncertainties raised by the IATTC Scientific Advisory Committee. In 2017, total bigeye tuna landings in the EPO by the longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 2,690 t (WPFMC 2018) or 2.8 percent of the estimated MSY of 95,491 t (Xu et al. 2018) and 2.8 percent of the total 2017 catch of 97,519 t (IATTC 2018). The impact of the purse-seine fishery on the bigeye stock is far greater than that of the longline fishery (Xu et al. 2018). Given the U.S. longline fleet's small contribution to overall fishing mortality, NMFS does not anticipate that the Hawaii-based longline fleet would influence stock dynamics of bigeye tuna in the EPO and therefore, does not expect Alternative 3 to affect negatively the EPO bigeye tuna stock. Compared to Alternative 1, NMFS expects less EPO bigeye tuna mortality because vessels would fish preferentially in the WCPO as long as the WCPO remains open.

4.1.4 Potential Effects of Alternatives 2 and 3 on Non-Target Stocks

Fishing effort for bigeye tuna drives catches of non-target species in the Hawaii deep-set longline fishery. Based on recent levels of bigeye tuna catch by vessels to which the limit applies, it is likely that the fishery will reach the 2018 U.S. bigeye longline catch limit of 3,554 t by October or earlier. Hawaii longline vessels operating under specified fishing agreements under the proposed action 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.

Under Alternatives 2 and 3, U.S. participating territories could enter into a specified fishing agreement with pelagic permitted vessels in Hawaii. Under a specified fishing agreement, pelagic permitted vessels would be able to fish to the allocation limit. Therefore, fishing effort under Alternatives 2 and 3 could potentially be higher than under Alternative 1, and as such, the catch of non-target species could be higher than under the no management alternative. NMFS expects the catch to be similar to that of recent years, however, as the proposed action is identical to that implemented in 2015, 2016, and in 2017, and for this reason evaluates the impacts of Alternatives 2 and 3 on non-target stocks together.

As described in Section 3.1, recent catch levels of non-target stocks by the U.S. longline fleet, including the Hawaii longline fishery, represent a small percent (generally less than 1 percent) of each stock's estimated MSY. For non-target stocks that NMFS has determined to be subject to overfishing or overfished, the potential for additional catch under Alternatives 2 and 3 could result in additional impacts compared to Alternative 1. As noted in Section 3.1.7, the EPO stock of North Pacific swordfish is subject to overfishing because $F_{2012}/F_{MSY} = 1.11$, but is not overfished because $B_{2012}/B_{MSY} = 1.87$ (ISC 2014). Based on federal logbook records, the catch of swordfish by Hawaii longline vessels operating within the boundary of the EPO stock is less than 5 t annually (NMFS unpublished data). This level of catch is around 1 percent of the stock's estimated MSY of 5,490 t.

Under Alternatives 2 and 3, catch of EPO swordfish is not expected to increase by any appreciable amount compared to 2012 levels when the fishery operated under a specified fishing agreement. This is because Hawaii longline vessels would likely remain in the WCPO (generally west of 150° W. long.) and not fish in the core area of the EPO swordfish stock. Additionally, vessels cannot switch to targeting swordfish in 2018 because the shallow-set fishery is closed through the end of the year. Because the EPO is distant from the Port of Honolulu, which increases the cost of fishing (Ayers et al. 2018), NMFS expects fishing effort in the EPO to be lower when the WCPO is available for targeting bigeye tuna as vessels seek to keep fuel and other operating costs low.

As noted in Section 3.1.8, WCNPO striped marlin is also subject to overfishing because the fishing mortality F/F_{MSY} is > 1.0 (1.25) and is overfished because the spawning biomass (938 t) is lower than the MSST of 1,628 t (ISC 2015a). In 2017, total striped marlin catch by all U.S. longline fisheries and tropical troll fisheries in the North Pacific was 336 t (NMFS 2018a). This level of catch is below the WCPFC-agreed upon U.S. catch limit of 457 t as proscribed in CMM 2010-01.

Since 2014, the U.S. deep-set longline fishery in Hawaii operated under the same catch and allocation limits proposed under Alternative 2. For this reason, under Alternatives 2 and 3, NMFS expects catch of North Pacific striped marlin to be similar to the level reported since 2014 which does not exceed the WCPFC-agreed upon limit of 457 t. Additionally, the Council has recommended NMFS implement this limit under the authority of the Magnuson-Stevens Act, and prohibit the retention of striped marlin by U.S. longline fishing vessels when NMFS projects 95 percent of the limit (or 435 t) to be reached. NMFS and the Council is currently developing an amendment to the Pelagic FEP describing this measure and operational aspects of the accountability measures that would be enacted to prevent the limit from being exceeded.

The WCPFC has agreed to other CMMs that limit the effort of fisheries that target North Pacific albacore and Pacific bluefin tuna. However, the U.S. longline fishery operating in the WCPO and longline fisheries of the U.S. participating territories do not target North Pacific albacore or bluefin tuna. Therefore, under Alternatives 2 and 3, NMFS expects catches of North Pacific albacore by U.S. longline fisheries operating in the North Pacific to be similar to the level reported in 2017, which was 90 t (WPFMC 2018), and represents less than 1 percent of the stock's estimated MSY. For Pacific Bluefin tuna, NMFS expects catches to be similar to the level reported in 2017, which was only 1 t (WPFMC 2018).

Under Alternatives 2 and 3, NMFS expects the yellowfin catch of all U.S. longline vessels operating in the WCPFC statistical area would to be around the 5-yr average of 1,477 t per year (NMFS 2018a). Yellowfin tuna is not subject to overfishing or in an overfished condition in the WCPO, according to the most recent stock assessment (Tremblay-Boyer et al. 2017).

The most recent stock assessment of yellowfin tuna in the EPO indicates that $F/F_{MSY} = 1.01$, and $SB_{2015\text{-}2017}/SB_{MSY}=1.08$ (Minte-Vera et al. 2018). The 2017 U.S. longline total catch of yellowfin tuna in the EPO is 0.25 percent of the 2017 total catch of yellowfin in the EPO (IATTC 2018), and therefore negligible. Given the U.S. longline fleet's small contribution to overall fishing mortality, NMFS does not anticipate that the Hawaii-based longline fleet would influence stock dynamics of yellowfin tuna in the EPO and therefore, does not expect Alternatives 2 or 3 to negatively affect the EPO yellowfin tuna stock.

Under Alternative 2 and 3, all U.S. vessels will continue to be prohibited from retaining onboard oceanic white tip sharks and silky sharks. Because NMFS does not expect fishery activity to increase over that observed in recent years, we do not expect increased bycatch of these species.

Because the American Samoa longline fishery primarily targets south Pacific albacore tuna, NMFS does not expect the fishery's effects on non-target stocks to increase above the baseline. It is not possible to estimate foreseeable levels of effort associated with fishery development projects in American Samoa, Guam, and the CNMI in order to estimate effects on non-target stocks. NMFS expects incremental, not rapid, fisheries development in the U.S. participating territories that NMFS would monitor through logbooks and observer requirements; therefore, NMFS and the Council would develop appropriate management measures to respond to any

fishery management concerns for non-target stocks. The American Samoa longline fleet operates entirely within the WCPO.

The Council and NMFS will continue to monitor domestic catches of all PMUS, and continue to consider information from stock status reports as changes to fishery management are contemplated and implemented. Ongoing and future monitoring and research will allow fishery managers and scientists to consider and respond to new information regarding non-target stocks, particularly those with unknown status.

The longline fisheries have operated under specified fishing agreements since 2010. For these reasons, NMFS does not expect the difference in effort level associated with Alternatives 2 and 3 to result in adverse effects to non-target stocks.

4.2 Potential Effects to Fishery Participants and Fishing Communities

4.2.1 Potential Effects of Alternative 1 (No Management Action)

American Samoa and Hawaii have home-based pelagic longline fleets, but CNMI and Guam have currently little domestic longline capacity.

Under Alternative 1, NMFS would not specify bigeye tuna catch limits for the U.S. territories, and therefore a territory could not allocate any bigeye tuna to FEP-permitted vessels under a specified fishing agreement in 2018. This alternative would have minor to moderately negative consequences for fisheries in the territories, the Hawaii longline fishery, and Hawaii seafood consumers depending upon when the fisheries reach the U.S. bigeye limit. This alternative would eliminate a mechanism to facilitate the infusion of capital into fisheries development projects identified in the MCPs, which result from the implementation of specified fishing agreements.

When the U.S. longline limit for bigeye tuna is reached in 2018, NMFS will prohibit by regulation the retention and landing of bigeye tuna in the WCPO. Thereafter, U.S. longline vessels fishing in the WCPO either must tie up for the remainder of the season, or fish for bigeye tuna in the EPO. There could be a negative economic impact to certain longline vessels based in Hawaii that would not be able to fish in the EPO. For example, some of the Hawaii longline fleet's smaller vessels may not transit to the EPO to fish (the boundary between the WCPO and EPO is 150 degrees W, which is approximately 435 nm from Honolulu Harbor). During WCPO closures, average trip costs increase and Hawaii longliners spend an average of two extra days at sea not fishing. These additional costs are associated with fishing in the more distant EPO (Ayers et al. 2018). Closures also may result in differential effects on certain segments of the Hawaii longline fleet. Hawaii and American Samoa dual-permitted vessels report high earnings during closures, when other vessels may not be able to fish or must travel farther (Ayers et al. 2018).

In addition to potential economic impacts described above, potential safety-at-sea issues arise under Alternative 1. Federal regulations prohibit Hawaii longline vessels from being longer than 101 ft and many active vessels range from 60-75 ft long. Longline vessels fishing for bigeye in the EEZ around Hawaii or the high seas generally fish throughout the year and often in varied weather conditions. Fishing in the EPO for bigeye tuna generally involves longer trips and greater distances from the home port. During one of the most active hurricane seasons in the EPO on record in 2015, higher market prices due to reduced availability during a closure may

have incentivized smaller vessels to fish in the EPO rather than tie up (Ayers et al. 2018). Fishing during the winter months, when strong storms are common in the North Pacific, may pose minor to moderate safety-at-sea concerns. Therefore, minor to moderate safety-at-sea issues arise if vessels have to travel greater distances and are their operational areas are limited spatially when fishing for bigeye tuna in the WCPO is prohibited.

The impact of a prohibition under Alternative 1 may reduce the supply of bigeye tuna caught by Hawaii longline vessels. This occurred in 2009 and 2010 (74 FR 68190, December 23, 2009; and 75 FR 68725, November 9, 2010). Because the restrictions in 2009 and 2010 occurred toward the end of the year (December and November, respectively), and during the holiday season when fresh, high-quality tuna is 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 restriction found minor to moderately negative consequences, though neither the longline industry nor seafood consumers experienced strictly negative impacts (Richmond et al. 2015). Many small sized longline vessels were not able to fish because they could not reach the EPO. Also, sub-premium quality tuna (though still good quality fish) was sold at a lower than average price.

As a direct result of the bigeye tuna restriction on longline fishery in the WCPO that went into effect on November 22, 2010, Hawaii troll and handline fishermen increased their catch of bigeye tuna and benefitted economically from the sales of those tuna. In December 2010, revenue from bigeye tuna caught by small boat vessels was $166,430, up 533 percent from $26,291 in December 2009 when the longline restriction on bigeye occurred on December 29, 2009 (WPFMC 2012). Under Alternative 1, if a longline fishery closure for bigeye tuna occurs, small vessels may experience economic benefits by providing fresh bigeye tuna for local markets, with longer closures resulting in potential greater economic benefits. However, these small vessel fleets are not able to replace the Hawaii longline fleet in terms of volume and value, as typically bigeye tuna caught by longline receives a higher price at market than troll- or handline-caught bigeye tuna. Therefore, there is a potential for limited supply of bigeye tuna for the larger seafood markets and higher prices for consumers.

4.2.2 Potential Effects of Alternative 2 (Status Quo/Council recommended)

Under Alternative 2, the U.S. participating territories would each have an annual 2,000 t longline limit for bigeye tuna and a limit of 1,000 t for bigeye tuna that could be allocated each year to FEP-permitted vessels. Longline fisheries in Guam and CNMI have yet to develop fishing capacity to harvest that quantity of bigeye tuna on an annual basis, so the limit would not affect current FEP-permitted longline vessels located in the Marianas because the fishery is currently inactive.

The American Samoa-based longline fishery has around 15 active vessels, but the Pelagic FEP caps the fishery 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 to reach a 2,000 t limit in the near term. However, if American Samoa entered into a specified fishing agreement, which allocated 1,000 t

of bigeye tuna to other vessels, catches by American Samoa longline vessels fishing in the South and North Pacific, combined with the 1,000 t of allocated bigeye tuna could approach a 2,000 t limit. In 2012, for example, American Samoa caught 1,505 t of bigeye tuna, with 771 t of that amount caught by Hawaii longline vessels operating under a specified fishing agreement with the territory.

If the American Samoa longline fishery reached the 2,000 t limit, and if the fishery was prohibited from retaining or landing bigeye tuna, minor to moderately adverse effects to fishery participants could result. However, any U.S. participating territory government that makes agreements with FEP-permitted vessels could control the amount of catch allocated (i.e., not allocate all 1,000 t), and thus reserve a greater portion of the 2,000 t limit to local vessels and reduce potential effects to local fishery participants.

Federal regulations implementing Amendment 7 at 50 CFR 665.819 require that specified fishing agreements direct funds to the WP SFF to support fisheries development projects identified in a U.S. participating territory's MCP, or that vessels operating under such agreements must land in the territory to which the agreement applies. Pursuant to Section 204(e) of the Magnuson-Stevens Act, the Council, in close coordination with a particular U.S. participating territory, would use the WP SFF to implement fishery development projects identified in that territory's MCP.

Under Alternative 2, fishing communities in U.S. participating territories would benefit indirectly through fishery improvement projects funded from specified fishing arrangements, with the number of territories benefiting depending on the number of 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. If the government of American Samoa were to reserve a greater portion of its limit for local vessels, it may forego access to fisheries development funds. Fishery improvement 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. Funding from past agreements have funded fisheries development projects in the U.S. participating territories including boat ramps, ice machines and designs for longline dock extension in American Samoa, a 250 ft fishing platform on Guam, and community MCP projects and improvements to Garapan Fishing Base in CNMI (Kingma 2016).

Also under Alternative 2, the U.S. participating 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 a history of albacore fishing. The authorization of specified fishing agreements allow catch to be attributed to the territory to which the agreement applies, and demonstrate the aspirations of the U.S. participating territories to participate in the larger, internationally managed WCPO fisheries.

Under Alternative 2, the Hawaii longline fishery participants also stand to realize minor to moderately positive benefits from the ability to enter into agreements with a U.S. participating territory. In general, benefits from arrangements for fishery participants include a reduction in

the need to fish for seasonally variable bigeye tuna in the EPO (which saves fuel costs), the ability to supply locally caught fresh, high quality tuna, and a stable income. The local community benefits from the continued availability of fresh, high quality tuna and lower consumer prices due to consistent product availability, especially during times of peak demand such as the holiday season.

If the fishery reaches the U.S. bigeye tuna limit, some Hawaii longline vessels would begin to fish under a specified fishing agreement and NMFS would attribute their catch to the U.S. territory party to the agreement. As specified fishing agreements involve funding contributions from fishery participants, vessels have the choice to enter into fishing agreements or not. In addition, the EPO may be available for most U.S. longline vessels based in Hawaii all year, since the EPO bigeye tuna catch limit applies to U.S. vessels over 24 m long and many longline vessels based in Hawaii are shorter. However, as mentioned, the availability of bigeye tuna in the EPO is seasonal.

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, based on transit times and costs. As a less desirable option, fishing in the EPO usually means longer transit times, which results in higher trip costs (Ayers et al. 2018), fewer numbers of sets, and potentially poorer quality fish at auction. Further, profits could be lower for fishermen who must fish in the EPO due to the aforementioned factors including the seasonal and inter-annual availability of bigeye tuna in the EPO.

For all of these reasons, Alternative 2 is likely to have minor to moderately positive benefits for U.S. participating territories, participants in Hawaii longline fisheries and fishing communities of Hawaii.

4.2.3 Potential Effects of Alternative 3

Under Alternative 3, the U.S. participating territories would be subject to a total longline bigeye catch limit (2,000 t), and allocation limit for specified fishing agreements (up to 2,000 t per territory). Like Alternative 1, longline vessels are not fishing in Guam and the CNMI so NMFS does not expect longline vessels to catch bigeye tuna in this area 2018. For American Samoa, NMFS expects bigeye tuna catches by longline vessels possessing an American Samoa limited access permit to be similar to the average annual catch in 2011-2016, which is approximately 529 t annually.

For American Samoa only, Alternative 3 may lead to increased effects on the fishery if the territory chooses to allocate its entire quota in a specified fishing agreement. These impacts could be alleviated through monitoring and forecasting of fleet catches and the process by which the Council reviews specified fishing agreements prior to authorization. The government of American Samoa could control the amount of catch allocated and thus reserve a greater portion of the 2,000 t limit for local vessels and reduce potential effects to local fishery participants. If American Samoa were to enter into a specified fishing agreement for all 2,000 t, NMFS would have to prohibit retention of bigeye tuna in the local albacore targeting fleet and retention by dual-permitted vessels. NMFS attributes to American Samoa the bigeye tuna caught by dual-permitted vessels outside the EEZ around Hawaii.

Alternative 3 would involve specified fishing agreements between the U.S. participating territories and permitted FEP vessels, which results in funding to support fisheries development projects identified in a U.S. participating territory's MCP. Fishing communities in U.S. participating territories would benefit indirectly through fishery improvement projects funded from specified fishing arrangements. NMFS expects benefits to vary per fisheries development project from minor to moderate, 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.

Also under Alternative 3, the U.S. participating territories stand to realize minor to moderately positive benefits from developing catch history within WCPFC managed fisheries. WCPFC recognizes the agreements between the U.S. participating territories and the United States in CMM 2017-01.

As opposed to Alternative 1, the Hawaii longline fishery participants also stand to realize minor to moderately positive benefits from the ability to enter into agreements with a U.S. participating territory. In general, benefits from arrangements for fishery participants include a reduction in the need to fish for seasonally variable bigeye tuna in the EPO (which saves money), the ability to supply locally caught fish, consistent fishing grounds, and a stable income. The local community benefits from the continued availability of fresh, high quality tuna and lower consumer prices due to more product being available.

Like Alternative 2, if the fishery meets the U.S. bigeye tuna limit, Hawaii longline vessels could enter into a specified fishing agreement where NMFS attributes their catch to the U.S. territory party to the agreement. In addition, the EPO may be available for most U.S. longline vessels based in Hawaii all year, since the EPO bigeye tuna catch limit applies to U.S. vessels over 24 m long and many longline vessels based in Hawaii are shorter. Fishing in the EPO during November and December is a less desirable option, as bigeye catch rates are believed to increase in the Hawaiian Archipelago during these months, whereas fishing in the EPO usually means longer transit times, which results in higher trip costs (Ayers et al. 2018), fewer numbers of sets, and potentially poorer quality fish at auction. Profits could be lower for fishermen who must fish in the EPO due to the aforementioned factors including the seasonal and inter-annual availability of bigeye tuna in the EPO.

Increases from status quo in bigeye allocation limits under a specified fishing agreement (up to 2,000 t) could result in increases in individual funding contributions under associated agreements.

Overall, Alternative 3 is likely to have minor to moderately positive benefits for U.S. participating territories, participants in Hawaii longline fisheries and fishing communities of Hawaii.

4.2.4 Potential Impacts of All Alternatives to American Samoa Cultural Fishing

This action establishes a bigeye tuna catch and an allocation limits for longline fisheries of each U.S. territory, including American Samoa. The specification of catch and/or allocation limits is

intended to support fisheries development in American Samoa, consistent with MSA's National Standards. The specification of these limits is not expected to have an impact on American Samoa cultural fishing practices, because the specifications do not change where American Samoa longliners are allowed to fish, or where other gear types can fish, or how the fishermen use or share their fish. While under this action, the Government of American Samoa might allocate some bigeye quota to territory fishing arrangements that otherwise would be available for use by cultural fishers, the limit reserved to the territory (1,000 t) significantly exceeds the amount of bigeye annually harvested by American Samoa fishermen. Moreover, this action does not mandate that any territory allocate any portion of its allocation limit to fishing arrangements. Thus, we expect that this action will not adversely affect existing cultural fishing practices. NMFS solicited comments from the public regarding impacts to American Samoa cultural fishing when it published the proposed rule, but received none.

4.3 Potential Effects on Protected Species

Longline fisheries have the potential to interact with several protected species identified in Section 3 as this gear type involves baited hooks suspended in depths near the surface to about 300 m. The analysis of the alternatives under this topic includes effects to turtles, marine mammals, seabirds, sharks and rays, and corals, with a focus on ESA-listed species. Because there are no active longline fisheries in CNMI and Guam, the analysis will focus on potential effects of the American Samoa and Hawaii deep-set longline fisheries. These fisheries operate under separate NMFS BiOps and associated ITS, 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). Under the alternatives considered, longline fisheries in all U.S. participating territories and Hawaii would continue to be managed under applicable Pelagic FEP regulations, and protected species statutes, including the ESA, MMPA, and Migratory Bird Treaty Act.

4.3.1 Potential Effects of Alternative 1 (No Management Action)

4.3.1.1 Hawaii Longline Fisheries

On September 19, 2014, NMFS completed a no-jeopardy biological opinion (2014 BiOp) that included an analysis of the potential effects of the Hawaii deep-set longline fishery on protected species, including sea turtles, humpback whales, sperm whales, the MHI insular false killer whale DPS, and Indo-West Pacific scalloped hammerhead DPS. NMFS reinitiated consultation on the Hawaii deep-set longline fishery for olive ridley sea turtle, North Pacific DPS of loggerhead sea turtle, and the six green sea turtle DPS on April 13, 2016. NMFS completed this supplemental consultation on March 24, 2017 and concluded that the continued operation of the Hawaii deep-set longline fishery will have no substantial effect on the overall population of olive ridley, North Pacific DPS of loggerhead sea turtle, and the six green sea turtle DPS. In making this determination, NMFS found that the overall population for all sea turtle species would remain large enough to maintain genetic heterogeneity, broad demographic representation, and successful reproduction, and to retain the potential for recovery. USFWS found no jeopardy to

the short-tailed albatross in its 2012 BiOp on the operation of the deep-set and shallow-set fishery.

During a bigeye catch and retention restriction under Alternative 1, NMFS expects Hawaii longline fishing effort to shift to the EPO, where interactions with protected species may also occur. Due to the distance involved in transiting to the EPO, and potential for fewer boats to venture to that zone due to safety at sea issues, NMFS expect less overall effort than if the WCPO remained open to fishing for bigeye tuna. Vessels are not authorized to shallow-set for the remainder of 2018, and therefore the shallow-set fishery will not have impacts to protected species in 2018.

The current and maximum likely levels of fishing effort by longline fisheries managed under the FEP would continue to be subject to the level of take authorized under the ESA and regulations under other applicable laws. For example, in accordance with MMPA false killer whale take reduction plan regulations, deep-set longline fishing is temporarily prohibited in an area of the EEZ south of Hawaii, the Southern Exclusion Zone, for the remainder of 2018 due to the fishery's observed serious injury interactions with four false killer whales (83 FR 33484, July 18, 2018). As noted in Section 3.3, NMFS is required to re-initiate consultation under ESA Section 7 if any ITS applicable to the Hawaii deep-set longline fishery is exceeded or another criterion for reinitiation is triggered.

In the 2014 BiOp and 2017 BiOp, NMFS assumed the deep-set fishery would continue to operate throughout the year, deploying approximately 46,117,532 hooks. From 2004-2012, the annual number of vessels that participated in the deep-set fishery has remained relatively stable, ranging from 124 to 129, with a slight increasing trend beginning in 2013. In 2015, 143 vessels made approximately 1,452 trips, with 18,519 sets, and 47.6 million hooks. In 2016, 142 vessels made 1,480 trips with 19,391 sets and deployed 51.2 million hooks. In 2017, 145 deep-set longline vessels made 1,539 trips with 19,674 sets and deployed 53.5 million hooks (WPFMC 2018). Figure 10 shows the effort trend in millions of hooks set annually compared to the level of effort analyzed in the 2014 BiOp and 2017 BiOp. Although the number of hooks deployed has risen slightly, interactions have remained within expected levels with the exception of east Pacific green sea turtle DPS. NMFS has no information to believe that this slight increase will result in a material change in the conduct of the fishery for the duration of this action that will introduce effects to listed species to an extent not considered in the 2014 BiOp as supplemented (2017) or 2018 BE. Fishing effort under this alternative may be lower than baseline conditions, and therefore anticipated levels of interactions with protected species may be correspondingly lower. Accordingly, NMFS expects the proposed action to result in fishing effort (sets and hooks) and protected species interactions to be consistent with those described in the 2014 BiOp as supplemented (2017) and 2018 BE.

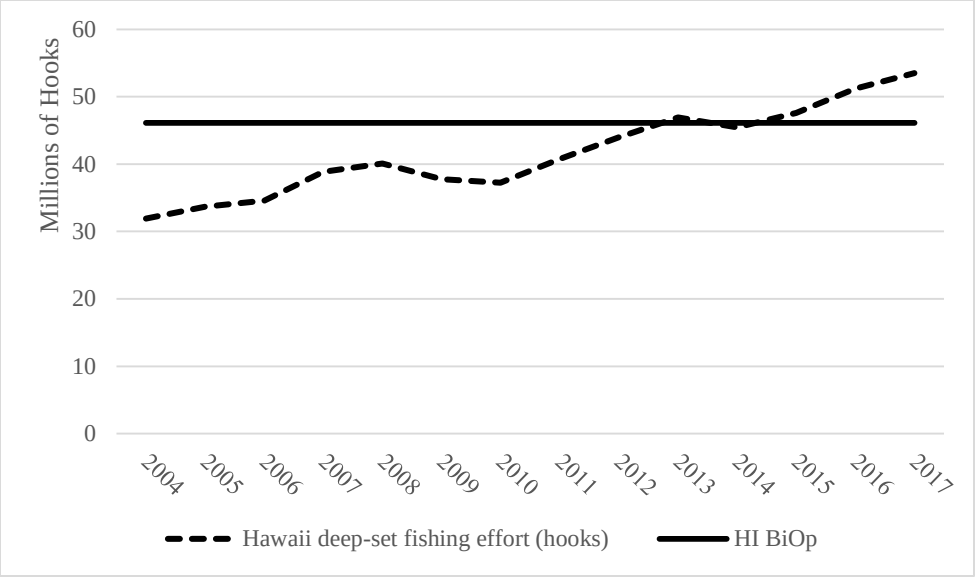

Figure 10. Deep-set fishing effort in the Hawaii longline fishery in millions of hooks as compared to the level of effort evaluated in the 2014 BiOp, as supplemented (2017).
Sources: WPFMC 2018; NMFS 2014a; NMFS 2017a.

The Hawaii deep-set longline fishery may interact with the newly listed oceanic whitetip shark and giant manta ray. These species were not included in the 2014 BiOp, as supplemented (2017). NMFS reinitiated ESA Section 7 consultation for the Hawaii deep-set longline fishery on October 4, 2018.

The stock assessment for the oceanic whitetip shark (Rice and Harley 2012) estimated current biomass of oceanic whitetip sharks in the WCPO to be 7,295 t and current catch at 2,001 t annually. The FAO (2012) estimates 7,295 t of shark biomass would be equivalent to roughly 200,000 individuals. At an average 76.9 percent post-release survival rate, NMFS estimates that the anticipated level of interactions in any given year of equal to or less than 3,185 oceanic whitetip sharks represents 735 mortalities or 0.367% (735/200,000*100) of the estimated number of individuals in the WCPO (NMFS and WPFMC 2018a). Population estimates of oceanic whitetip sharks in the EPO are unavailable, and thus this population-level impact is a conservative estimate.

A preliminary analysis of annual standardized catch per unit of effort (CPUE) for oceanic whitetip shark for 1995-2014 conducted as part of the 2016 Status Review Report (Young et al. 2016) indicated that the population in the area of the Hawaii longline fishery operation might have stabilized in recent years. Observer data from 2015 and 2016 indicate that the nominal CPUE was approximately the same or slightly higher than 2014 (NMFS Observer data, unpublished), but these data are not standardized and should be interpreted with caution. Based on this information, the negligible proportion of the population that may be affected by the operation of the longline fleet, and the high proportion of sharks released alive, the impact of the Hawaii deep-set longline fishery on the oceanic whitetip shark population is likely to be minimal.

NMFS estimates in the 2018 BE for the deep-set fishery that the anticipated level of interactions for giant manta rays in any given year of equal to or less than 84 would lead to 6 giant manta ray mortalities, based on a 92.7 percent post-release survival rate. There is no historical or current global abundance estimates or stock assessments for giant manta rays. Most estimates of subpopulations are based on anecdotal observations, and range from around 100-1,500 (Miller and Klimovich 2016). Little information is available on the abundance of giant manta rays in the high seas area in the central north Pacific where the Hawaii deep-set longline fishery operates. Nevertheless, the 2016 NMFS Status Review Report for the giant manta ray concluded that the incidental catch of this species in U.S. longline fisheries are likely to have minimal effects on the population (Miller and Klimovich 2016).

Based on available information to date, and as discussed in sections 3.3.4.1, NMFS expects the impacts to these species by this fishery to be minimal. NMFS also notes that the protective regulations under Section 4(d) of the ESA were not deemed necessary or appropriate for the conservation of these two species at this time.

4.3.1.2 American Samoa Longline Fishery

In 2015, NMFS evaluated the potential impact of the American Samoa longline fishery on ESA-listed species under its jurisdiction.

On May 8, 2015, NMFS reinitiated consultation under Section 7 of the ESA to evaluate the effects of the American Samoa longline fishery on ESA-listed species (NMFS 2015a). NMFS issued a BiOp on October 30, 2015 that specifically evaluated the potential effects of the American Samoa longline fishery on leatherback and olive ridley sea turtles, the Indo-West Pacific scalloped hammerhead DPS and the six ESA listed reef corals. NMFS determined that the fishery is not likely to jeopardize the continued existence of ESA-listed species under NMFS jurisdiction. The American Samoa longline fishery has not exceeded the authorized ITS for any species issued in the 2015 BiOp. Therefore, NMFS findings and conclusions described in the BiOp remain valid for this fishery.

NMFS also determined that, because there is no new information on fishery interactions with humpback, sperm, blue, fin, or sei whales, the previous NMFS determination of July 27, 2010, remains valid, i.e., the fishery is not likely to adversely those species.

Under this alternative, NMFS expects fishing effort to remain at recent levels for the American Samoa longline fishery. Anticipated levels of interactions with protected species would be similar to or below recent levels (see Section 3.3), which are below the levels evaluated in the most recent biological opinion (17,554,000 hooks). As of 2017, effort by millions of hooks had declined to about half of that analyzed in the 2015 BiOp (Figure 11).

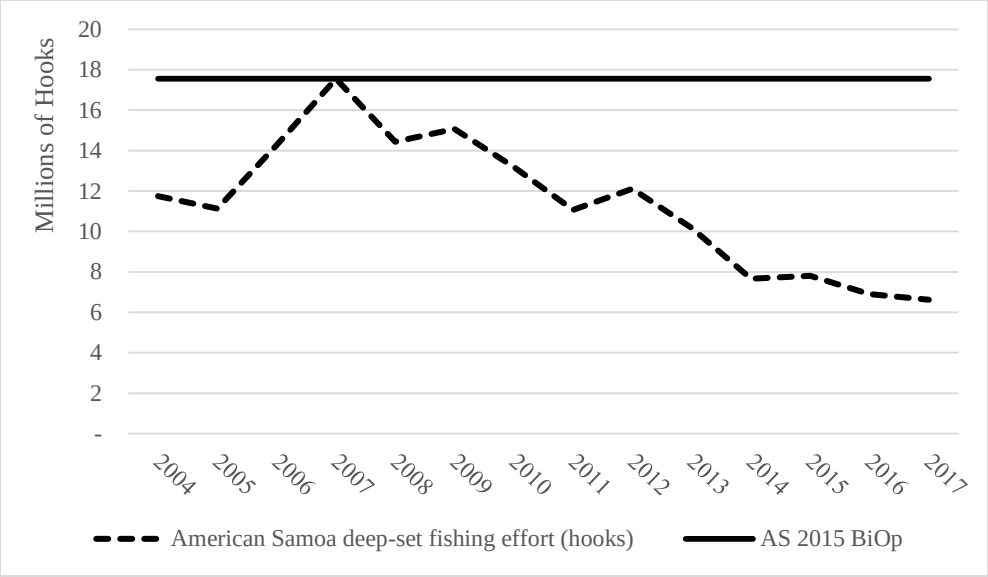

Figure 11. Deep-set fishing effort in millions of hooks in the American Samoa longline fishery as compared to the level of effort analyzed in the 2015 BiOp.
Source: WPFMC 2018 and NMFS 2015a.

The American Samoa longline fishery may interact with the newly listed oceanic whitetip shark and giant manta ray. These species were not included in the 2015 BiOp. NMFS intends to promptly reinitiate formal consultation for the American Samoa longline fishery, as required by 50 CFR 402.16.

The stock assessment for the oceanic whitetip shark (Rice and Harley 2012) estimated current biomass of oceanic whitetip sharks in the WCPO to be 7,295 t and current catch at 2,001 t annually. The FAO (2012) estimates 7,295 t of shark biomass would be equivalent to roughly 200,000 individuals. The American Samoa longline fishery caught an average of 591 oceanic whitetip sharks annually during 2006-2017. At an average 68% post-release survival rate (NMFS unpublished data), NMFS estimates the anticipated level of interactions in any given year of equal to or less than 591 sharks represents 189 mortalities or 0.0945% (189/200,000*100) of the estimated number of individuals in the WCPO. Based on the negligible proportion of the population affected by the operation of the longline fleet and the high proportion of sharks released alive, the impact of the American Samoa longline fishery on the oceanic whitetip shark population is likely to be minimal.

The American Samoa longline fishery caught an average of 5.33 giant manta rays annually during 2006-2017. Based on an average post-release survival rate of 99%, NMFS expects up to one mortality annually (5.33 x 0.01 = 0.05, rounded to 1) (NMFS unpublished data). There is no historical or current global abundance estimates or stock assessments for giant manta rays. Most estimates of subpopulations are based on anecdotal observations, and range from around 100-1,500 (Miller and Klimovich 2016). Little information is available on the abundance of giant manta rays in U.S. EEZ around American Samoa here the American Samoa longline fishery operates. Nevertheless, the 2016 NMFS Status Review Report for the giant manta ray concluded

that the incidental catch of this species in U.S. longline fisheries are likely to have minimal effects on the population (Miller and Klimovich 2016).

Based on available information to date, and as more fully discussed in section 3.3.4.3, NMFS expects the impacts to these species by this fishery to be minimal. NMFS also notes that the protective regulations under Section 4(d) of the ESA were not deemed necessary or appropriate for the conservation of these two species at this time.

4.3.2 Potential Effects of Alternative 2 (Status Quo/Council recommended)

4.3.2.1 Hawaii Longline Fisheries

Hawaii deep-set longline vessels operating under specified fishing agreements under the proposed action 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. The 2014 BiOp as supplemented (2017) evaluated the effects of the deep-set fishery operating throughout the year, which requires specified fishing agreements and based on this information, NMFS has determined that the fishery would not jeopardize the continued existence of those ESA-listed species evaluated by this BiOp. Based on the updated BE analyses, NMFS considers the effects of the fisheries on these species to be insubstantial. Under Alternative 2, NMFS expects effects to protected species from Hawaii deep-set longline vessels operating under one, two or three fishing agreements to be within authorized baseline levels identified Section 3.3 and not result in large adverse effects to any protected species. Vessels are not authorized to shallow-set for the remainder of 2018, and therefore the shallow-set fishery will not have impacts to protected species in 2018.

4.3.2.2 American Samoa Longline Fishery

Because the American Samoa longline fishery primarily targets south Pacific albacore tuna, the fishery's impact on protected species identified in Section 3.3 is expected to be the same regardless of whether NMFS specifies a catch limit for bigeye tuna or not. However, under of Alternative 2, funding may become available to support fisheries development projects identified in the American Samoa MCP, which may lead to a diversification of the American Samoa longline fishery from primarily an albacore fishery to a fishery that is able to harvest and market other pelagic MUS such as bigeye and yellowfin tunas. However, NMFS does not expect such potential diversification 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, NMFS expects the fishing effort levels to be the same as in Alterative 1 and are not expected to increase beyond recent levels, and the interactions currently authorized by NMFS are not expected to be exceeded under Alternative 2. Guam and CNMI Longline Fisheries

For Guam and the CNMI, which currently do not have active longline vessels, it is not possible to estimate foreseeable levels of effort to predict effects to protected species. NMFS expects incremental, not rapid, fisheries development in Guam and CNMI; therefore, any fisheries development resulting in increased participation in the near term will not result in levels of interactions beyond those currently authorized. Development of active longline fisheries in

Guam and CNMI would result in additional review of impacts to protected species through reinitiation of ESA consultation.

4.3.3 Potential Effects of Alternative 3

4.3.3.1 Hawaii Longline Fisheries

Hawaii deep-set longline vessels operating under specified fishing agreements under the proposed action 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. The 2014 BiOp as supplemented (2017) evaluated the effects of the deep-set fishery operating under specified fishing agreements and based on this information, NMFS determined that the fishery would not jeopardize the continued existence of those ESA-listed species evaluated by this BiOp. Based on the updated BE analyses, NMFS considers the effects of the fisheries on these species to be insubstantial. Under Alternative 3, NMFS expects effects to protected species from Hawaii deep-set longline vessels operating under one, two or three fishing agreements to be within authorized baseline levels identified in Section 4.3.1 and does not expect the proposed action to result in large adverse effects to any protected species, including the oceanic white tip and giant manta ray. Vessels are not authorized to shallow-set for the remainder of 2018, and therefore the shallow-set fishery will not have impacts to protected species in 2018.

4.3.3.2 American Samoa Longline Fishery

Because the American Samoa longline fishery primarily targets south Pacific albacore tuna, NMFS expects the fishery's effects on protected species identified in Section 3.3 to continue as described. However, under Alternative 3, funding may be available to support fisheries development projects identified in the American Samoa MCP, which may lead to a diversification of the American Samoa longline fishery from primarily an albacore fishery to a fishery that is able to harvest and market other pelagic MUS such as bigeye and yellowfin tunas. However, NMFS does not expect such potential diversification 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, NMFS expects fishing effort levels to be the same as in Alterative 1 and not expected to increase beyond recent levels, and the interactions currently authorized by NMFS are not expected to be exceeded under Alternative 3.
Guam and CNMI Longline Fisheries

For Guam and CNMI, which currently do not have active longline vessels, it is not possible to estimate foreseeable levels of effort to predict effects to protected species. NMFS expects incremental, not rapid, fisheries development in Guam and CNMI; therefore, NMFS expects that any fisheries development resulting in increased participation in the near term will not result in levels of interactions beyond those currently authorized. Development of active longline fisheries

in Guam and CNMI would result in additional review of impacts to protected species through reinitiation of ESA consultation.

4.4 Potential Effects on Marine Habitats, Critical Habitat and Essential Fish Habitat

Under Alternatives 1, 2 and 3, NMFS does not anticipate any of the alternatives to adversely affect 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 effects to habitats, and so 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. Longline fishing does not occur in MPAs, marine sanctuaries or marine monuments, so no marine protected areas would be impacted.

MHI IFKW prey species are a characteristic of the essential feature of critical habitat for this DPS. U.S. landings in the WCPO compared to each stock's total estimated biomass are less than one percent for prey species with estimated biomass (NMFS 2018b), and international and domestic management measures strive to ensure the sustainability of these stocks. Additionally, the diversity in IFKW diet likely indicates the whales shift to available prey items to meet their energetic needs. The longline fisheries do not harvest MHI IFKW prey in the area designated as critical habitat. Based on this available information, NMFS does not expect that the Hawaii longline fisheries to contribute to the long-term reduction in quantity, quality, or availability of MHI IFKW prey species over the range of the fish stocks that these whales encounter. Longline fishing involves suspending baited hooks in the upper surface layers of the water column, which 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; however, the loss of longline gear during normal fishing operations is not believed to be at levels that result in substantial or adverse effects to EFH, HAPC, or the marine habitat (WPFMC 2014).

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 do not continue to ghost fish indefinitely since baits 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.

In addition, Hawaii longline fishermen have participated in the Honolulu Harbor Derelict Fishing Gear Port Reception Program since 2006. Fishermen voluntarily dispose of retrieved derelict nets and spent longline gear in a receptacle in Honolulu Harbor. After transport to Schnitzer Steel Corporation, the nets are cut up for incineration at Honolulu City and County's H-Power plant. The H-Power facility then incinerates the derelict fishing gear to generate electricity. This model private/public partnership will continue under all alternatives.

4.5 Potential Effects on Administration and Enforcement

4.5.1 Potential Effects of Alternative 1 (No Management Action)

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.

This alternative would have minor positive impacts associated with administration and enforcement, because NMFS would not establish territory bigeye specifications, allocation, or authorize specified fishing agreements in 2018. Therefore, the administrative costs associated with tracking and assigning catches made under territory arrangements with FEP-permitted vessels would be redirected 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 catch and retention of bigeye tuna in the WCPO.

4.5.2 Potential Effects of Alternatives 2 and 3

Under Alternatives 2 and 3, the administrative costs would be similar to Alternative 1, 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. Costs result from monitoring and attributing catches made by vessels identified in a specified fishing agreement to the U.S. participating territory to which the agreement applies, which is status quo in the agency since 2011. Therefore, changes to the level of monitoring or an increase in costs would not occur.

4.6 Potential Cumulative Effects

Cumulative effects refer to the combined effects on the human environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-federal) or person undertakes such other actions. Further, cumulative effects can result from individually minor but collectively significant actions taking place over a period. The cumulative impact analysis examines whether the direct and indirect effects of the alternatives considered on a given resource, interact with the direct and indirect effects of other actions on that same resource to determine the overall, or cumulative effects, on that resource. Section 3 describes the elements of the human environment that the alternative actions considered may affect, or the baseline for assessing the direct and indirect effects of the proposed action, as presented in Section 2.

The following cumulative effects analysis is organized by the following issues: target and non-target species, protected species, and fishery participants and communities. Because pelagic longline fishing activities authorized occur far offshore and in deep oceanic waters away from land, populated areas, and marine protected areas such as marine national monuments, the alternatives considered would not have an effect on air/water quality, coral reefs, or benthic marine habitats. As such, we do not consider these resources in the cumulative effects analysis.

4.6.1 Cumulative Effects on Target and Non-Target Stocks

4.6.1.1 Past, Present and Reasonably Foreseeable Management Actions

NMFS Management Actions

The Council has recommended NMFS implement or authorize several actions, which are presently in various stages of development and/or review before transmittal to NMFS for Secretarial review under the Magnuson-Stevens Act. These include the following actions:

- American Samoa longline limited access permit program modifications to support fishery participation by small vessels (< 50ft) in the fishery and reduce program complexity;
- Exemption to the American Samoa Large Vessel Prohibited Area;
- Reclassification of archipelagic management unit species to ecosystem component species;
- Establishing a framework for domestic catch and effort limits and specifying a striped marlin limit;
- Revising FEP management objectives and converting the FEPs to living documents;
- Modification to the American Samoa longline swordfish trip limit;
- Modification of the framework for specifying territorial catch and effort limits utilized for this management action;
- Establishment of a framework for managing sea turtle interactions in the Hawaii shallow-set longline fleet; and
- Refining EFH for precious corals and updating the FEPs with information on non-fishing impacts to EFH.

In general, the alternatives considered would not have interactive effects with the proposed actions listed as they vary in management scope and impact, and the public will have an opportunity to review and comment on the actions at a later date.

International Management Actions

Both the WCPFC and IATTC continue to adopt management measures that are applicable to fisheries that catch bigeye tuna. To meet the conservation management objectives of these regional fishery management organizations, international cooperation is required. The United States will continue to participate in these organizations and implement conservation and management measures that apply to U.S. fisheries.

External Factors

NMFS identified four major exogenous factors, other than fishing pressure from non-U.S. pelagic fisheries considered in the baseline description of the affected environment, 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
- Ocean noise

- Marine debris
- Ocean productivity related to global climate change

Fluctuations in the Pelagic Ocean Environment

Catch rates of pelagic fish species fluctuate temporally and spatially 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 effects to the pelagic ecosystem (Lehodey et al. 1997). 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, scientists need accurate and timely fisheries information to produce stock assessments that enable fishery managers to regulate harvests based on observed stock conditions.

Oceanic Noise Pollution

In the last 50 years, sound producing activities such as commercial shipping, hydrocarbon exploration and research, military sonar and other defense related-actions have increased ambient sound in the ocean (Hildebrand 2005). Ambient noise from shipping in the Pacific Ocean has doubled every decade for the last 40 years (McDonald et al. 2006). Noise pollution can affect commercially important fish stocks and marine mammals 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 influence 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 life stage, increases in oceanic noise levels could potentially have adverse effects to 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 is not quantified nor is the amount of fish species killed by ghost nets known. 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. Purse seine fisheries often used FADs to aggregate fish. While workers equip many of these FADs with radio transponders or beacons to locate them, the FAD themselves are made

of netting or other loosely connected 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[12] 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, Polovina and others have shown that large-scale climate cycles can affect 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 the spatial ecosystem and population dynamics model (SEAPODYM) showed an eastern shift in the biomass of skipjack and yellowfin tuna over time, with a large and increasing uncertainty for the second half of the century. The effects of fishing on biomass strongly outweighed the decreases contributed to climate change in the first half of this century (Senina et al. 2018). In order to support the long-term sustainability target 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.

4.6.1.2 Effects Analysis on Target and Non-Target Stocks

As described in Section 4.1, NMFS expects the direct and indirect impact of the alternatives considered to have minor positive and negative effects on the status of target and non-target stocks, including bigeye tuna, with none expected to be substantial. U.S. fisheries including those of the territories are sustainably managed and are operating consistent with internationally agreed upon CMMs. Fishermen use a range of fishing gears to harvest bigeye tuna, with primary impacts from longline and purse seine fisheries. In the WCPO, bigeye tuna is not overfished or experiencing overfishing according to LRPs described in the Pelagic FEP (WPFMC 2018).

Alternatives 2 and 3 would involve NMFS oversight of limited allocation of bigeye tuna catch limits under three fishing arrangements. In accordance with federal regulations at 50 CFR 665.819, FEP permitted longline vessels can only operate under one specified fishing agreement at a time. Given this controlling measure, combined with the U.S. WCPO bigeye tuna catch limit of 3,554 t in 2018, and the current and expected levels of vessel participation, it is likely that the level of effort and associated catches in 2018 will be within historical baseline levels.

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

Furthermore, the location of 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. As discussed in Section 3.1.1, the majority of fishing effort by the Hawaii longline fishery occurs north of 20° N in Region 2, and further 98% of bigeye tuna caught by the Hawaii longline fishery comes from north of 10° N and outside of the core equatorial zone of heavy purse seine and longline fishing (NMFS unpublished data).

Fishing effort for bigeye tuna drives catches of non-target species in the Hawaii longline fishery. If fishing effort for bigeye tuna increases, NMFS expects the catches of other target and non-target stocks to increase commensurate with the increases in fishing effort. The predicted level of fishing effort by the U.S. participating territories and the Hawaii longline fishery under all alternatives is likely to result in catches of non-target species within historical baseline levels, although there could be slightly less effort by Hawaii-based fisheries under Alternative 1 compared to Alternatives 2 and 3.

As described above, several exogenous factors may affect target and non-target species. The industrial scale purse seine and longline fisheries have the largest influence on the condition of the stocks. The Council/PIFSC analysis of the proposed action on that status of bigeye tuna in 2045 in Appendix A assumed full implementation of all bigeye tuna longline quotas in each of the proposed action scenarios, other sources of fishing mortality, and that the U.S. fisheries would continue to comply with applicable domestic and international conservation and management measures. Full implementation is above historical catch for most of the longline fleets with catch limits.

Domestic bigeye tuna landings under the US catch limit cannot supply the substantial demand for fresh and frozen tuna in the Hawaii market, which opens the market to foreign imports. NMFS expects that foreign imports would fill the market demand for bigeye tuna if NMFS restricts fishing for bigeye tuna in the WCPO, which is likely under Alternative 1. In this circumstance, we would assume the same amount of bigeye fishing mortality to satisfy the Hawaii market. Because foreign longline fisheries are not as well monitored in terms of target and non-target catches and landings and protected species interactions as compared to U.S. longline fisheries, the proposed action would maintain the U.S. production of bigeye tuna at optimal levels through the highly monitored, environmentally responsible domestic longline fisheries. NMFS does not expect the effects to target and non-target stocks from the proposed action, when combined with the cumulative effects, to result in large adverse affects on these stocks.

4.6.2 Cumulative Effects on Protected Species

4.6.2.1 Past, Present, and Reasonably Foreseeable Future Management Actions

Through data collected from observer programs and other sources, the Council and NMFS will continue to monitor interactions between managed fisheries and protected species. 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 protected species and how to reduce and mitigate interactions. Due to the recent listing of oceanic whitetip shark and giant manta ray, NMFS will reinitiate ESA-consultation on pelagic deep-set longline fisheries managed under the Pelagic FEP. NMFS has reinitiated consultation on the operation of the Hawaii shallow-set fishery and deep-set fishery.

4.6.2.2 Effects Analysis on Protected Species

As previously described in Section 4, the Council and NMFS have taken significant steps to reduce sea turtle and seabird interactions in longline fisheries, and conducts work and research to further reduce interactions. Longline fisheries managed under the Pelagic FEP are the benchmark (WCPFC 2009) 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.

Under all alternatives, 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. Therefore, effects to protected species will be similar. The levels of interactions that NMFS authorizes in each fishery do consider the estimated effects to the same species by all fisheries where the domestic fishery operates, as well as cumulative effects. Cumulative effects of the U.S. fleets have been considered and authorized in the BiOps that apply to the domestic longline and other pelagic fisheries in the western Pacific. None of the alternatives would result in substantial changes to western Pacific pelagic longline fisheries; therefore, NMFS does not anticipate substantial impacts to protected species.

4.6.3 Cumulative Effects to Fishery Participants and Fishing Communities

4.6.3.1 Past, Present, and Reasonably Foreseeable Future Management Actions

As noted in Section 3.2.6, the Council has identified American Samoa, CNMI, Guam, and each of the inhabited Hawaiian Islands as a fishing community. 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.

External Factors

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 fishing costs. 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, for example longline fishing on small vessels in the American Samoa longline fishery.

The amount of imported seafood is also increasing, where the U.S. now imports nearly 85 percent of consumed seafood.[13] Increased seafood imports are substantial 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 U.S. fish products lose market channels to imported seafood products, U.S. fishermen may find it difficult to regain those channels. As described previously, the territories face significant barriers to developing responsible longline fisheries, which include lack of infrastructure, transportation, and access to markets.

In addition, a reliance on foreign imports in Hawaii and the U.S. territories may affect 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 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 Hawaii and the U.S. participating territories. The development of domestic sustainable fisheries production in the western region would help to mitigate the effects of most of these fundamental issues by providing increased revenues for communities and developing fisheries that meet domestic consumption needs. Alternative 1 would not allow the territories to enter into specified fishing agreements in 2018 whereas Alternatives 2 and 3 would allow for such agreements and could promote potential opportunities to develop fisheries in the U.S. participating territories, which could help offset other factors that are affecting fishing communities in the U.S. territories.

Alternative 1 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 depend on fish products provided by Hawaii longline fishery throughout the year, which may impact Hawaii communities. Alternatives 2 and 3 would provide the Hawaii longline fishery the opportunity to supply U.S. markets with bigeye tuna caught in the WCPO through fishing agreements with one or more U.S. participating territory. 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.

[13] http://www.fishwatch.gov/farmed_seafood/index.htm

4.6.4 Effects Analysis on Fishery Participants and Fishing Communities

Regardless of which alternative is selected, NMFS and the Council would continue to manage Western Pacific pelagic fisheries sustainably. The alternatives are not expected to result in a large change to the fisheries in terms of area fished, effort, harvests, or protected species interactions. Alternative 1 would not allow U.S. participating territories to make fishing agreements with FEP-permitted vessels. As a result, a territory could not allocate any bigeye tuna. Alternative 1 also does not provide long-term stability for fishery participants in the Hawaii longline fishery and vessel owners and captains would need to prepare for restrictions each year. However, this may encourage fishery participants to explore other management options, such as catch shares or individual fishing quotas.

Alternatives 2 and 3 would provide minor to moderate benefits to fishery participants and provide fisheries development funding to the U.S. territories through the WP SFF. NMFS expects these alternatives to result in the greatest short and long-term benefit to fishery participants by providing the most intensive management oversight of fishing arrangements, managing territorial catches of bigeye tuna, and long-term stability in the commercial pelagic fisheries. Such stability would result in fewer cumulative effects of external stressors on fishing participants and communities, as compared to the Alternative 1.

4.6.5 Climate Change

NMFS and the Council evaluated the potential effects of climate change on the resources considered in this document. We also considered the potential effects of the alternatives considered in the face of climate change.

A climate change impact analysis is a difficult undertaking given its global nature and interrelationships among sources, causes, mechanisms of actions and impacts. We focus our analysis on whether climate change is expected to impact resources that are the focus of this analysis including: target stocks (bigeye tuna), non-target stocks and bycatch of particular management interest (striped marlin and North Pacific swordfish stocks, and silky sharks), and on protected species.

Implications of climate change for the environmental effects of the alternatives:

We note that the effects of climate change on these resources may be positive if climate change effects benefit a species' prey base or otherwise enhance the species' ability to survive and reproduce, or effects may be negative if the impacts reduce a species' ability to survive and reproduce. Effects may also be neutral.

For the current proposed specifications, the effects of climate change on target and non-target species that are caught by the Hawaii deep-set longline fishery have been considered indirectly because the proposed bigeye tuna catch and allocation limits were based on recent fishery catches (including all fishing mortality on the stock), and in consideration of the most recent stock status. NMFS considers the effects of climate change on ESA-listed species in the BiOp for each fishery when issuing the ITS.

Climate change would have similar effects to the resources regardless of which alternative is considered. In the coming years, the Council and NMFS will continue to monitor domestic catches of all PMUS, and continue to consider information from scientifically-derived stock status reports as future catch and allocation limits are made, and as changes to fishery management are contemplated and implemented. Ongoing and future monitoring and research will allow fishery managers and scientists to consider effects of climate change, fishing, and other environmental factors that are directly or indirectly affecting the resources.

Potential effects on climate change in terms of greenhouse gas emissions:

NMFS authorizes the U.S. longline fishery to conduct fishing with or without a bigeye tuna specification. The proposed specification would not direct any particular level of fishing effort other than capping vessel length and the number of permits available and, therefore, neither NMFS nor the Council controls where fishing vessels fish beyond existing restricted fishing areas, how long a fishing trip lasts, or other decisions made by individual fishermen. For this reason, our comparison of potential greenhouse gas emissions will be qualitative.

As described above in Section 2, the expected fishery outcomes of the alternatives considered are similar. Under Alternative 1, (No Management Action), NMFS would prohibit the Hawaii deep-set longline fishery from retaining bigeye tuna caught in the WCPO when the fishery reaches the U.S. limit, usually a few months before the end of the year. When this happens, the Hawaii longline fleet may shift effort to the EPO (east of 150 degrees W. long). Under Alternatives 2 and 3 vessels in the Hawaii deep-set longline fleet are expected to travel farther than they might under Alternative 1; however, much of the deep-set longline fishing toward the latter part of the year may be closer to the Hawaiian archipelago instead of the EPO. For these reasons, none of the alternatives is expected to result in a large change to greenhouse gas emissions.

5 APPLICABLE LAWS

Section 303 of the Magnuson-Stevens Act requires that any fishery management plan prepared by any fishery management council or by the Secretary of Commerce contain conservation and management measures that are consistent with the National Standards of the Act, other provisions of the Act, regulations implementing recommendations by international fishery management organizations and any other applicable law. This section identifies provisions of the other applicable laws that the NMFS and the Council has identified the proposed action must comply with, and rational for why this action is consistent with each applicable law.

5.1 National Environmental Policy Act

In accordance with the National Environmental Policy Act (NEPA) and CEQ implementing regulations, and NOAA Administrative Order (NAO) 216-6A – *Compliance with the National Environmental Policy Act, Executive Orders 12114, Environmental Effects Abroad of Major Federal Actions; 11988 and 13690, Floodplain Management; and 11990, Protection of Wetland,* NMFS must consider the effects of its proposals on the environment before taking action. As part of this process, NMFS and the Council provide opportunities for the involvement of interested and affected members of the public before a decision is made. NMFS and the Council prepared this EA in accordance with NEPA and its implementing regulations, as well as NAO 216-6A.

The Council and NMFS also developed the proposed action described in this EA in coordination with various federal and local government agencies that are represented on the Council.

On August 8, 2018, NMFS published the proposed territorial bigeye tuna catch and allocation specifications, and requested public review and comments on the proposed specification. The proposed specification was accompanied by a draft EA dated July 20, 2018 (83 FR 39037). The comment period ended August 23, 2018. NMFS received comments from the fishing industry on the proposed specifications and on the draft EA, which expressed general support for the action. NMFS considered public comments in finalizing the EA and in making its decision on the proposed action, and responds to comments in the final specification.

The NMFS Regional Administrator will use this EA to consider the effects of the proposed action on the human environment, taking into consideration public comments on the proposed action presented in this document, and to determine whether the proposed action would have a significant environmental impact requiring the preparation of an environmental impact statement.

5.2 Coastal Zone Management Act

The Coastal Zone Management Act requires a determination that a recommended management measure has no effect on the land, water uses, or natural resources of the coastal zone or is consistent to the maximum extent practicable with an affected state's enforceable coastal zone management program. On April 4, 2018, NMFS determined that the proposed specifications are consistent to the maximum extent practicable with the enforceable policies of the approved coastal zone management programs of American Samoa, Guam, the Northern Mariana Islands, and Hawaii, and requested the programs review of and concurrence with its determinations.

5.3 Endangered Species Act

The Endangered Species Act (ESA) provides for the protection and conservation of threatened and endangered species. Section 7(a)(2) of the ESA requires federal agencies to ensure that any action authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. Pursuant to Section 7 of the ESA, NMFS has evaluated the pelagic longline fisheries of Hawaii, American Samoa, Guam, and the Northern Mariana Islands for potential effects to ESA-listed species under the jurisdiction of NMFS. The conclusions of these consultations are briefly summarized below.

Hawaii Deep-Set Longline Fishery

On January 6, 2012, the U.S. Fish & Wildlife Service (USFWS) completed a biological opinion (BiOp) that concluded the Hawaii deep-set fishery would not jeopardize the short-tailed albatross, and included an incidental take statement for that species. The Hawaii deep-set longline fishery has not exceeded the authorized incidental take statement (ITS) for the short-tailed albatross.

On September 19, 2014, NMFS completed a no-jeopardy BiOp for the continued operation of the Hawaii deep-set pelagic longline fishery. NMFS determined that the fishery is not likely to

jeopardize the continued existence or recovery of humpback whales, sperm whales, MHI insular false killer whale distinct population segment (DPS), North Pacific loggerhead turtles, leatherback turtles, olive ridley turtles, green turtles, or the Indo-West Pacific DPS of scalloped hammerhead sharks. NMFS anticipated that the fishery could interact with and adversely affect these species, and authorized ITS for each of these species.

On September 16, 2015, NMFS concurred with the agency determination that the continued authorization of the Hawaii deep-set longline fishery is not likely to adversely affect Hawaiian monk seal critical habitat, and fin whales.

On March 24, 2017, NMFS completed a no-jeopardy supplement to the 2014 BiOp for the continued operation of the Hawaii deep-set pelagic longline fishery. NMFS determined that the fishery is not likely to jeopardize the continued existence or recovery of the N. Pacific loggerhead sea turtle DPS, olive ridley sea turtles (endangered Mexico population and threatened global species), East Pacific green sea turtle DPS, Central North Pacific green sea turtle DPS, East Indian-west Pacific DPS, Southwest Pacific DPS, Central West Pacific DPS, and Central South Pacific DPS. NMFS anticipated that the fishery could interact with and adversely affect these species, and authorized incidental take statement (ITS) for each of these species.

On January 22, 2018, NMFS issued a final rule to list the giant manta ray as threatened species under the ESA (83 FR 2916). On January 30, 2018, NMFS issued a final rule to list the oceanic whitetip shark as threatened under the ESA (83 FR 4153). Both species occur in the action area of the Hawaii deep-set longline fishery. Neither species is subject to protective regulations under ESA section 4(d); and accordingly, take is not prohibited under ESA.

On October 4, 2018, NMFS reinitiated ESA Section 7 consultation for the deep-set fishery for all ESA-listed species under NMFS jurisdiction occurring in the action area due to three re-initiation triggers: listing of the oceanic whitetip shark and giant manta ray; designation of main Hawaiian Islands insular false killer whale critical habitat; and exceeding the ITS for east Pacific green sea turtle DPS in mid-2018. The 2014 BiOp as supplemented (2017) remains valid for all species which the fishery may likely adversely affect except oceanic whitetip shark, and giant manta ray. On October 4, 2018, NMFS determined that the conduct of the fishery during the period of consultation will not violate ESA Sections 7(a)(2) and 7(d).

Hawaii Shallow-set Longline Fishery

On January 6, 2012, the USFWS completed a BiOp that concluded the Hawaii shallow-set fishery would not jeopardize the short-tailed albatross, and included an incidental take statement for that species. NMFS previously evaluated the potential impacts of this fishery on ESA-listed species under NMFS jurisdiction and their designated critical habitat NMFS documented the determination in a no-jeopardy BiOp (January 30, 2012) and four separate letters of concurrence or no-effect determinations (August 27, 2008, October 6, 2014, March 2, 2015, and September 16, 2015).

In the 2012 BiOp, NMFS concluded that the continued operation of the shallow-set fishery would adversely affect, but was not likely to jeopardize the continued existence of the humpback whale, the loggerhead turtle, the leatherback turtle, the olive ridley turtle, or the green turtle, or

result in destruction or adverse modification of designated critical habitat. The 2012 BiOp also included not likely to adversely affect determinations for the Hawaiian monk seal, the blue whale, the fin whale, the sei whale, the sperm whale, the North Pacific right whale, and the hawksbill sea turtle.

On September 10, 2014, NMFS published a final rule (79 FR 53852) that listed 20 new species of reef-building corals as threatened under the ESA. Of those, NMFS believes that seven occur in the EEZ. On October 6, 2014, NMFS determined that Pacific Island pelagic fisheries, including the shallow-set fishery, would not affect ESA-listed species of shallow reef-building corals. On March 2, 2015, NMFS determined that the continued authorization of the Hawaii shallow-set longline fishery is not likely to adversely affect the main Hawaiian Islands (MHI) insular false killer whale DPS and the Eastern Pacific scalloped hammerhead shark DPS. On September 16, 2015, NMFS determined that the continued authorization of the Hawaii shallow-set fishery is not likely to adversely affect Hawaiian monk seal critical habitat and fin whales.

On October 16, 2014, NMFS issued a permit under Section 101(a)(5)(E) of the Marine Mammal Protection Act also authorizing the shallow-set fishery to incidentally take humpback whales from the Central North Pacific stock (79 FR 62105). Please note that, since the date of that permit, the CNP humpback whale was designated a DPS and is not a listed species under the ESA (81 FR 62259, September 8, 2016).

On December 27, 2017, the United States Ninth Circuit Court of Appeals found that NMFS' no jeopardy determination with respect to the impact of the shallow-set fishery on North Pacific loggerheads was arbitrary and capricious. *Turtle Island Restoration Network, et al..,* v. *Department of Commerce, et al..,* 878 F.3d 725 (2017). Upon remand to the district court and pursuant to a court-approved settlement agreement, the portions of the 2012 Bi Op discussing the North Pacific loggerhead were vacated.

This fishery also may interact with the newly listed giant manta ray and oceanic white tip shark. On April 20, 2018, NMFS reinitiated ESA Section 7 consultation for the shallow-set fishery for all ESA-listed species under NMFS jurisdiction occurring in the action area. On April 24, 2018, NMFS determined that the conduct of the fishery during the period of consultation will not violate ESA Sections 7(a)(2) and 7(d). On May 8, 2018, pursuant to the court-approved settlement agreement discussed above, the U.S. District Court of Hawaii closed the Hawaii-shallow set fishery through December 31, 2018 (83 FR 21939, May 11, 2018). Therefore, the fishery is not authorized to operate for the remainder of 2018, and would have no effect on ESA-listed species during 2018.

American Samoa Longline Fisheries

On October 30, 2015, NMFS issued a no-jeopardy BiOp on the continued operation of the American Samoa longline fishery. NMFS determined that the fishery is not likely to jeopardize the continued existence of green, leatherback, olive ridley, and hawksbill sea turtles, the South Pacific loggerhead sea turtle DPS, or the Indo-West Pacific scalloped hammerhead shark DPS. NMFS anticipated that the fishery could interact with and adversely affect these species, and authorized an ITS for each species. The American Samoa longline fishery has not exceeded the authorized levels of take for any species issue in the BiOp.

NMFS also determined that, because there is no new information on fishery interactions with humpback, sperm, blue, fin, or sei whales, the previous NMFS determination of July 27, 2010, remains valid, i.e., the fishery is not likely to adversely those species. NMFS also determined that the continued authorization of the fishery is not likely to adversely affect ESA-listed species of shallow-reef building corals because there is very limited reef habitat in the EEZ, and longline vessels fish far offshore, well beyond 3 nm from shore.

The American Samoa longline fishery has not exceeded the authorized ITS for any species issued in the 2015 BiOp, and the proposed action is not expected to affect endangered and threatened species or critical habitat in a manner not considered in previous ESA consultations. NMFS intends to promptly reinitiate formal consultation regarding the effect of this fishery on the two recently listed species, oceanic whitetip shark and giant manta ray, as required by 50 CFR 402.16. For a discussion of the likely effects of this fishery on these species, see section 3.3.4.3. Neither species is subject to protective regulations under ESA section 4(d); and accordingly, take is not prohibited under ESA.

Guam and the Northern Mariana Islands

On March 29, 2001, NMFS completed a BiOp on the continued operation of the pelagic fisheries of the western Pacific, which considered the effects of all longline, troll, handline, and pole and line fisheries based in Hawaii, American Samoa, Guam, and the CNMI. NMFS determined that western Pacific pelagic fisheries are not likely to adversely affect any threatened or endangered marine mammal or the hawksbill sea turtle. In addition, NMFS determined that these fisheries were not likely to jeopardize the continued existence of green sea turtles, leatherback turtles, loggerhead turtles or olive ridley turtles and authorized an ITS for each of these species, which applied primarily to longline fisheries, although separate ITS were also provided non-longline fisheries of the western Pacific. The Guam and CNMI fisheries have not exceeded the authorized ITS for any species issued in the 2001 BiOP and is currently inactive. Therefore, the proposed action is not expected to affect endangered and threatened species or critical habitat in a manner not considered in previous ESA consultations.

5.4 Marine Mammal Protection Act

The MMPA prohibits, with certain exceptions, the take of marine mammals in the U.S. and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. The MMPA gives NMFS as delegated by the Secretary of Commerce, the authority and duties for all cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions, except walruses). With this responsibility, NMFS required to prepare and periodically review stock assessments of marine mammal stocks.

Under Section 118 of the MMPA, NMFS must publish, at least annually, a List of Fisheries that classifies U.S. commercial fisheries into one of three categories. These categories are based on the level of serious injury and mortality of marine mammals that occurs incidental to each fishery. Specifically, the MMPA mandates that each fishery be classified according to whether it has frequent, occasional, or a remote likelihood of or no known incidental mortality or serious injury of marine mammals. A Category 1 fishery is one with frequent incidental morality and serious injury of marine mammals. A Category 2 fishery is one with occasional incidental

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

According to the 2018 List of Fisheries (83 FR 5349, February 7, 2018), the Hawaii deep-set longline fishery is a Category I fishery and the American Samoa longline fishery is a Category II. Because there has been no documented interaction with marine mammals in longline fisheries of Guam and the CNMI and because those fisheries have been inactive since 2011, they are not classified in the 2018 List of Fisheries.

On October 16, 2014, NMFS issued a permit under the MMPA section 101(a)(5)(E), addressing the Hawaii deep-set and shallow-set longline fisheries' interactions with depleted stocks of marine mammals (79 FR 62105). The permit authorizes the incidental, but not intentional, taking of ESA-listed humpback whales, sperm whales, and main Hawaiian insular false killer whales. In authorizing this permit, NMFS determined that incidental taking by the Hawaii longline fisheries would have a negligible impact on the affected stocks of marine mammals. NMFS has prepared a draft negligible impact determination, and the permit under MMPA section 101(a)(5)(E) remains valid and effective until replaced in accordance with 5 U.S.C. § 558(c).

Under the proposed action, and due to existing fishery requirements (e.g., limited entry), NMFS does not expect U.S. longline fisheries to expand or change operations (e.g., area fished, number of vessels fishing, number of trips per year, number of hooks per set, depth of hooks, or gear deployment techniques).

NMFS does not expect longline vessels in the CNMI or Guam to catch bigeye tuna in 2018 because there are currently no active longline fisheries based in those islands. In American Samoa, NMFS expects bigeye tuna catches by American Samoa longline vessels to be similar to the average annual catch in 2011-2016, approximately 529 t. As of 2017, effort in the American Samoa longline fishery by millions of hooks had declined to about half of that analyzed in the 2015 BiOp. Under this action, NMFS does not expect the proposed action would modify American Samoa longline, CNMI, or Guam fisheries operations in a manner that would result in an effect on any marine mammals that was not considered in previous ESA consultations or by the LOF's classification and MMPA Section 118 commercial fishery take authorization.

Longline fishing effort over time may gradually increase if latent permits in the Hawaii-based longline fishery are activated; however, NMFS does not anticipate new entry and subsequent fishing effort into the fishery in the near future because the number of vessels that have participated in the past ten years has been relatively stable with only a slight increase in recent years. From 2004-2012, the annual number of vessels that participated in the deep-set fishery has remained relatively stable, ranging from 124 to 129, with a slight increasing trend beginning in 2013. In 2017, 145 deep-set longline vessels made 1,539 trips with 19,674 sets and deployed 53.5 million hooks. Although the number of hooks deployed in represents an increase of 3.21% from 2014 to 2017, interaction rates remain within levels authorized, and NMFS has no information to believe that this increase will result in a material change in the future conduct of the fishery that will introduce effects to marine mammals to an extent not considered in previous ESA consultations or by the LOF's classification and the Section 118 commercial fishery take authorization. Under the proposed allocation limits, Hawaii longline vessels operating under specified fishing agreements 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 proposed action would not modify vessel operations or other aspects of the longline fisheries of American Samoa, Guam, the CNMI, and Hawaii, longline fisheries as conducted under the proposed action are not expected to affect marine mammals in any manner not previously considered or authorized the commercial fishing take exemption under Section 118 of the MMPA.

5.5 National Historic Preservation Act

The National Historic Preservation Act requires federal agencies undergo a review process for all federally funded and permitted projects that will affect sites listed on, or eligible for listing on, the National Register of Historic Places. There are presently no known districts, sites, highways, cultural resources structures or objects listed in or eligible for listing in the National Register of Historic Places in the EEZ around American Samoa, Guam, CNMI, Hawaii, and the Pacific Remote Island Areas, or in adjacent areas of the high seas in international waters where pelagic longline fishing activities are conducted. Because longline fisheries are conducted in deep waters far offshore and do not affect bottom features, neither current nor future longline fishing activities would be expected to affect submerged resources such as shipwrecks that could occur in offshore areas.

5.6 Executive Order 12866 (Regulatory Impact Review)

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

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

Based on the costs and benefits discussed in the RIR (Appendix B) and the above criteria, none of the alternatives appears to have the potential to constitute a "significant" action under EO 12866.

5.7 Executive Order 13132 (Federalism)

The objective of Executive Order 13132 is to guarantee the Constitution's division of governmental responsibilities between the federal government and the states. Federalism Implications (FI) is defined as having substantial direct effects on states or local governments (individually or collectively), on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. This

action does not contain policies with FI under E.O. 13132, as it does not affect or alter the relationship between the federal government and the governments of the Territory of American Samoa, the Territory of Guam, the CNMI, or the State of Hawaii.

5.8 Information Quality Act

The information in this document complies with the Information Quality Act and NOAA standards (NOAA Information Quality Guidelines, September 30, 2002) that recognize information quality is composed of three elements: utility, integrity, and objectivity. National Standard 2 of the Magnuson-Stevens Act states that an FMP's conservation and management measures shall be based upon the best scientific information available. In accordance with this national standard, the information product (i.e., this EA) incorporates the best biological, social, and economic information available to date, including the most recent biological information on, and assessment of, the pelagic fishery resources and protected resources, and the most recent information available on fishing communities, including their dependence on pelagic longline fisheries, and up-to-date economic information (landings, revenues, etc.). The policy choices, i.e., proposed management measures, contained in the information product are supported by the available scientific information. The management measures are designed to meet the conservation goals and objectives of the Pelagic FEP and the Magnuson-Stevens Act, and other applicable laws.

The data and analyses used to develop and analyze the measures contained in the information product are presented in this EA. Furthermore, all reference materials utilized in the discussion and analyses are properly referenced within the appropriate sections of the environmental assessment. The information product was prepared by Council and NMFS staff based on information provided by NMFS Pacific Islands Fisheries Science Center (PIFSC) and NMFS PIRO. The information product was reviewed by PIRO and PIFSC staff, and NMFS Headquarters (including the Office of Sustainable Fisheries). Legal review was performed by NOAA General Counsel Pacific Islands and General Counsel for Enforcement and Litigation for consistency with applicable laws, including but not limited to the Magnuson-Stevens Act, National Environmental Policy Act, Administrative Procedure Act, Paperwork Reduction Act, Coastal Zone Management Act, Endangered Species Act, Marine Mammal Protection Act, and Executive Orders 13132 and 12866.

5.9 Paperwork Reduction Act

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

5.10 Administrative Procedure Act

All federal rulemaking is governed under the provisions of the Administrative Procedure Act (APA) (5 U.S.C. Subchapter II) which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish

notification of proposed rules in the *Federal Register* and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day waiting period from the time a final rule is published until it becomes effective, with certain exceptions.

The proposed 2018 territorial catch and allocation limit action complies with the provisions of the APA. In developing the proposed specifications and AM recommendations, the Council held public meetings, provided opportunities for the public to comment on the proposed methods, specifications and recommendations, and the Council considered comments from the public and advisory bodies in making its recommendation.

On August 8, 2018, NMFS published the proposed territorial bigeye tuna catch and allocation specifications, and requested public review and comments on the proposed specification. The proposed specification was accompanied by a draft EA dated July 20, 2018 (83 FR 39037). The comment period ended August 23, 2018. NMFS received comments from the fishing industry on the proposed specifications and on the draft EA. NMFS considered public comments in finalizing the EA and in making its decision on the proposed action, and responds to comments in the final specification.

Because this rule relieves a restriction, it is not subject to the 30-day delayed effectiveness provision of the APA pursuant to 5 U.S.C. 553(d)(1). This rule allows U.S. vessels identified in a valid specified fishing agreement to resume fishing in the western and central Pacific Ocean (WCPO) if and when NMFS closes the longline fishery for bigeye tuna. On July 18, 2018, through a separate action, NMFS established the 2018 limit of 3,554 t of bigeye tuna caught by U.S. longline fisheries in the WCPO (83 FR 33851). When NMFS projects that the fishery will reach the limit, NMFS must close the fishery for bigeye tuna in the WCPO. Regulations at 50 CFR 665.819 require NMFS to begin attributing longline caught bigeye tuna to the U.S. territory to which a fishing agreement applies seven days before the date NMFS projects the fishery will reach the WCPO U.S bigeye tuna limit, or upon the effective date of the agreement, whichever is later. Based on longline catch records to date, NMFS projects the fishery will reach the current 3,554 t limit of WCPO bigeye tuna in early November 2018. If the effectiveness of this final rule is delayed past the date the WCPO bigeye tuna limit is reached, NMFS would be required to publish a temporary rule that restricts the Hawaii-based longline fishery for WCPO bigeye tuna until this final rule is effective. After the effective date, NMFS would remove the restrictions for U.S. vessels identified in a valid specified fishing agreement with a U.S. territory. By implementing this rule immediately, it allows the Hawaii longline fishery to continue fishing without the uncertainty or disruption of a potential closure.

5.11 Regulatory Flexibility Act

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

Based on the available information presented in this EA, NMFS has determined that all vessels federally permitted under Pelagic FEP are small entities under the SBA's definition of a small entity, i.e., they are engaged in the business of fish harvesting (NAICS Code: 114111), are independently owned or operated, are not dominant in their field of operation, and have annual gross receipts not in excess of $11 million.

Even though this proposed action would apply to a substantial number of vessels, the implementation of this action would not result in significant adverse economic impact to individual vessels. Furthermore, there would be little, if any, disproportionate adverse economic impacts from the proposed rule based on gear type, or relative vessel size. The proposed rule also will not place a substantial number of small entities, or any segment of small entities, at a significant competitive disadvantage to large entities.

NMFS does not expect the proposed action to have a significant economic impact on a substantial number of small entities. As such, an initial regulatory flexibility analysis is not required and none has been prepared.

5.12 Executive Order 12898 (Environmental Justice)

On February 11, 1994, President 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.[14]

The longline fisheries of Hawaii, American Samoa, Guam, and the Northern Mariana Islands are not known to have a large adverse environmental effect on stocks of fish that may be caught by subsistence fisherman, or on other marine resources that may be targeted for subsistence consumption. The fishery does not pollute marine waters and so does not have adverse effects to human health or on marine life. NMFS and the Council manage fisheries through federal regulations that are intended to conserve marine resources and habitats to enhance the economic and social well-being of fishing communities, including members of minority populations and low-income populations.

[14] "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. Memorandum from the president to the Heads of Departments and Agencies. Comprehensive Presidential Documents No. 279 (February 11, 1994).

NMFS does not expect the proposed action to have large effects to the environment that would result in a disproportionately large and adverse effect on minority or low-income populations. Therefore, there would not be a disproportionately high and adverse impact to minority or low-income populations with respect to the availability of fish, other environmental effects, or health effects if NMFS implements the proposed action.

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APPENDIX A. EVALUATION OF PROPOSED 2018 TERRITORIAL BIGEYE TUNA CATCH AND ALLOCATION LIMITS

Evaluation of Proposed 2018 Territorial Bigeye Tuna Catch and Allocation Limits[1]

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Background

This report evaluates impacts on bigeye tuna stock status of a proposed U.S. management action that considers longline bigeye catch limits for the U.S. Participating Territories[2] of American Samoa, Guam, and Northern Mariana Islands. Consideration also includes limits on the amount of bigeye the U.S. Participating Territories could potential allocate under specified fishing agreements with Hawaii-permitted longline vessels. This report evaluates the impact on bigeye stock status of the various catch and allocation limit specifications under consideration by the Western Pacific Regional Fishery Management Council.

Bigeye tuna is considered a Pacific-wide stock, but is assessed separately in the western and central Pacific Ocean (WCPO) and the eastern Pacific Ocean (EPO). The most recent stock assessment for WCPO bigeye tuna was completed in July 2017 (McKechnie et al.., 2017). The 2017 assessment updates the previous stock assessment prepared by the Secretariat of the Pacific Community (SPC) in 2014 by incorporating additional bigeye catch data from 2013-2015, and investigating alternative regional bigeye tuna spatial structure in combination with a new bigeye tuna growth curve, with the latter suggesting bigeye tuna is more productive than previously assumed. Unlike the 2014 stock assessment, which identified four models that most plausibly reflected the condition of the stock, the 2017 stock assessment identifies 72 plausible models called a "structural uncertainty grid."

In August 2017, the 2017 WCPO bigeye stock assessment was reviewed at the 13th Regular Session of the WCPFC Scientific Committee (SC) in Rarotonga, Cook Islands. The SC endorsed the 2017 WCPO bigeye tuna stock assessment as the most advanced and comprehensive assessment yet conducted for this species. The SC also endorsed the use of the assessment model's structural uncertainty grid to characterize stock status and management advice and implications, but noted the large uncertainty in the assessment results, mainly due to the inclusion of old and new regional spatial structures and growth curves, for which the SC considered further investigation is necessary. The SC agreed to a weighting scheme for the assessment models in the grid considering five axes of uncertainty. The consensus weighting

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[1] PIFSC Internal Report IR-18-004.
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[2] American Samoa, Guam, and the Northern Mariana Islands have Participating Territory status within the WCPFC and are provided different catch and effort limits than the United States under WCPFC conservation and management measures.

considered all options within four axes of uncertainty for (1) steepness, (2) tagging dispersion, (3) size frequency and (4) old and new regional structure to be equally likely. For the growth axis of uncertainty, the new growth curve models (n = 36 models, weight = 3, 108 model weight units) were weighted three times more than the old growth curve models (n = 36 models, weight = 1, 36 model weight units). In total there were 144 models to characterize bigeye characterize stock status, uncertainty, summarize stock status in relation to reference points as provided in the 2017 WCPO bigeye stock assessment, and to calculate the probability of breaching the WCPFC-adopted spawning biomass limit reference point (LRP, $0.2*SB_{F=0}$) and the probability of F_{recent} being greater than F_{MSY} (WCPFC 2017).

The 2017 WCPO bigeye tuna stock assessment and the selected weighting grid selection by the WCPFC SC indicate that recent levels of fishing mortality were below the level that will support MSY (WCPFC 2017). Relative recent fishing mortality (F_{recent}/F_{MSY}) had a median of 0.83 with a ~23% probability that recent fishing mortality was above F_{MSY}. The central tendency of recent spawning biomass had a median ($SB_{recent}/SB_{F=0}$) = 0.32 with a 16% probability that the recent spawning biomass had breached the adopted LRP (WCPFC 2017).

At the WCPFC's 14th Regular Session held December 3–7, 2017, in Manila, Philippines, the SPC presented an evaluation of the outcomes of CMM 2015-01 on bigeye tuna stock status in year 2045 with defined management options for the tropical tuna fishery (purse seine and longline) from the Intersessional Meeting to progress the draft Bridging CMM on Tropical Tuna (SPC 2017a).[3] This evaluation was based on the 2017 bigeye tuna stock assessment (McKechnie et al. 2017) and utilized deterministic projections across the range of weighted models as agreed to by the SC at its 13th meeting held August in 2017 (WCPFC 2017).

The SPC evaluation was integral to the deliberations of the WCPFC, which subsequently agreed on a new conservation and management measure (CMM 2017-01) for tropical tunas (skipjack, yellowfin, and bigeye) at WCPFC14. An objective of CMM 2017-01 is to have the bigeye spawning biomass depletion ratio ($SB/SB_{F=0}$) to be maintained at or above the average $SB/SB_{F=0}$ for 2012-2015 (0.32). To achieve this objective, the CMM includes a number of provisions to be implemented in 2018, including longline catch bigeye limits for certain member countries, seasonal purse seine Fish Aggregation Device (FAD) closures in exclusive economic zones (EEZs) and the high seas in the area between 20˚N and 20˚S. For example, under CMM 2017-01, the U.S. longline bigeye limit was reverted back to its 2016 level of 3,554 t. In 2017, the U.S. limit adopted by the WCPFC was 3,345 t in 2017). Five other members have longline bigeye catch limits specified in the measure, which also were set back to their 2016 levels (Table 1), with the exception of China, which obtained a 500- t higher limit than provided in 2016. Under CMM 2017-01, other members catching less than 2,000 t are allowed to harvest up to 2,000 t, while Small Island Developing States (SIDS) and Participating Territories (PTs) longline bigeye catches continued to be unlimited under the measure. The U.S. territories of American Samoa,

[3] The SPC conducted a 30-year projection from 2016, rather than a 20-year projection due to the stock not reaching equilibrium in the 20-year horizon with the assumed purse seine effort and longline catch, and under the recruitment assumptions used. (G. Piling. SPC, pers. comm. January 2018).

Guam and the Commonwealth of the Northern Mariana Islands are PTs, and under CMM 2017-01 have no limits on bigeye tuna.

Evaluation of Proposed 2018 Territorial Bigeye Tuna Catch and Allocation Limits

Pursuant to Amendment 7 of the PFEP, the Council is considering recommending the specification of bigeye tuna catch and allocation limits for each of the U.S. territories. Specification alternatives under consideration include the following:

1. Alternative 1: No specification of longline catch or allocation limits for any U.S. participating territory in 2018 (No Management Action);
2. Alternative 2 (Status quo): Specify for each U.S. participating territory, a 2,000- t longline catch limit and 1,000- t allocation limit in 2018 (Status Quo);

The Council is also considering alternatives that would set no catch limit for any U.S. territories, but continue to allow each territory to allocate bigeye tuna to Hawaii longline vessels under specified fishing agreements.

3. Alternative 3: No specification of a total longline bigeye limit for any U.S. participating territory, but specify a limit on the amount of bigeye each territory can allocate under specified fishing agreements:
    a. 1,000- t allocation limit per territory
    b. 1,500- t allocation limit per territory
    c. 2,000- t allocation limit per territory

For each alternative, there are different levels of bigeye tuna limits that NMFS and the Council would authorize each U.S. territories to catch, or to transfer for use by Hawaii-permitted longline vessels under specified fishing agreements. Therefore, there are a range of potential outcomes associated with Alternatives 2 and 3 listed above with respect to a variable number (1, 2, or 3) of specified fishing agreements that could be established in a given year, and the magnitude of the catch (e.g., 1,000; 1,500; or 2,000 t) per agreement. For Alternative 2, there are four potential outcomes (A-D) and 9 potential outcomes for Alternative 3 (Table 1).

Table 1: Potential outcomes associated with Alternatives 2 and 3

Alternative 2	Alternative 3
Potential Outcome A: 1 agreement (1,000 t)	Potential Outcome E: 1 agreement (1,000 t)
Potential Outcome B: 2 agreements (2,000 t)	Potential Outcome F: 2 agreements (2,000 t)
Potential Outcome C: 3 agreements (3,000 t)	Potential Outcome G: 3 agreements (3,000 t)
Potential Outcome D: 3 agreements and full utilization of each Territory's 2,000 t limit (6,000 t)	Potential Outcome H: 1 agreement (1,500 t)
	Potential Outcome I: 2 agreements (3,000 t)
	Potential Outcome J: 3 agreements (4,500 t)
	Potential Outcome K: 1 agreement (2,000 t)
	Potential Outcome L: 2 agreements (4,000 t)
	Potential Outcome M: 3 agreements (6,000 t)

At the request of the Council and NMFS, SPC conducted projections with respect to the alternatives listed above and their associated potential outcomes in relation to the implementation of CMM 2017-01 with respect to future (2045) bigeye stock status. The projections were based on scalars to the Hawaii-permitted longline catch within the MULTIFAN-CL bigeye assessment model framework that represent the potential outcomes under the various alternatives.

The SPC analysis assumed full implementation of the CMM 2017-01, including the 3-month purse seine FAD closure within EEZs and the high seas and an additional two sequential months on the high seas by member countries. For longline catches, the SPC analysis assumed that countries with specified annual longline bigeye limits in excess of 2,000 t would each catch their full annual limit, even if actual catches have been less (e.g., Japan and Indonesia; Table 2). For member countries that have bigeye longline catches less than 2,000 t, and for SIDS and PTs without limits specified in CMM 2017-01, the SPC analysis assumed that the catches of these fleets would be continued at their average 2013–2015 levels. Under all these assumptions, the SPC estimates that the total WCPO longline bigeye catch would be increased by 9.6% of the 2013-2015 average catch under CMM 2017-01.

Table 2: 2018 longline bigeye catch limits and 2016 reported longline bigeye catches for six WCPFC members.

Member Countries, Participating Territories, and Cooperating Non-Members	2018 Longline Bigeye Catch Limit (t)	2016 Longline Bigeye Catch (t) Reported to WCPFC
Japan	18,265	12,610
Korea	13,942	11,018
Chinese Taipei	10,481	9,488
China	8,224	8,195
Indonesia	5,889	8
United States	3,554	3,761

Source: CMM 2017-01 and SPC 2017b.

It is noted that member flag States with longline catches of bigeye of less than 2,000 t could increase their catch to this level and remain compliant with the CMM 2017-01, and further that longline fleets of SIDS and PTs are currently unrestricted and could increase their catches of bigeye to any level.

The SPC projections utilized the short-term future bigeye tuna recruitment hypothesis. Under the short-term recruitment hypothesis, future recruitment would remain on average consistent with 2004-2013 conditions. The WCPFC Science Committee has agreed that for the purpose of evaluating the CMM, and any proposed alternatives, that the recent recruitment scenario is more appropriate because of the possibility of some bias in the estimates of early recruitment in the bigeye stock assessment (SPC 2014).

To evaluate the impacts on bigeye tuna stock status from the alternatives listed above, the SPC conducted 14 model scenario runs. The baseline scenario represents 2013–2015 average catch or 2015 for bigeye catch by Hawaii-permitted longline vessels inclusive of two specified fishing

agreements in 2015, one with the CNMI and the other with Guam. All of the alternatives reflect full implementation of CMM 2017-01, including the assumption that Japan and Indonesia would catch the full amount of their bigeye catch limit. Evaluation of the alternatives and their associated scenarios utilize scalars applied to the 2015 U.S. longline bigeye catch to account for various bigeye tuna transfer levels associated with 0, 1, 2 or 3 specified fishing agreements. The Alternative 1 scenario represents no action in relation to the U.S. proposal to set territorial catch and allocation limits. Thus, with no transfers of Territorial allocation to Hawaii longline vessels, the Alternative 1 projection includes less catch than the 2015 level. The 4 potential outcomes for Alternative 2 include Territorial transfers of 1,000, 2,000, and 3,000 metric tons of bigeye to longline vessels from 1, 2, or 3 Territories (A-C, respectively) and then also adding full utilization of Territorial catch limits up to a maximum of 6,000 metric tons (D). For Alternative 3, nine potential outcomes were evaluated that reflect 1, 2, or 3 specified fishing agreements subject to various allocation limits per territory (1,000 t, 1,500 t, and 2,000 t).

The U.S. longline catch assumptions, which included potential transfer of allocations from U.S. Territories to eligible U.S. vessels under the various scenarios were scaled in WCPO bigeye stock assessment regions and projections were calculated using the scalars illustrated in Table 4. In accordance with Federal regulations at 50 CFR 300.224, bigeye tuna caught outside the Hawaii EEZ by longline vessels that are permitted to fish and land fish in both American Samoa and Hawaii (AS/HI Dual Permitted) is assigned to American Samoa even if the vessel does not initiate fishing from, or return to land fish in American Samoa. Such catches are shown separately, and were not scaled as they are already included in the baseline.

Results

Results of the projections are presented in Tables 5 to 8. Stock projections indicate F_{2045}/F_{MSY} increases from 0.927 to 0.983 assuming full implementation of CMM 2017-01. In other words, if CMM 2017-01 is fully implemented, bigeye tuna would not be subject to overfishing in 2045. With respect to spawning biomass and total biomass in 2045 versus biomass at MSY, SPC (2017) did not calculate these values, focusing instead on the spawning biomass ratio to that in the absence of fishing ($SB/SB_{F=0}$), which is WCPFC's adopted interim Limit Reference Point (LRP) for bigeye tuna. Specifically, WCPFC considers bigeye tuna to be overfished when $SB/SB_{F=0}$ falls below 20 percent ($SB/SB_{F=0} < 0.20$).

The SC13 summary report indicated that recent $SB_{2011\text{-}2014}/SB_{MSY}$ had a mean of 1.21, which is well above the established overfished reference point (0.6 SB/SBMSY) for bigeye tuna under the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region (PFEP). Notwithstanding, for all the projections, there is low probability that the ratio of biomass to biomass at MSY would breach the PFEP overfished stock status criteria and biomass would be greater than the level necessary to produce MSY on a continuing basis.[4]

[4] The WPFMC reference point of 0.6SBmsy is approximately 0.14 $SB_{F=0}$ for bigeye tuna. The potential outcome with the greatest impact to bigeye stock status is Alternative 3, Potential Outcome M, which is projected to result in $SB_{2045}/SB_{F=0} = 0.270$. However, under this scenario, bigeye tuna stock status would remain above the WCPFC overfished limit reference point and the stock would not be overfished.

Under Alternative 1, if CMM 2017-01 was fully implemented, and the total catch of bigeye by U.S. longline fisheries were held at the U.S. limit of 3,554 t, 529 t for the American Samoa longline fishery, and no specified fishing agreements, then the F_{2045}/F_{MSY} is projected to be 0.983, indicating the bigeye tuna would not be subject to overfishing, and spawning biomass ($SB_{2045}/SB_{F=0}$ = 0.286) would be above the WCPFC's LRP.

Under Alternative 2, there are four distinct possible fishery outcomes depending on the number of specified fishing agreements authorized. Under Potential Outcome 2A, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t, which is the average catch for 2011-2016. With one specified fishing agreement with 1,000 t of bigeye catch allocation transferred to Hawaii longline vessels from a U.S. territory, the projected F_{2045}/F_{MSY} = 0.988 and $SB_{2045}/SB_{F=0}$ = 0.283. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome A.

Under Potential Outcome 2B, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With two specified fishing agreements with 2,000 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 0.994 and $SB_{2045}/SB_{F=0}$ = 0.280. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome B.

Under Potential Outcome 2C, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With three specified fishing agreements with 3,000 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 1.00 while $SB_{2045}/SB_{F=0}$ = 0.278. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome C.

Under Potential Outcome 2D, the U.S. Hawaii longline fleet would catch 3,554 t. With three fishing agreements, with 3,000 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories and full utilization of the remaining portion of their specified catch limit of 1,000 t) by longline fisheries of American Samoa, Guam and the Northern Mariana Islands (for a total of 3,000 t), the projected F_{2045}/F_{MSY} = 1.014 while $SB_{2045}/SB_{F=0}$ = 0.271. This indicates that bigeye tuna would technically meet the definition of overfishing, although it is statistically indistinguishable from the overfishing threshold of F_{2045}/F_{MSY} >1.0). The stock would not be overfished in 2045 as a result of Potential Outcome D.

Under Alternative 3, there are an additional 9 potential outcomes (E-M). Under Potential Outcome 3(a)E, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With only one specified fishing agreement 1,000 t of bigeye catch allocated to Hawaii longline vessels, the projected F_{2045}/F_{MSY} = 0.988 and $SB_{2045}/SB_{F=0}$ = 0.283. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome E.

Under Potential Outcome 3(a)F, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With two specified fishing agreements with 2,000 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 0.994 and $SB_{2045}/SB_{F=0}$ = 0.280. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome F.

Under Potential Outcome 3(a) G, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With three specified fishing agreements with 3,000 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 1.00 while $SB_{2045}/SB_{F=0}$ = 0.278. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome G.

Under Potential Outcome 3(b)H, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With only one specified fishing agreement with 1,500 t of bigeye catch allocated to Hawaii longline vessels, the projected F_{2045}/F_{MSY} = 0.991 and $SB_{2045}/SB_{F=0}$ = 0.282. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome H.

Under Potential Outcome 3(b)I, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With two specified fishing agreements with 3,000 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 1.00 while $SB_{2045}/SB_{F=0}$ = 0.278. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome I.

Under Potential Outcome 3(b)J, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With two three specified fishing agreements with 4,500 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 1.008 while $SB_{2045}/SB_{F=0}$ = 0.274. This indicates that bigeye tuna would technically meet the definition of overfishing (although F_{2045}/F_{MSY} would be statistically indistinguishable from the overfishing threshold of 1.0). The stock would not be overfished in 2045 as a result of Potential Outcome J.

Under Potential Outcome3(c)K, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With one specified fishing agreement with 2,000 t of bigeye allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 0.994 and $SB_{2045}/SB_{F=0}$ = 0.280. This indicates that bigeye tuna would not be subject to overfishing and not overfished in 2045 as a result of Potential Outcome K.

Under Potential Outcome 3(c)L, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With two specified fishing agreements with 4,000 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 1.005 and $SB_{2045}/SB_{F=0}$ = 0.275. This indicates that bigeye tuna would technically meet the definition of overfishing (although F_{2045}/F_{MSY} would be statistically

indistinguishable from the overfishing threshold of 1.0). The stock would not be overfished in 2045 as a result of Potential Outcome L.

Under Potential Outcome 3(c)M, the U.S. Hawaii longline fleet would catch 3,554 t, and the American Samoa longline fishery would catch 529 t. With three specified fishing agreements with 6,000 t of bigeye catch allocation transferred to Hawaii longline vessels from U.S. territories, the projected F_{2045}/F_{MSY} = 1.016 and $SB_{2045}/SB_{F=0}$ = 0.270. This indicates that bigeye tuna would technically meet the definition of overfishing (although F_{2045}/F_{MSY} would be statistically indistinguishable from the overfishing threshold of 1.0). The stock would not be overfished in 2045 as a result of Potential Outcome M.

Table 3: Bigeye Tuna Catch (t) by U.S. and Territorial Longline Fisheries in the Western and Central Pacific Ocean 2011-2016.

Longline Fishery	2016	2015	2014	2013	2012	2011	Ave. 2011-2016
U.S. Hawaii longline permitted vessels	3,761	3,427	3,823	3,654	3,660	3,565	3,648
Catch allocated to Hawaii longline vessels through a specified fishing agreement with American Samoa					815	723	769
Catch allocated to Hawaii longline vessels through a specified fishing agreement with the CNMI	884	999	1,000	792			918
Catch allocated to Hawaii longline vessels through a specified fishing agreement with Guam	939	856					897
Dual permitted U.S. Hawaii/American Samoa longline vessels	588	441	236	305	523	363	409
American Samoa longline permitted vessel	98	116	82	84	164	178	120
Guam longline vessels	0	0	0	0	0	0	0
CNMI longline vessels	0	0	0	0	0	0	0
Total Longline Bigeye Catch	**6,270**	**5,839**	**5,141**	**4,835**	**5,162**	**4,829**	**5,295**

Source: PIFSC 2017 U.S. Annual Part 1 Report to the WCPFC

Table 4: Methodology to determine scalars on U.S. longline bigeye catches to evaluate potential outcomes of the proposed action.

Runs	U.S. HI Longline Permitted Vessel BET Catch	AS/HI Dual Longline Permitted Vessel BET Catch	AS/GU/CNMI Longline BET Catch*	BET Transfers to HI Longline Vessels	Projected U.S. Longline BET Catch (Regions 2 and 4)*	Scalar on 2015 U.S. Longline BET catch in SPC data (Regions 2 & 4)+
2015 Baseline	3,427	441	116	1,855	5,723	1
Alt. 1: No action	3,554	409[1]	120	0	3,963	0.69
Alt. 2: 2,000 t catch limit /1,000 t allocation limit	See below	See below	See below	See below	See below	See below
Potential Outcome A	3,554	409[1]	120	1,000	4,963	0.87
Potential Outcome B	3,554	409[1]	120	2,000	5,963	1.04
Potential Outcome C	3,554	409[1]	120	3,000	6,963	1.22
Potential Outcome D	3,554	0 (see next column)	6,000[2]	3,000	9,554	1.67
Alt 3: No total limit; allocation limits (1,000, 1,500, 2,000)	See below	See below	See below	See below	See below	See below
Potential outcome E (1,000)	3,554	409[1]	120	1,000	4,963	0.87
Potential outcome F (2,000)	3,554	409[1]	120	2,000	5,963	1.04
Potential outcome G (3,000)	3,554	409[1]	120	3,000	6,963	1.22
Potential outcome H (1,500)	3,554	409[1]	120	1,500	5,463	0.95
Potential outcome I (3,000)	3,554	409[1]	120	3,000	6,963	1.22
Potential outcome J (4,500)	3,554	409	120	4500	8,463	1.48

Runs	U.S. HI Longline Permitted Vessel BET Catch	AS/HI Dual Longline Permitted Vessel BET Catch	AS/GU/CNMI Longline BET Catch*	BET Transfers to HI Longline Vessels	Projected U.S. Longline BET Catch (Regions 2 and 4)*	Scalar on 2015 U.S. Longline BET catch in SPC data (Regions 2 & 4)+
Potential outcome K (2,000)	3,554	409	120	2,000	5,963	1.04
Potential outcome L (4,000)	3,554	409	120	4,000	7,963	1.39
Potential outcome M (6,000)	3,554	409	120	6,000	9,963	1.74

Notes:
* The model accounts for BET catch by U.S longline vessels landing in AS in Region 6, which was 116 in 2015 and averaged 120 t for the 2011–2016 period. The projected U.S. and American Samoa catches are accounted for in deterministic projections of BET stock status in 2045 in Tables 4–8. There were no reported longline BET landings in Guam or CNMI in 2015, and currently, there are no U.S. longline vessels active in Guam or CNMI.
[1] AS/HI LL dual permit catch (409 t) = average catch from dual American Samoa/Hawaii longline permitted vessels from 2011 to 2016.
[2] Potential Outcome D assumes each U.S. territory allocates 1,000 t to Hawaii longline permitted vessel and the remainder (1,000 t) of its specified catch limit is caught by longline vessels operating in the respective territory.

Table 5: Projections related to Alternatives 1, and 2 and percent change in F_{2045}/F_{MSY}, $SB_{2045}/SB_{F=0}$, at various scalars.

	Baseline Catch	Alternative 1: No Action		Alternative 2: 2,000 t Catch Limit and 1,000 t Allocation Limit for each U.S. Territory							
				Potential Outcome A		*Potential Outcome B*		*Potential Outcome C*		*Potential Outcome D*	
No. of Specified Fishing Agreements	**2015**	**No Fishing Agreements and No BET Transfers**		**1 Fishing Agreement and 1,000 t of BET Transfers**		**2 Fishing Agreements and 2,000 t of BET Transfers**		**3 Fishing Agreements and 3,000 t of BET Transfers**		**3 Fishing Agreement and 3,000 t of BET transfers and Full Utilization of BET in Territories**	
Scaled U.S. Longline BET Catch (Regions 2 and 4)	**5,723 t** HI: 3,427 HI/AS Dual:441 Transfers: 1,855	**3,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 0		**4,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 1,000		**5,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 2,000		**6,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 3,000		**9,554 t** HI: 3,554 AS: 1,000 GU: 1,000 CNMI: 1,000 Transfers: 3,000	
			Percent Change		**Percent Change**		**Percent Change**		**Percent Change**		**Percent Change**
F_{2045}/F_{MSY}	**0.927**	**0.983**	**0.00**	**0.988**	**0.5**	**0.994**	**1.1**	**1.000**	**1.7**	**1.014**	3.2
$SB_{2045}/SB_{F=0}$	**0.313**	**0.286**	**0.00**	**0.283**	**-1.0**	**0.280**	**-2.1**	**0.278**	**-2.8**	**0.271**	-5.2

Note: The percent change is calculated with respect to values associated with Alternative 1, which includes full implementation of CMM 2017-01, with no US territory catch transfers under specified fishing agreements. The baseline catch is the average (2013–2015) total purse seine associated effort and longline catch levels within the bigeye tuna stock assessment. All alternatives assume full implementation of CMM 2017-01.

Table 6: Projections related to Alternative 3(a) and percent change in F_{2045}/F_{MSY}, $SB_{2045}/SB_{F=0}$, at various scalars.

	Alternative 1: No Action		Alternative 3: No total catch limits, but allocation limits of 1,000 per territory					
			Potential Outcome E		*Potential Outcome F*		*Potential Outcome G*	
No. of Specified Fishing Agreements	**No Fishing Agreements and No BET Transfers**		**1 Fishing Agreement and 1,000 t of BET Transfers**		**2 Fishing Agreements and 2,000 t of BET Transfers**		**3 Fishing Agreements and 3,000 t of BET Transfers**	
Scaled U.S. Longline BET Catch (Regions 2 and 4)	**3,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 0		**4,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 1,000		**5,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 2,000		**6,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 3,000	
		Percent Change		**Percent Change**		**Percent Change**		**Percent Change**
F_{2045}/F_{MSY}	**0.983**	**0.00**	**0.988**	**0.5**	**0.994**	**1.1**	**1.000**	**1.7**
$SB_{2045}/SBF=0$	**0.286**	**0.00**	**0.283**	**-1.0**	**0.280**	**-2.1**	**0.278**	**-2.8**

Table 7: Projections related to Alternative 3 (b) and percent change in F_{2045}/F_{MSY}, $SB_{2045}/SB_{F=0}$, at various scalars.

	Alternative 1: No Action		Alternative 3: No Total Catch Limits, but Allocation Limits of 1,500 per Territory					
			Potential Outcome H		***Potential Outcome I***		***Potential Outcome J***	
No. of Specified Fishing Agreements	**No Fishing Agreements and No BET Transfers**		**1 Fishing Agreement and 1,500 t of BET Transfers**		**2 Fishing Agreements and 3,000 t of BET Transfers**		**3 Fishing Agreements and 4,500 t of BET Transfers**	
Scaled U.S. Longline BET Catch (Regions 2 and 4)	**3,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 0		**5,463 t** HI: 3,554 HI/AS Dual: 409 Transfers: 1,500		**6,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 3,000		**8463 t** HI: 3,554 HI/AS Dual: 409 Transfers: 4,500	
		Percent Change		**Percent Change**		**Percent Change**		**Percent Change**
F_{2045}/F_{MSY}	**0.983**	**0.00**	**0.991**	**0.8**	**1.000**	**1.7**	**1.008**	**2.5**
$SB_{2045}/SBF=0$	**0.286**	**0.00**	**0.282**	**-1.4**	**0.278**	**-2.8**	**0.274**	**-4.2**

Table 8: Projections related to Alternatives 3(c) and percent change in F_{2045}/F_{MSY}, $SB_{2045}/SB_{F=0}$, at various scalars.

	Alternative 1: No Action		**Alternative 3: No Total Catch Limits, but Allocation Limits of 2,000 per Territory**					
			Potential Outcome K		***Potential Outcome L***		***Potential Outcome M***	
No. of Specified Fishing Agreements	**No Fishing Agreements and No BET Transfers**		**1 Fishing Agreement and 2,000 t of BET Transfers**		**2 Fishing Agreements and 4,000 t of BET Transfers**		**3 Fishing Agreements and 6,000 t of BET Transfers**	
Scaled U.S. Longline BET Catch (Regions 2 and 4)	**3,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 0		**5,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 2,000		**7,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 4,000		**9,963 t** HI: 3,554 HI/AS Dual: 409 Transfers: 6,000	
		Percent Change		**Percent Change**		**Percent Change**		**Percent Change**
F_{2045}/F_{MSY}	**0.983**	**0.00**	**0.994**	**1.1**	**1.005**	**2.2**	**1.016**	**3.4**
$SB_{2045}/SBF=0$	**0.286**	**0.00**	**0.280**	**-2.1**	**0.275**	**-3.8**	**0.270**	**-5.6**

Acknowledgements

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APPENDIX B. REGULATORY IMPACT REVIEW

1. Introduction

This document is a regulatory impact review (RIR) prepared under Executive Order (E.O.) 12866, "Regulatory Planning and Review." The regulatory philosophy of E.O.12866 stresses that, in deciding whether and how to regulate, agencies should assess all costs and benefits of all regulatory alternatives and choose those approaches that maximize the net benefits to the society. To comply with E.O. 12866, NMFS prepares an RIR for regulatory actions that are of public interest. The RIR provides an overview of the problems, policy objectives, and anticipated impacts of regulatory actions. 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 statute requires another regulatory approach.*

This RIR is for a proposed measure to specify a catch limit of 2,000 metric tons (t) of longline-caught bigeye tuna for each of the pelagic longline fisheries of American Samoa, Guam and the Northern Mariana Islands in 2018. Along with the proposed specification, NMFS also proposes to authorize each U.S. territory to allocate and transfer, up to 1,000 t of its 2,000 t bigeye tuna limit to a U.S. longline fishing vessel or vessels identified in a specified fishing agreement.

2. Problem Statement and Management Objective

The purpose of this action is to establish a bigeye tuna catch limit for longline fisheries of each U.S. participating territory (American Samoa, Guam, and the CNMI), and support the development of fisheries in those territories consistent with Amendment 7 to the Pelagic FEP and fishery development provisions of the Magnuson-Stevens Act. The proposed catch limits for 2018 are needed to 1) prevent bigeye overfishing, 2) support fisheries development in US territories, and 3) promote the availability of sustainably caught bigeye from U.S. vessels supplying the Hawaii seafood market during the culturally important end of year season of peak demand. The need for this action is to ensure that NMFS and the Council manage allocations of longline caught bigeye tuna under specified fishing agreements consistent with the conservation needs of the stock.

A detailed description of the problem and the management objective are presented in Sections 1.3 and 1.4 of the Environmental Assessment (EA).

3. Description of the Fisheries

Section 3.2 of the EA provides an overview of the pelagic fisheries of the U.S. participating territories and Hawaii. These include the American Samoa longline fishery (Section 3.2.2), Mariana Archipelago longline fishery (Section 3.2.1); Hawaii longline (Section 3.2.3); and Hawaii troll and handline (Section 3.2.4). Section 3.2.5 presents specific information on U.S. longline catches of bigeye tuna in the Pacific, and Section 3.2.6 presents specific information on U.S. purse seine catches of bigeye in the Western and Central Pacific.

4. Description of the Alternatives

This section describes the alternative longline bigeye tuna catch and allocation limits for American Samoa, Guam, and the CNMI for 2018. Please see Section 2 of the EA for more details on each of the alternatives that NMFS analyzed.

Alternative 1: No Specification of Territorial Catch or Allocation Limits (No Action)

Under Alternative 1, NMFS would not specify a bigeye tuna catch or allocation limit for any U.S. participating territory in 2018.

Alternative 2: Specify for each U.S. participating territory, a 2,000 t catch limit and 1,000 t allocation limit in 2018 (Status Quo/Council Recommended)

Under Alternative 2, NMFS would implement the Council's recommendation by specifying a catch limit of 2,000 t of bigeye tuna for each U.S. participating territory in 2018. NMFS would also authorize the three U.S. participating territories to each allocate up to 1,000 t of their 2,000 t bigeye limit to FEP-permitted longline vessels identified in a specified fishing agreement with a U.S. territory. Alternative 2 is identical to the bigeye tuna catch and allocation limit specifications implemented annually beginning with the 2014 fishing year. As an accountability measure (AM), NMFS would prohibit the retention of longline-caught bigeye tuna by vessels in the applicable U.S. territory (if NMFS projects the territorial limit will be reached), and/or by vessels operating under the applicable specified fishing agreement (if NMFS projects the allocation limit will be reached).

Alternative 3: Specify for each U.S. participating territory, a 2,000 t catch limit and that each territory can allocate up to 2,000 of the catch limit

Under Alternative 3, NMFS would specify a catch limit of 2,000 t of bigeye tuna for each U.S. participating territory in 2018. NMFS would also authorize the three U.S. territories to each allocate up to their entire 2,000 t bigeye limit to FEP-permitted longline vessels identified in a specified fishing agreement with a U.S. territory. As an AM, NMFS would prohibit the retention of longline-caught bigeye tuna by vessels in the applicable U.S. territory (if NMFS projects the territorial limit will be reached), and/or by vessels operating under the applicable specified fishing agreement (if NMFS projects the allocation limit will be reached).

5. Analysis of Alternatives

This section describes potential economic effects of alternatives that were considered and evaluates the impacts of the action alternative relative to the no-action alternative.

Alternative 1: No Specification of Territorial Catch or Allocation Limits (No Action)

Under Alternative 1, longline fisheries of American Samoa, Guam, and the CNMI would not be subject to a bigeye tuna catch limit in 2018 and they would not be able to allocate any catch under a specified fishing agreement. Section 4.2.1 of the EA provides more information on impacts to longline fishery participants and fishing communities.

U.S. longline fishery (Hawaii-based)

The U.S. longline fishery based in Hawaii would be subject to a 2018 catch limit of 3,554 t. This fishery would likely reach the catch limit by October or earlier. Without the option of receiving an allocation of catch through an agreement with any participating territory, vessels in this fishery can no longer retain bigeye tuna caught in the WCPO upon reaching the catch limit.

Once the limit is reached, owners and operators of vessels in the Hawaii fleet have few other options besides tying up their boats for the remainder of the calendar year. Vessels that also have an American Samoa longline limited access permit (dual-permit holders) would be able to catch and retain bigeye tuna as long as it is caught outside the U.S. EEZ surrounding the Hawaiian Archipelago. Based on recent fishery performance from 2011-2016, NMFS anticipates that vessels operating in the longline fishery of American Samoa would catch approximately 529 t of bigeye tuna in 2018, although catch attributed to American Samoa would be expected to be higher during a period of extended closure. This is because vessels with dual permits might choose to fish for and land more bigeye tuna into Hawaii (which can be attributed to American Samoa) if the Hawaii-based boats are subject to a closure, because the closure would reduce the overall supply of fish landed in Hawaii leading to a higher price per pound of bigeye tuna.

American Samoa, Guam, and the CNMI longline fisheries:

Bigeye catch by longline vessels based in American Samoa, Guam, and the CNMI, as U.S. participating territories, would not be subject to a bigeye tuna catch limit in 2018. Recent fishery performance and the current lack of active longline vessels in the CNMI and Guam, suggest that longline vessels based in CNMI and Guam are unlikely to fish for bigeye tuna in 2018. The American Samoa longline fishery sees more activity by comparison. Bigeye tuna catches by longline vessels possessing an American Samoa limited entry permit averaged 529 t from 2011 through 2016. These landings included those that possessed limited entry permits for both American Samoa and Hawaii (dual AS/HI longline permitted vessels). Possessing both permits enabled these dual AS/HI longline permitted vessels to attribute fish landed in Hawaii, but caught outside of the Hawaii EEZ, to American Samoa. Of the average 529 t caught by American Samoa longline vessels, dual AS/HI longline permitted vessels fishing on the high seas accounted for an average 409 t, while vessels possessing a single American Samoa permit accounted for 120 t. of the landings. Once the Hawaii longline vessels are no longer able to retain bigeye tuna caught in the WCPO, dual AS/HI longline permit holders might expect to earn a higher price per pound of bigeye tuna as compared to what they might earn for that same fish

prior to the fishery reaching the limit. They might also increase fishing effort and/or number of trips to land more bigeye tuna in Hawaii with the potential to earn additional revenue.

Hawaii longline fisheries:

Under Alternative 1, once the U.S. reaches the bigeye catch limit of 3,554 t, U.S. longline vessels based in Hawaii may no longer retain bigeye tuna caught in the WCPO, although they would still be able to land other species or fish for bigeye tuna outside of the WCPO. Under current predictions, the closure is expected to occur in October or earlier and continue through the remainder of the calendar year. If a Hawaii longline vessel also possesses an American Samoa longline permit, it may continue to land bigeye tuna in Hawaii, as long as it was caught outside of the U.S. EEZ surrounding Hawaii. Hawaii-based longline vessels may also fish for bigeye tuna in the Eastern Pacific Ocean (EPO), although larger boats, specifically those that exceed 24 meters in length are also subject to a 750 t bigeye tuna catch limit in the EPO (32-34 out of about 140 vessels in the Hawaii longline fishery exceed 24 meters in length). In previous years, some longline vessels would have the option of switching to shallow-set longline fishing, targeting swordfish, especially among those vessels already outfitted to make this switch. However, this option is not available to longline vessels for this year because the shallow-set longline fishery is closed for the remainder of the calendar year in compliance with an order of the U.S. District Court for the District of Hawaii. Some vessels might stop fishing altogether until January 1, 2019.

Markets, consumers, and wholesalers:

Alternative 1 will result in a drop in the supply of locally-caught fresh bigeye tuna in Hawaii. Consumers and wholesalers may be expected to pay higher price per pound for fresh (and possibly frozen) bigeye tuna provided by other sources. The drop in this supply can be offset by dual AS/HI longline permit holders' bigeye tuna landings, and landings from longline vessels fishing in the EPO. The offset will not be enough to completely meet demand for fresh tuna, especially at the end of the year, when demand for fresh bigeye tuna peaks. Because of this, bigeye tuna imports into Hawaii will likely increase to help offset U.S. demand.

Fisheries fund:

As any agreement leading to the allocation or transfer of catch would in return provide contribution into the Western Pacific Sustainable Fisheries Fund to fund fisheries development projects as identified through an approved MCP for each territory, no funds would be deposited into this fund in 2018. As a result, there would be fewer opportunities for fisheries development in the U.S. participating territories, including improvements to fishery infrastructure.

Administration and Enforcement:

Under Alternative 1, with the lack of territory bigeye specifications and specified fishing agreements for 2018, actions associated with tracking and assigning catches made under territory arrangements would not be required.

Alternative 2: Specify for each U.S. participating territory, a 2,000 t catch limit and 1,000 t allocation limit in 2018 (Status Quo/Council Recommended)

Under Alternative 2, longline fisheries in the U.S. participating territories would each be subject to a 2,000 t catch limit for bigeye tuna. Each territory would also be able to allocate up to 1,000 t of its 2,000 t catch limit to FEP-permitted longline vessels under specified fishing agreements. The proposed allocation would provide up to 3,000 t of bigeye tuna to the U.S. longline fleet based in Hawaii through specified fishing agreements, in addition to the 3,554 t provided under the U.S. bigeye tuna limit. Specified fishing agreements under this alternative would support responsible fisheries development in the U.S. participating territories by providing funds for approved MCPs.

Under Alternative 2, several potential scenarios may occur, depending on the number of specified fishing agreements developed, submitted to and approved by NMFS in 2018. U.S. participating territories could enter into specified fishing agreements with U.S. pelagic permitted vessels, up to three total, one for each territory. The possible outcomes under the varying number of agreements are discussed more fully in Section 4.2.2 of the EA. With the timing of reaching the catch limit projected to be by October 2018 or earlier, a single fishing agreement allocating 1,000 t of catch is not likely to allow the U.S. longline vessels to fish and supply locally caught bigeye tuna through the end of the year, whereas three (and possibly two) specified fishing agreements may.

American Samoa, Guam, and the CNMI longline fisheries:

Impacts to the Guam and CNMI longline fisheries should be the same as under the no action alternative, because of the lack of recent longline activity with no active vessels based in those locations. As mentioned under Alternative 1, during a fishery closure, dual AS/HI longline permit holders can expect a boost in revenue if they continue to fish. This could come from higher price per pound for bigeye tuna because of the continued demand for locally caught fresh tuna as well as a potential increase fishing effort to take advantage of the higher prices. As the number of fishing agreements increases, with the reduced likelihood of extended closure to U.S. longline vessels to retain bigeye tuna, it becomes less likely that this increase in fishing effort by dual AS/HI longline vessels would occur. If only one agreement is implemented, one might expect overall fishing effort by dual AS/HI longline permit holders to be higher in that year, compared to the case where two or three agreements are implemented. NMFS expects American Samoa limited entry permit holders that are not dual permit holders to fish about the same amount as in recent years; these longliners target al.bacore to sell to canneries.

With the potential increase in fishing effort by American Samoa longline vessels, if U.S. vessels enter into a specified fishing agreement with American Samoa utilizing the full amount, and with an early enough closure of the U.S. fishery, the American Samoa longline fishery may possibly reach the allocation limit of 1,000 t.

Hawaii longline fisheries:

Under Alternative 2, participants in the Hawaii deep-set longline fishery listed on any specified fishing agreement would expect to see positive benefits, while those that are not listed, would see impacts similar to no action. Since most participants in this fishery primarily fish for bigeye tuna in the WCPO, rather than the EPO, enabling many of these participants to fish in this area throughout the year would allow them to continue to earn higher revenues than if they were no

longer able to do so (as under the no action alternative). The net gain to this fishery would depend on the number of approved specified fishing agreements.

Markets, consumers, and wholesalers:

Compared with Alternative 1, Alternative 2 would yield a higher supply of locally-caught fresh bigeye tuna to consumers in Hawaii. If the number of specified fishing agreements enables the Hawaii deep-set longline fishery to fish for and supply bigeye tuna throughout the year, then markets would not be disrupted. Consumers, wholesalers, retailers and restaurants would not have to rely on imports, dual AS/HI longline permit holders' bigeye tuna landings, landings from longline vessels fishing in the EPO and landings by troll and handline boats to help meet market demand for bigeye tuna, and/or pay a higher price per pound for the same quality of bigeye tuna.

Fisheries fund:

Specified fishing agreements under this alternative would help provide financial support for responsible fisheries development projects identified in the MCPs for U.S. participating territories by providing funds for these projects. If more agreements are executed, more monies may be available through the Western Pacific Sustainable Fisheries Fund to support fishery development projects.

Administration and Enforcement:

Administrative costs under Alternative 2 would be slightly higher than under Alternative 1. Administrative costs may be generated from activities such as in-season monitoring of the WCPO longline catch limits for bigeye tuna by NMFS, regulatory and management costs associated with announcements and notifications of catch prohibition, as well as additional costs from monitoring and attributing catches made by vessels identified in a specified fishing agreement with the U.S. participating territory to which the agreement applies. Enforcement costs should be about the same as under Alternative 1.

Alternative 3: Specify for each U.S. participating territory, a 2,000 t catch limit and up to 2,000 t allocation limit in 2018

Under Alternative 3, longline fisheries in the U.S. participating territories would each be subject to a 2,000 t catch limit for bigeye tuna. Each territory would also be able to allocate up to 2,000 t of its 2,000 t catch limit to FEP-permitted longline vessels under specified fishing agreements. Specified fishing agreements under this alternative would support responsible fisheries development in the U.S. participating territories by providing funds for approved MCPs.

Under Alternative 3, several potential scenarios may occur, depending on the number of specified fishing agreements developed, submitted to and approved by NMFS in 2018. U.S. participating territories could enter into specified fishing agreements with U.S. pelagic permitted vessels, up to three total, one for each territory. The possible outcomes under the varying number of agreements are discussed more fully in Section 4.2.3 of the EA. With the timing of reaching the catch limit projected to be in October or earlier, a single fishing agreement allocating 2,000 t of catch might not allow the U.S. longline vessels to fish and supply locally-caught bigeye tuna

through the end of the year, whereas two specified fishing agreements would likely be sufficient to allow the U.S. longline vessels to fish through the end of the year.

American Samoa, Guam, and the CNMI longline fisheries:

Impacts to the Guam and CNMI longline fisheries should be the same as under the no action alternative and Alternative 2, because of the lack of recent longline activity with no vessels currently based in these locations. Guam and CNMI would also be more likely to allocate the full 2,000 t. American Samoa-based vessels possessing a limited access permit would likely catch about 529 t of bigeye tuna based on annual average catch between 2011 and 2016. Because of this, the American Samoa government could control the amount of catch to be allocated in order to reserve some portion of the 2,000 t limit for the local vessels in order to reduce potential effects to local fishery participants. However, if the American Samoa government did allocate the entire 2,000 t limit to the U.S. longline fleet, NMFS would have to prohibit retention of bigeye tuna in the local albacore targeting fleet and by dual-permitted vessels. This would also mean that during the time that the U.S. longline fleet is closed to fishing for bigeye tuna, dual permitted vessels would not be able to land bigeye tuna caught outside the Hawaii EEZ in Hawaii and earn the temporarily higher revenue during the closure period.

Hawaii longline fisheries:

Under Alternative 3, participants in the Hawaii deep-set longline fishery listed on any specified fishing agreement would expect to see positive benefits, while those that are not listed, would see the impacts similar to no action. Since most participants in this fishery primarily fish for bigeye tuna in the WCPO, rather than the EPO, enabling many of these participants to fish in this area throughout the year would allow them to continue to earn higher revenues than if they were no longer able to do so (as under the no action alternative). The net gain to this fishery would depend on the number of approved specified fishing agreements.

Markets, consumers, and wholesalers:

Compared with Alternative 1, and similar to Alternative 2, Alternative 3 would yield a higher supply of locally-caught fresh bigeye tuna to consumers in Hawaii. If the number of specified fishing agreements enables the Hawaii deep-set longline fishery to fish for and supply bigeye tuna throughout the year, then markets would not be disrupted. Consumers, wholesalers, retailers and restaurants would not have to rely on imports, dual AS/HI longline permit holders' bigeye tuna landings, landings from longline vessels fishing in the EPO and landings by troll and handline boats to help meet market demand for bigeye tuna, and/or pay a higher price per pound for the same quality of bigeye tuna.

Fisheries fund:

Similar to Alternative 2, specified fishing agreements under Alternative 3 would help provide financial support for responsible fisheries development projects identified in the MCPs for U.S. participating territories by providing funds for these projects. If more agreements are executed, more monies may be available through the Western Pacific Sustainable Fisheries Fund to support fishery development projects.

Administration and Enforcement:

Administrative costs under Alternative 3 would be slightly higher than under Alternative 1 and similar to Alternative 2. Administrative costs may be generated from activities such as in-season monitoring of the WCPO longline catch limits for bigeye tuna by NMFS, regulatory and management costs associated with announcements and notifications of catch prohibition, as well as additional costs from monitoring and attributing catches made by vessels identified in a specified fishing agreement with the U.S. participating territory to which the agreement applies. Enforcement costs should be about the same as under Alternatives 1 and 2.

Comparing Net Benefits between alternatives:

Implementing the Council-preferred action (Alternative 2),or Alternative 3, may generate a positive net benefit relative to the no action alternative. The preferred action would result in a very small potential negative impact to bigeye tuna stocks and possibly to some domestic fishing entities such as dual permitted vessels and troll and handline boats that might receive higher prices for bigeye tuna. But these may be offset by the incremental benefits to the U.S. longline fishery based in Hawaii as a whole, consumers, and to fisheries development in territories that are party to the specified fishing agreement through the end of the calendar year.

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FINDING OF NO SIGNIFICANT IMPACT

Specification of 2018 Bigeye Tuna Catch and Allocation Limits for Pelagic Longline Fisheries in U.S. Pacific Island Territories
(RIN 0648- XG025)

October 9, 2018

The National Marine Fisheries Service (NMFS) prepared this Finding of No Significant Impact (FONSI) according to the following guidance:

- National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NAO) 216-6A, "Compliance with the National Environmental Policy Act, Executive Orders 12114 (Environmental Effects Abroad of Major Federal Actions), 11988 and 13690 (Floodplain Management), and 11990 (Protection of Wetlands); and its associated Companion Manual (January 13, 2017); and
- Council on Environmental Quality (CEQ) significance criteria at 40 CFR 1508.27(b).

Background and Federal Action

The National Marine Fisheries Service (NMFS) will specify 2018 territorial limits for longline-caught bigeye tuna under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. Consistent with the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific (Pelagics FEP), the Western Pacific Fishery Management Council (Council) recommended that NMFS specify a catch limit of 2,000 metric tons (t) of longline-caught bigeye tuna for each U.S. Pacific territory (American Samoa, Guam, and the Northern Mariana Islands). The Council also recommended that NMFS authorize each territory to transfer up to 1,000 t of its limit to U.S. longline fishing vessels in a valid specified fishing agreement (50 CFR 665.819). As an accountability measure, NMFS will monitor U.S. longline catches. When NMFS projects that the fishery will reach a territorial catch or allocation limit, NMFS will prohibit the retention of bigeye tuna. The proposed action (Alternative 2) provides for the sustainable harvest of bigeye tuna while supporting fisheries development projects in the U.S. Pacific territories.

Environmental Assessment

NMFS prepared an environmental assessment (EA), dated October 5, 2018, that analyzed the potential impacts on the human environment from specifying the proposed catch and allocation limits. The EA considered three management alternatives, including the proposed action and the no-action alternative. The EA analyzes the following three alternatives for catch and allocation limit specifications in detail:

- Alternative 1: NMFS would not specify a territorial bigeye tuna catch or allocation limit (No Management Action).

- Alternative 2: NMFS would specify, for each territory, a 2,000 t catch limit and 1,000 t allocation limit (Status Quo/Council and NMFS preferred).

- Alternative 3: NMFS would specify, for each territory, a 2,000 t catch limit and 2,000 t allocation limit.

The preferred alternative is Alternative 2. The EA indicates that this alternative would not result in adverse effects on the long-term sustainability of bigeye tuna, other non-target species, by-catch species, protected species, or adversely affect marine habitats, or result in large changes to any western Pacific longline fishery. The EA concluded that a 2018 specification of a 2,000 t catch limit and 1,000 t allocation limit for each territory would not significantly impact the long-term sustainability of fishery resources of the U.S. Pacific islands. Overall, the proposed 2018 action does not change the manner in which the longline fisheries are conducted or the effects of the fishery on any resources.

Significance Analysis

The Council on Environmental Quality (CEQ) Regulations state that the determination of significance using an analysis of effects requires examination of both context and intensity, and lists ten criteria for intensity (40 CFR 1508.27). In addition, the Companion Manual for National Oceanic and Atmospheric Administration Administrative Order 216-6A provides sixteen criteria, the same ten as the CEQ Regulations and six additional, for determining whether the impacts of a proposed action are significant. Each criterion is discussed below with respect to the proposed action and considered individually as well as in combination with the others.

1. Can the proposed action reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?

No. The 2018 EA did not identify significant impacts to the human environment. Under the proposed action, NMFS does not expect large adverse effects on target and non-target stocks (2018 EA section 4.1), fishery participants or fishing communities (2018 EA section 4.2), protected species (2018 EA 4.3), marine habitats, critical habitat, or essential fish habitat (2018 EA section 4.4), or administration and enforcement (2018 EA section 4.5).

2. Can the proposed action reasonably be expected to significantly affect public health or safety?

No. This action might have some positive benefits to safety-at-sea for the Hawaii longline fishery by allowing fishery participants to enter into territory agreements to fish in the Western and Central Pacific Ocean (WCPO) after the Western and Central Pacific Fisheries Commission (WCPFC)-mandated longline limit is reached. The opportunity for longline vessels to enter into fishing agreements with the U.S. territories, and for fishing in the WCPO under territorial bigeye tuna allocation limits, might benefit small vessels in the Hawaii longline fishery. This is because, when the U.S. longline fishery reaches the WCPO catch limit for bigeye tuna, all longline vessels must either stop fishing or fish for bigeye tuna in the Eastern Pacific Ocean (EPO), which is further from Hawaii than some fishing grounds in the WCPO. During one of the most active hurri-

cane seasons in the EPO on record in 2015, higher market prices due to reduced availability during a closure may have incentivized smaller vessels, which are not subject to the EPO bigeye tuna limit if under 24 m in length, to fish in the EPO rather than tie up. The positive effects are not considered significant, however, because under the proposed action and no-action, vessels would continue to monitor weather and sea conditions (2018 EA, Section 4.2.1).

3. Can the proposed action reasonably be expected to result in significant impacts to unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?

No. NMFS does not expect substantial physical, chemical, or biological alterations to habitat. Longline fishing does not occur in marine protected areas, marine sanctuaries, or marine monuments and existing longline fishing practices will not change under the proposed action so no impacts are anticipated (2018 EA, Section 4.4).

The pelagic longline fleets under the proposed action do not operate within estuarine waters or have the potential to affect wetlands. Furthermore, because pelagic longline fishing activities authorized occur offshore and in deep oceanic waters away from land, populated areas, and marine protected areas such as marine national monuments, the proposed action would not have an effect on air/water quality, coral reefs, or benthic marine habitats (2018 EA, Section 3.6).

4. Are the proposed action's effects on the quality of the human environment likely to be highly controversial?

No. The implementing framework regulations of the Pelagics FEP, and the 2014 catch and allocation limit specifications (which are identical to the 2018 proposed action), were previously the subject of litigation (*Conservation Council for Hawai'i, et al., v. NMFS (*D. Hawaii 2015*)*). In December 2015, the U.S. District Court of Hawaii ruled in favor of NOAA, finding that NMFS' approval of both the framework rule implementing Amendment 7 and the 2014 specifications was consistent with WCPFC decisions and applicable law.

The effects of the proposed action, as analyzed in the 2018 EA, are not likely to be highly controversial. The analysis of the potential outcomes under the proposed action considered varying numbers of fishing agreements, and corresponding allocations, as well as partial or full utilization of the bigeye limit set for the U.S. territories. In the 2018 EA, Alternative 2 Outcome D represents the maximum potential impact of the action. The analysis in the 2018 EA showed that the proposed action would not affect sustainability of any fish stock or marine resource (see Answer, Question 12).

NMFS does not expect the potential impacts of Outcome D to be controversial because the WCPFC acknowledges U.S. territories' transfer of bigeye tuna to U.S. longline vessel through specified fishing agreements. Also, the most recent bigeye tuna assessment for the western and central Pacific indicates that the stock is not experiencing overfishing and is not overfished, and would remain as such under the proposed action.

Similarly, the analysis in the 2018 EA indicates catches of non-target species, including protected marine species would remain within historical baseline levels, although there could be slightly less effort by Hawaii-based fisheries under Alternative 1 compared to Alternatives 2 and 3.

Additionally, the Hawaii longline fishery will continue to operate in accordance with regulations intended to prevent and reduce adverse impacts to the environment. NMFS will base future catch, effort, and transfer limits on the best available scientific and commercial information about stock status, and will develop the limits considering applicable international conservation and management measures for highly migratory species. Future catch and effort limit and transfer limit specifications will be subject to additional environmental review under NEPA, ESA, Magnuson-Stevens Act, and other applicable law, to ensure the sustainability of target and non-target stocks, the conservation of protected species and the human environment, and consistency with all applicable international obligations.

5. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No. The 2018 EA did not identify impacts to the human environment that are likely to be highly uncertain or involve unique or unknown risks. Under the proposed action, the Hawaii fishery should continue to fish within historical effort levels. U.S. fisheries will continue to comply with all applicable international conservation and management measures and will continue to fish in accordance with provisions of applicable laws intended for the conservation of fish stocks and protection of the environment. Under the proposed action, the Hawaii longline fishery will continue to comply with existing observer and reporting requirements; NMFS will be able to identify and address any unanticipated impacts to fish stocks or protected species. We will include new information regarding stock status and impacts to the environment in annual reviews of fishing effort and transfer specifications, as appropriate.

6. Can the proposed action reasonably be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

No. The proposed action would specify a catch limit of 2,000 t of longline-caught bigeye tuna for each U.S. territory (i.e., American Samoa, Guam and the Northern Mariana Islands) in 2018. NMFS would also authorize each territory to allocate and transfer up to 1,000 t of its 2,000-t bigeye tuna limit to U.S. longline fishing vessels identified in a valid specified fishing agreement. These specifications will end on December 31, 2018. Under the proposed action, the Hawaii longline fishery will continue to operate in accordance with regulations intended to prevent and reduce adverse impacts to the environment. Future catch, effort, and transfer limits, if recommended by the Council will be based on the best available scientific and commercial information on stock status. NMFS and the Council will annually develop and review these limits considering applicable international conservation and management measures for highly migratory species. Future catch and effort limit and transfer limit specifications will also be subject to annual environmental review and approval under NEPA, ESA, Magnuson-Stevens Act, and other appli-

cable law, to ensure the sustainability of target and non-target stocks, the conservation of protected species and the human environment, and consistency with all applicable international obligations. For these reasons, this action would not automatically lead to approval of future actions that could have significant impacts.

7. Is the proposed action related to other actions that when considered together will have individually insignificant but cumulatively significant impacts?

No. The impacts of the Hawaii longline fishery fishing under the 2018 specification will not have cumulatively significant impacts when considered together with past, present and reasonably foreseeable actions by NMFS, Hawaii-managed fisheries, or by others. NMFS evaluated the potential for cumulative effects of the action on target and non-target stocks, ocean productivity related to climate change, protected species, catch rates of target and non-target species, and fishing communities. None of the pelagic longline fisheries are expected to change under the proposed action, and the fishery would continue to be managed sustainably. As documented in the 2018 EA, the fishery is not known to be having an adverse effect on any protected species, including recently listed species. For these reasons, NMFS does not expect the proposed action to result in cumulatively significant impacts (2018 EA, Section 4.6).

8. Can the proposed action reasonably be expected to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?

No. We have not identified such resources in the areas affected by commercial longline fishing (2018 EA, Section 3.6).

9. Can the proposed action reasonably be expected to have a significant impact on endangered or threatened species, or their critical habitat as defined under the Endangered Species Act of 1973?

No. Impacts to endangered or threatened species, marine mammals, or critical habitat of these species are described in Section 4.3 of the 2018 EA. The baseline conditions in the EA are based on a detailed review of the operation of the Hawaii and American Samoa longline fisheries, expected level of activity (effort), and its potential impact on these listed species.

The information in the 2018 EA indicates that under all alternatives considered, the proposed action is not expected to have a substantial effect on the overall population size of any protected species and is not likely to reduce appreciably the likelihood of both survival and recovery of the species in the wild. Under the proposed action, NMFS expects overall populations of listed species that interact with the fishery to remain large enough to maintain genetic heterogeneity, broad demographic representation, and successful reproduction, and to retain the potential for recovery. Longline fishing activities do not occur in identified critical habitat. When prey species are considered features of essential habitat, either prey species are not caught by the fishery, stocks are subject to domestic or international management and other management controls and fished sustainably, or the listed species is capable of diversifying their diet in response to changes in the

availability of prey species. For these reasons, NMFS does not expect the proposed action to adversely impact critical habitat.

NMFS expects to complete the ESA section 7 consultations addressing the Hawaii deep-set and shallow-set longline fisheries and the American Samoa deep-set longline fishery and issue new biological opinions for the fisheries within six months of reinitiating consultation. Consultation for the Hawaii deep-set fishery was reinitiated on October 4, 2018; for the shallow-set fishery, April 20, 2018; and NMFS intends to promptly reinitiate consultation on the American Samoa longline fishery as required by 50 CFR 402.16. If the information in the biological opinions indicate the continued operation of the fisheries, including under the proposed action would result in impacts to protected species that are substantially different from the analysis in the 2018 EA, NMFS would evaluate that information and prepare supplemental environmental analyses,

10. Can the proposed action reasonably be expected to threaten a violation of Federal, state, or local law or requirements imposed for environmental protection?

No. The Council, which includes representatives from American Samoa, Guam, the CNMI, and Hawaii, developed this action, in accordance with the Magnuson-Stevens Act, and other applicable laws. The Council deliberations took place in public forums and the Council provided opportunities for public comments during the development of its recommendations. The draft specification and 2018 EA document were developed by NMFS in coordination with the Council staff and coordinated with territory and state government natural resource agencies and the public, and no comment was provided that leads NMFS to find that the proposed action would be inconsistent with applicable laws (2018 EA, Section 5). Further, after consultation with Hawaii and the Pacific Territories, NMFS determined that this action is consistent to the maximum extent possible with all relevant approval coastal zone management policies.

11. Can the proposed action reasonably be expected to adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act?

No. Impacts to marine mammals are described in Section 4.3 of the 2018 EA. The baseline conditions in the EA are based on a detailed review of the operation of the Hawaii and American Samoa longline fisheries, expected level of activity (effort), and its potential impact on these mammals. We note that all Western Pacific longline fisheries operate under a suite of management measures designed to prevent and reduce the severity of interactions with marine mammals, and that help NMFS and the Council to monitor such interactions. The proposed action would not change the way any fishery is conducted, and would continue to require the same management measures that are currently in place. For these reasons, the proposed action is not expected to have a substantial effect on any marine mammal stock.

12. Can the proposed action reasonably be expected to adversely affect managed fish species?

Target Stocks

No. The U.S. longline fishing vessels primarily target bigeye tuna. According to the most recent (2017) stock assessment for WCPO bigeye tuna endorsed by the WPCFC Scientific Committee, it appears the stock is not experiencing overfishing (77% probability) and is not in an overfished condition (84% probability).

The 2018 EA analyzes potential impacts to the sustainability of bigeye tuna stocks by evaluating the effect of the alternatives, under multiple potential outcomes. As described in the 2018 EA, overfishing occurs when the fishing mortality rate (F/F_{MSY} ratio) is greater than 1.0 for one year or more. NMFS considers a stock overfished when the total stock biomass (B/B_{MSY} ratio) falls below the minimum size stock threshold (MSST). For bigeye tuna, MSST is considered to be breached if the B/B_{MSY} ratio falls below 0.6.

The analysis of the potential outcomes under the proposed action considered varying numbers of fishing agreements, and corresponding allocations, as well as partial or full utilization of the bigeye limit set for the U.S. territories.

In the 2018 EA, Alternative 2 Outcome D represents the maximum potential impact of the action. Outcome D assumes all three U.S. territories would enter into a fishing agreement and each allocate 1,000 t of their 2,000-t bigeye tuna catch limit to U.S. fishing vessels through the agreements. Outcome D also assumes that each of the three U.S. territories would catch 1,000 t of bigeye tuna (3,000 t) in 2018, and that U.S. pelagic fisheries would harvest each of the territory's allocation limit of 1,000 t of bigeye tuna under three specified fishing agreements (another 3,000 t).[1]

If NMFS did not allow any U.S. territory to allocate any tuna to Hawaii longline vessels (Alternative 1), and with full implementation of the measures set forth in WCPFC CMM 2017-01, the analysis in the 2018 EA projects that F_{2045}/F_{MSY} would be 0.983, meaning that WCPO bigeye would be below the overfishing threshold in 2045. With respect to spawning biomass, the analysis indicates that $SB_{2045}/SB_{F=0}$ is 0.286, which is above the WCPFC limit reference point or LRP ($SB_{2045}/SB_{F=0} = 0.20$) and Pelagics FEP's MSST (B/B_{MSY} 0.6).[2] The WCPO bigeye stock would not be subject to overfishing or in an overfished condition when projected to 2045 under Alternative 1.

[1] NMFS does not consider Outcome D to be the most likely outcome because out of the three Territories, only American Samoa currently has a longline fishery, which primarily targets albacore, and none of the Territories has the demonstrated capacity to harvest the full amount of its authorized bigeye limit. Nevertheless, because we authorize the amount under Outcome D, we have analyzed its potential impact on the conservation of bigeye tuna.

[2] Under the status determination criteria specified in the Pelagics FEP, WCPO bigeye tuna is overfished when $SB/SB_{MSY} = 0.6$. This is equivalent to $SB/SB_{F=0} = 0.14$.

Under Outcome D, the projected median mortality would be F_{2045}/F_{MSY} = 1.014. This mortality rate is indistinguishable from the overfishing threshold of F/F_{MSY} >1.0. Under Outcome D, median total biomass would be $SB_{2045}/SB_{F=0}$ = 0.271, which means the stock would not be in an overfished condition under Outcome D in 2045.

NMFS expects Alternative 2 Outcome C is the more likely outcome to occur in 2018. Outcome C assumes each territory would not fully utilize the remaining 1,000 t of its catch limit, which is consistent with the current state of the territorial longline fisheries (currently neither Guam nor the Commonwealth of the Mariana Islands has longline fisheries capable of targeting bigeye and the American Samoa longline fishery primarily targets albacore). Under Alternative 2-Outcome C, bigeye tuna would not be subject to overfishing or overfished because the projected median fishing mortality would be F_{2045}/F_{MSY} = 1.00 and the median total biomass would be $SB_{2045}/SB_{F=0}$ = 0.278.

The most recent stock assessment of bigeye tuna in the EPO indicates that F/F_{MSY} = 1.15 and $SB_{2014\text{-}2016}/SB_{MSY}$ = 1.02 (Xu et al. 2018). NMFS has not determined this assessment to represent the best scientific information for making status determinations because of questions and concerns identified by the Inter-American Tropical Tuna Commission's scientific advisory committee at its 9th meeting held May 14-28, 2018 (see Section 3.1.1 of the 2018 EA). In 2017, total bigeye tuna landings in the EPO by the longline fisheries in Hawaii, American Samoa, Guam, and the CNMI was 2,690 t (WPFMC 2018) or 2.8 percent of the estimated MSY of 95,491 t (Xu et al. 2018) and 2.8 percent of the total 2017 catch of 97,519 t (IATTC 2018). The impact of the purse-seine fishery on the bigeye stock is far greater than that of the longline fishery (Xu et al. 2018). Given the U.S. longline fleet's small contribution to overall fishing mortality, NMFS does not anticipate that the Hawaii-based longline fleet would influence stock dynamics of bigeye tuna in the EPO and therefore, does not expect Alternatives 1, 2 or 3 to negatively affect the EPO bigeye tuna stock.

Based on these analyses, NMFS does not expect the proposed action to jeopardize the sustainability of the target species.

Non-Target Stocks

No. Under this action, U.S. longline fisheries in Hawaii and the U.S. territories will continue to comply with all federal regulations implementing international conservation and management measures adopted by WCPFC, and domestic conservation and existing management under the Pelagics FEP to ensure that fishing is sustainable. 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 U.S. participating territories and the Hawaii longline fishery under Alternatives 2 and 3 are expected to result in catches of non-target species within historical baseline levels, although there could be slightly less effort by Hawaii-based fisheries under Alternative 1 compared to Alternatives 2 and 3 (2018 EA Sections 4.1.1.2 and 4.1.4).

NMFS will continue to monitor all longline fisheries for information on catch, bycatch, and discards, and interactions with protected species. Fishery monitoring allows NMFS and the Council to respond to potential needs to reduce bycatch and mortality of bycatch. Longline vessels that fish under specified fishing agreements under the action will still be required to submit logbooks, carry observers when requested by NMFS, and carry and operate a vessel monitoring system (VMS) unit. In addition, all longline vessels are required to follow strict protected species mitigation measures that reduce interactions with these species.

13. Can the proposed action reasonably be expected to adversely affect essential fish habitat as defined under the Magnuson-Stevens Fishery Conservation and Management Act?

No. Section 4.4 of the 2018 EA describes the impacts on essential fish habitat (EFH) and habitat areas of particular concern (HAPC). The proposed action would not change the way any longline fishery is conducted, and would not adversely impact the marine habitat, particularly EFH or HAPC. NMFS knows of no western Pacific pelagic fishery that has large adverse impacts to habitats, and so none of the alternatives is likely to lead to substantial physical, chemical, or biological alterations to the habitat.

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; 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.

14. Can the proposed action reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

No. Section 4.4 of the 2018 EA describes the impacts on marine habitats. None of the alternatives considered would adversely impact the marine habitat, including vulnerable marine and coastal ecosystems, including marine protected areas (MPAs), marine sanctuaries, or marine monuments. NMFS knows of no western Pacific pelagic fishery that has large adverse impacts to habitats, and so none of the alternatives is likely to lead to substantial physical, chemical, or biological alterations to the habitat. Longline fishing does not occur in coastal areas or MPAs, so the proposed action would not impact these vulnerable or protected ecosystems.

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; 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 vulnerable marine ecosystems including deep coral beds.

15. Can the proposed action reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

No. NMFS is not aware of studies that show effects from pelagic longline fisheries to species fecundity or negative predator/prey relationships that result in adverse changes to food web dynamics. Without management to ensure fishing is sustainable, the removal of top predator pelagic species such as bigeye tuna, yellowfin tuna, and billfish above natural mortality rates has the potential to cause major imbalances or wide-ranging change to ecosystem functions and habitats. However, both international and domestic fishery managers are controlling catches throughout the Pacific. NMFS expects such control to improve stock status and prevent imbalances or wide-ranging changes to ecosystem function. Additionally, NMFS does not expect the proposed action to result in fishing effort above baseline levels of operation. Therefore, NMFS does not analyze effects on biodiversity and/or ecosystem function in the 2018 EA (2018 EA, Section 3.6).

16. Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

No. This action would not change the conduct of longline fisheries, and these fisheries are not known to be spreading or introducing non-indigenous species (2018 EA, Section 3.6).

Summary and Other Findings

NMFS also considered the effects of climate change on the resources considered in the EA and the potential effects of the alternatives considered in the face of climate change (2018 EA, Section 4.6.5). Monitoring of stock status would continue, and allow detection of impacts to stocks that might be occurring because of climate change. NMFS and the Council could modify fishery management provisions to ensure that all fisheries remain sustainably managed. NMFS does not expect the action to result in a change in the fishery's conduct, so there would be no change in greenhouse gas emissions.

NMFS does not expect the conduct of U.S. longline fisheries in the Pacific Islands under the proposed action to have significant adverse impacts to the physical marine environment, target or non-target fish species, protected resources, fishery participants and communities, or state and federal enforcement or fisheries administration. The Hawaii longline fishery will continue to operate in accordance with provisions of the Pelagics FEP, other applicable regulations, and with authorizations undertaken in accordance with the ESA and MMPA. These regulations and authorizations will help ensure the sustainable management of the affected stock, consistent with conservation and management objectives under applicable law and WCPFC decisions.

Determination

In view of the information presented in this document and the analysis contained in the supporting EA prepared for 2018 bigeye tuna catch and allocation limits for pelagic longline fisheries in U.S. Pacific island territories, it is hereby determined that the 2018 bigeye tuna catch and allocation limits for pelagic longline fisheries in U.S. Pacific island territories will not significantly impact the quality of the human environment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an environmental impact statement for this action is not necessary.

OCT - 9 2018

Michael D. Tosatto
Regional Administrator

Date

Attachment: NMFS (National Marine Fisheries Service). 2018. Environmental Assessment: Bigeye Tuna Catch and Allocation Limits for Pelagic Longline Fisheries in U. S. Pacific Island Territories including a Regulatory Impact Review. National Marine Fisheries Service, Honolulu, HI. 175 p. + Appendices.