NOAA FISHERIES
Pacific Islands Regional Office

Supplemental Environmental Assessment to Update through 2025:

Programmatic Environmental Assessment for the Implementation of Decisions of the Western and Central Pacific Fisheries Commission on Management of Tropical Tunas in the Western and Central Pacific Ocean from 2015-2020

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Appendix A *Programmatic Environmental Assessment for the Implementation of Decisions of the Western and Central Pacific Fisheries Commission on Management of Tropical Tunas in the Western and Central Pacific Ocean from 2015-2020*

Appendix B *Supplemental Environmental Assessment for a Rule to Implement Decisions of the Western and Central Pacific Fisheries Commission for: Fishing Restrictions in Purse Seine Fisheries (RIN 0648-BI78)*

Executive Summary

This supplemental environmental assessment (SEA) has been prepared pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. § 4321, *et seq*.) and related authorities, such as the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508) and the National Oceanic and Atmospheric Administration's (NOAA) Administrative Order (NAO) 216-6A (April 22, 2016) – Compliance with the National Environmental Policy Act, and its associated Companion Manual (January 13, 2017).[1]

In 2015, the National Marine Fisheries Service (NMFS) published a programmatic environmental assessment (PEA) titled *Programmatic Environmental Assessment for the Implementation of Decisions of the Western and Central Pacific Fisheries Commission on Management of Tropical Tunas in the Western and Central Pacific Ocean from 2015-2020* (hereafter 2015 PEA). The 2015 PEA analyzed NMFS' projected domestic implementation of the conservation and management measures on tropical tunas in the western and central Pacific Ocean (WCPO), adopted by the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Commission or WCPFC), pursuant to the Western and Central Pacific Fisheries Convention Implementation Act (WCPFCIA; 16 USC 6901 *et seq*.), from 2015 through the end of 2020.

In 2019, NMFS prepared a supplemental environmental assessment titled *Supplemental Environmental Assessment for a Rule to Implement Decisions of the Western and Central Pacific Fisheries Commission for: Fishing Restriction in Purse Seine Fisheries* (hereafter 2019 SEA). The 2019 SEA described the new information available since completion of the 2015 PEA, and provided specific analysis of a rule to implement the purse seine provisions of the WCPFC tropical tunas decision (Conservation and Management Measure (CMM) 2018-01, "Conservation and Management Measure for Bigeye, Yellowfin, and Skipjack Tuna in the Western and Central Pacific Ocean") for 2019 and 2020.

The Commission has recently approved three intersessional decisions that need immediate implementation. NMFS regulations at 50 CFR 300.223(e) implement a WCPFC requirement for 100% WCPFC observer coverage[2] on purse seine vessels (with limited exceptions). On April 8, 2020, in response to the international concerns over the health of observers and vessel crews due to the COVID-19 pandemic, the Commission made an intersessional decision to suspend the requirements for observer coverage on purse seine vessels on fishing trips in the Convention

[1] This EA is being prepared using the 1978 CEQ NEPA Regulations. NEPA reviews initiated prior to the effective date of the revised CEQ regulations may be conducted using the 1978 version of the regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020 (see 85 FR 43304). This review began on September 9, 2020, and the agency has decided to proceed under the 1978 regulations.

[2] A WCPFC Observer means a person authorized by the Commission in accordance with any procedures established by the Commission to undertake vessel observer duties as part of the Commission's Regional Observer Programme, including an observer deployed as part of a NMFS-administered observer program or as part of another national or sub-regional observer program, provided that such program is authorized by the Commission to be part of the Commission's Regional Observer Programme.

Area through May 31, 2020. The Commission subsequently extended that decision and the current extension is effective until August 15, 2021. Accordingly, NMFS waived the requirement under 50 CFR 300.223(e) pursuant to the emergency rule issued by NMFS on March 27, 2020 (85 FR 17285), which was subsequently extended through March 26, 2022 (86 FR 16307; March 29, 2021), until August 15, 2021.

NMFS regulations at 50 CFR 300.216(b)(1) implement the WCPFC prohibition on at-sea transshipments for purse seine vessels. On April 20, 2020, in response to the international concerns over the health of vessel crews and port officials due to COVID-19, the Commission made an intersessional decision to suspend this prohibition so that purse seine vessels can conduct limited at-sea transshipments, if transshipment in port cannot be conducted, in accordance with the domestic laws and regulations of the port State. The Commission subsequently extended that decision and the current extension is effective until August 15, 2021.

NMFS regulations at 50 CFR 300.215(d) and 50 CFR 300.216(b)(2) implement WCPFC provisions regarding observer coverage for at-sea transshipments. On May 13, 2020, in response to the international concerns over the health of observers and vessel crews due to COVID-19, the Commission made an intersessional decision to suspend the requirements for observer coverage for at-sea transshipments. The Commission subsequently extended that decision and the current extension is effective until August 15, 2021.

NMFS anticipates that the Commission might make additional short-notice decisions in the near future that require immediate implementation and are temporary in nature that address relevant global or regional health, safety, and security concerns, as well as other international emergencies and crises. These decisions may include the following: additional waivers or modifications of WCPFC decisions, such as decisions regarding catch and effort limits or fishing restrictions; conditions to waivers or modifications of WCPFC decisions; and substitutions of existing regulatory requirements (e.g., requirements for electronic monitoring instead of observer coverage). NMFS regulations at 50 CFR 300 Subpart O implement multiple existing WCPFC decisions. Although the WCPFCIA authorizes NMFS to promulgate such regulations as may be necessary to carry out the United States' international obligations as a member of the WCPFC, including recommendations and decisions adopted by the Commission, NMFS does not currently have a process to implement quickly short-notice WCPFC decisions requiring immediate action that address relevant global or regional health, safety, and security concerns, as well as other international emergencies and crises. NMFS is undertaking a rulemaking (RIN 0648-BJ86) to establish a process to implement such decisions of the Commission.

This document incorporates the 2015 PEA and the 2019 SEA by reference. The 2015 PEA is included as Appendix A and the 2019 SEA is included as Appendix B. This SEA updates the analysis in the 2015 PEA and 2019 SEA to include analysis of WCPFC decisions on tropical tunas through the end of 2025. This SEA also includes specific analysis of the rulemaking that NMFS is undertaking to implement for WCPFC short-notice decisions that are temporary in nature and respond to relevant global or regional health, safety, and security concerns, as well as other international emergencies and crises. This document refers to relevant sections of the 2015 PEA and 2019 SEA throughout, as appropriate.

In the 2019 SEA, NMFS stated that since completion of the 2015 PEA, the following new information is available:

- NMFS published a final rule listing the Eastern Pacific distinct population segment (DPS) of the scalloped hammerhead shark (*Sphyrna lewini*) as endangered under the Endangered Species Act (ESA) and the Indo-West Pacific DPS as threatened under the ESA (see 79 FR 38214; published July 3, 2014).

- NMFS published a final rule (see 80 FR 50926; published August 21, 2015) designating critical habitat (CH) for the Hawaiian monk seal *(Neomonachus schauinslandi*) under the ESA in the main Hawaiian Islands and expanding monk seal CH in the Northwestern Hawaiian Islands.

- NMFS and the U.S. Fish and Wildlife Service (USFWS) published a final rule to list 11 DPS of the green sea turtle (*Chelonia mydas*) (see 81 FR 20058; published April 6, 2016).

- NMFS implemented provisions of WCPFC conservation and management measures on tropical tunas by rulemaking – CMM 2015-01, CMM 2016-01, and CMM 2017-01 – for longline and purse seine fisheries. The provisions include longline bigeye tuna catch limits, purse seine fish aggregating device (FAD) restrictions, and purse seine fishing effort limits. See final rule published in 2018 for the most recent rulemaking on these provisions (see 83 FR 33851; published July 18, 2018).[3]

- The parties to the South Pacific Tuna Treaty (SPTT) agreed to a revised treaty in December 2016 that provides for access by U.S. purse seine vessels to the waters of the Pacific Island Parties (PIPs)[4] to the SPTT. The parties to the SPTT, including the United States, signed a memorandum of understanding, agreeing to provisionally apply the revised SPTT until it enters into force. The United States is continuing to proceed on the domestic implementation of the revised SPTT.[5]

- NMFS issued a final rule to implement for U.S. fishing vessels Inter-American Tropical Tuna Commission (IATTC) Resolutions 16-01 "Collection and Analyses of Data on Fish-Aggregating Devices" and 16-06 "Conservation Measures for Shark Species, with Special Emphasis on the Silky Shark (*Carcharhinus Falciformis*) for the Years 2017, 2018, and 2019" (see 81 FR 86966; published December 2, 2016).

[3] These rulemakings were within the scope of analysis of the 2015 PEA, which analyzed U.S. implementation of potential Commission decisions on tropical tunas from 2015-2020.

[4] These include Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

[5] The 2015 PEA included implementation of a revised SPTT within the scope of the cumulative impacts analysis.

- NMFS issued a final rule to implement IATTC Resolution C-16-08, "Measures for the Conservation and Management of Pacific Bluefin Tuna in the Eastern Pacific Ocean" (see 82 FR 18704; published April 21, 2017).

- NMFS issued a final rule to implement IATTC Resolution C-17-01, "Conservation of Tuna in the Eastern Pacific Ocean During 2017" (see 82 FR 17382; published April 11, 2017).

- NMFS published a final rule to list the giant manta ray (*Manta birostris*) as threatened under the ESA (see 83 FR 2916; published January 22, 2018).

- NMFS published a final rule to list the oceanic whitetip shark (*Carcharinus lonigmanus*) as threatened under the ESA (see 83 FR 4153; published January 30, 2018).

- NMFS issued a final rule to implement IATTC C-17-02, "Conservation Measures for Tropical tunas in the Eastern Pacific Ocean During 2018-2020 and Amendment to Resolution C-17-01" (see 83 FR 15503; published April 11, 2018).

- NMFS issued a final rule to implement IATTC Resolution C-18-05, "Amendment of Resolution C-16-01 on the Collection of Data on Fish Aggregating Devices" (see 83 FR 62732; published December 6, 2018).

- New stock assessments for bigeye tuna in and yellowfin tuna discussed by the WCPFC Scientific Committee suggest that the stocks of bigeye tuna and yellowfin tuna in the WCPO are not experiencing overfishing nor are they overfished and the stock of bigeye tuna shows overall improvement, though there is substantial uncertainty in the stock assessments.[6] NMFS does not currently consider the WCPO stocks of bigeye tuna or yellowfin tuna to be overfished or to be experiencing overfishing.

- NMFS published a final rule (see 81 FR 24501, published April 26, 2016) that establishes that regulations implementing IATTC decisions no longer apply in the area of overlap between the WCPFC and the IATTC (overlap area), with the exception of regulations governing the IATTC Regional Vessel Register. NMFS published an advance notice of proposed rulemaking for the overlap area to seek public input to continue or revise management of the overlap area (see 83 FR 27305; published June 12, 2018).

- NMFS published a final rule to list the chambered nautilus (*Nautilus pompilius*) as threatened under the ESA (see 83 FR 189; published September 28, 2018).

- Based on the 2018 IATTC stock assessment of yellowfin tuna, NMFS determined that the EPO stock of yellowfin tuna is experiencing overfishing.

[6] More recent stock assessments were discussed by the WCPFC Scientific Committee in 2020 and include the same conclusions.

- Recent information regarding performance of the U.S. WCPO purse seine fishery is available since completion of the 2015 PEA.

- NMFS reinitiated formal consultation under Section 7 of the ESA for the U.S. WCPO purse seine fishery for ESA-listed species with which the fishery interacts to take into consideration the newly-listed species and new information regarding the fishery in 2017.

The 2019 SEA focused analysis on the U.S. WCPO purse seine fishery. The following is new information available since completion of the 2019 SEA, as well as new information on other fisheries that could be affected by WCPFC tropical tunas or emergency decisions available since completion of the 2015 PEA:

- NMFS published a final rule to change management measures in the overlap area so that all NMFS regulations implementing IATTC management measures now apply in the overlap area and a few regulations implementing WCPFC management measures continue to apply in the overlap area (see 85 FR 37376, published June 22, 2020).

- NMFS published a final rule that expands the requirement for vessel owners to obtain International Maritime Organization (IMO) numbers to include smaller U.S. vessels fishing for tuna and tuna-like species in the IATTC Area and relieves some of the restrictions on retention of incidental catch by purse seine vessels (84 FR 70040; December 20, 2019; corrected in 85 FR 8198; February 13, 2020).

- NMFS published a final rule on May 18, 2020 (85 FR 29666), to implement provisions in IATTC Resolutions C-19-01 ("Amendment to Resolution C-18-05 on the Collection and Analysis of Data on Fish Aggregating Devices (FADs)"), C-19-05 ("Amendment to the Resolution C-16-06 Conservation Measures for Shark Species, with Special Emphasis on the Silky Sharks *(Carcharhinus Falciformis),* for the Years 2020-2021"), and C-18-07 ("Resolution on Improving Observer Safety At Sea: Emergency Action Plan"), and AIDCP Resolution A-18-03 ("On Improving Observer Safety At Sea: Emergency Action Plan").

- Recent information regarding performance of the U.S. longline fisheries is available since completion of the 2015 PEA.

- NMFS completed the Biological Opinion and Conference Opinion on the Continued Operation of the American Samoa Longline Fishery (2015 BiOp).

- NMFS completed the Supplement of the 2014 Biological Opinion on Continued Operation of the Hawaii-based Deep-set Pelagic Longline Fishery (2017 Supplemental BiOp).

- NMFS completed the Biological Opinion on the Continued Authorization of the Hawaii Pelagic Shallow-Set Longline Fishery (2019 BiOp).

- NMFS published a final rule that revises measures that govern interactions between the Hawaii shallow-set pelagic longline fishery and sea turtles (85 FR 57988; September 17, 2020).

- NMFS determined that the WCPO stock of oceanic whitetip shark is both subject to overfishing and overfished, and has informed the Western Pacific Fishery Management Council of its obligations for domestic and international management to address domestic and international impacts under the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1801 *et seq*.) (85 FR 46588; August 3, 2020).

- NMFS published an interim final rule to implement IATTC Resolution C-20-05 ("Resolution on Conservation and Management Measures for Tropical Tunas in 2021") (86 FR 5033; January 19, 2021).

- NMFS published a final rule to implement IATTC Resolution C-20-02 ("Measures for the Conservation and Management of Pacific Bluefin Tuna in the Eastern Pacific Ocean, 2021") (86 FR 16303; March 29, 2021).

Chapter 1 Updated Information

The chapter provides a summary of the sections of the 2015 PEA and 2019 SEA that are incorporated by reference in this document and provides updates to those sections for the purposes of this SEA.

1.1 Introduction and Purpose and Need

The 2015 PEA is included in Appendix A of this document. The 2019 SEA is included in Appendix B of this document. Chapter 1 of the 2015 PEA provides detailed background information on Commission decisions on tropical tunas, the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Convention), and the United States' domestic implementation of WCPFC decisions under the authority of the WCPFCIA.

Chapter 1 of the 2015 PEA includes the following purpose and need statement:

> The purpose of NMFS' domestic implementation of WCPFC decisions on tropical tunas from 2015 to 2020 is to contribute to the underlying objectives of the Commission's management of tropical tuna stocks in the WCPO, which, as stated in CMM 2014-01, are to reduce or maintain their respective fishing mortality rates at levels no greater than those rates associated with maximum sustainable yield, and as reflected in the Commission's limit reference points for these stocks, are to avoid the spawning stocks becoming smaller than 20% of the estimated spawning stock size in the absence of fishing. The need for the domestic implementation of WCPFC decisions on tropical tunas is to satisfy the obligations of the United States as a Contracting Party to the Convention, pursuant to the authority of the WCPFCIA.

CMM 2018-01 stated that pending the establishment of harvest strategies, and any implementing CMM, the purpose of the measure is to provide for a robust transitional management regime that ensures the sustainability of bigeye, skipjack, and yellowfin tuna stocks. Accordingly, the 2019 SEA modified the purpose and need statement in the 2015 PEA to take into consideration language in CMM 2018-01. This modified purpose and need statement is as follows:

> The purpose of NMFS' domestic implementation of WCPFC decisions on tropical tunas through 2020 is to contribute to the underlying objectives of the Commission's management of tropical tuna stocks in the WCPO, which, as stated in CMM 2018-01, are, pending the establishment of harvest strategies, and any implementing CMM, to provide for a robust transitional management regime that ensures the sustainability of bigeye, skipjack, and yellowfin tuna stocks. The need for the domestic implementation of WCPFC decisions on tropical tunas is to satisfy the obligations of the United States as a Contracting Party to the Convention, pursuant to the authority of the WCPFCIA.

CMM 2020-01 is the most recent WCPFC decision on tropical tunas and maintains the text of CMM 2018-01.

As stated in the Executive Summary, above, this SEA updates the analysis in the 2015 PEA and 2019 SEA to include analysis of WCPFC decisions on tropical tunas through the end of 2025. This SEA also includes specific analysis of the rulemaking that NMFS is undertaking to implement short-notice WCPFC decisions requiring immediate action that address relevant global or regional health, safety, and security concerns, as well as other international emergencies and crises. Thus, the modified purpose and need statement for this document is as follows:

> The purpose of NMFS' domestic implementation of WCPFC decisions on tropical tunas through 2025, is to contribute to the underlying objectives of the Commission's management of tropical tuna stocks in the WCPO, which, as stated in CMM 2018-01, are, pending the establishment of harvest strategies, and any implementing CMM, to provide for a robust transitional management regime that ensures the sustainability of bigeye, skipjack, and yellowfin tuna stocks. The purpose of NMFS' domestic process to implement short-notice WCPFC decisions is to respond to urgent situations in a timely manner. The need for the domestic implementation of WCPFC decisions on tropical tunas and WCPFC decisions that require immediate action is to satisfy the obligations of the United States as a Contracting Party to the Convention, pursuant to the authority of the WCPFCIA.

1.2 Proposed Action and Alternatives

Chapter 2 of the 2015 PEA describes the proposed action and alternatives examined in that document in detail. The proposed action was NMFS' domestic implementation of the Commission's conservation and management measures, pursuant to the WCPFCIA, on the "tropical tunas" or bigeye tuna, yellowfin tuna, and skipjack tuna from 2015 through the end of 2020. Eleven alternatives (the No-Action Alternative and ten action alternatives) were analyzed in depth in the 2015 PEA.

The proposed action for the purposes of this SEA is NMFS' management of the commercial high migratory species (HMS) fisheries in the WCPO through domestic implementation of the Commission's conservation and management measures, pursuant to the WCPFCIA, on the "tropical tunas" or bigeye tuna, yellowfin tuna, and skipjack tuna from the present through the end of 2025. The proposed action also includes the implementation of short-notice WCPFC decisions, including intersessional decisions, which address relevant global or regional health, safety, and security concerns, as well as other international emergencies and crises, from the present through the end of 2025, which NMFS would implement through development of a framework to issue temporary specifications. NMFS believes that analysis over a five-year time period is reasonable, because that is the period in which NMFS can reasonably forecast stock conditions and fleet behavior in the future.

For the purposes of the analysis in this SEA, under the No-Action Alternative, NMFS would not implement WCPFC decisions on tropical tunas or short-notice WCPFC decisions, which are temporary in nature and respond to international emergencies and crises, from the present through 2025. Thus, this alternative would result in conditions that are treated as the baseline for the purposes of assessing the impacts of the other alternatives. The inclusion of the No-Action Alternative serves the important function of facilitating comparison of the effects of the action alternatives and is a required part of a NEPA document. Under the No-Action Alternative, the fisheries operating in the WCPO would continue to be managed under existing laws and regulations.

NMFS has examined the action alternatives analyzed in the 2015 PEA, which include combinations of longline bigeye tuna catch limits, purse seine fishing effort limits, purse seine fish aggregating device (FAD) restrictions, high seas FAD closures, longline yellowfin tuna catch limits and purse seine yellowfin tuna catch limits. NMFS believes that the action alternatives analyzed in the 2015 PEA, with some modifications, as discussed further below, constitute a reasonable range of alternatives for analysis in this SEA for implementation of WCPFC tropical tunas decisions. NMFS' current implementation of the WCPFC tropical tunas measures in CMM 2020-01 include the following:

- A calendar year longline bigeye tuna catch limit of 3,554 metric tons (mt) (see 50 CFR 300.224(a)).
- A calendar year purse seine fishing effort limits of 1,828 fishing days per year in the effort limit area for purse seine (Effort Limit Area for Purse Seine, or ELAPS, means, within the area between 20° N. latitude and 20° S. latitude, areas within the area of application of the Convention (Convention Area) that either are high seas or within the U.S. exclusive economic zone (EEZ)) (see 50 CFR 300.223(a)).
- FAD prohibition periods for purse seine vessels in the entire Convention Area from July 1 through September 30 in each calendar year and on the high seas in the Convention Area from November 1 through December 31 in each calendar year (see 50 CFR 300.223(b)(2)).
- A limit of 350 drifting active FADs per purse seine vessel in the Convention Area at any one time (see 50 CFR 300.223(b)(3)).
- Catch retention requirements for purse seine vessels in the Convention Area (see 50 CFR 300.223(d)).

Given that the WCPFC's tropical tunas measures have remained fairly consistent in recent years, it is likely that the WCPFC will adopt tropical tunas measures in the next five years similar to CMM 2018-01. In addition, as indicated in the following sub-section, the performance of the U.S. longline and purse seine fisheries in the Convention Area has remained similar in recent years compared to the performance of those fisheries analyzed in the 2015 PEA, and thus, the basis for the development of the alternatives, as explained in the 2015 PEA, remains unchanged.

NMFS has also developed a range of alternatives for potential short-notice WCPFC decisions that may need immediate implementation through temporary specifications, based on the three intersessional decisions the WCPFC has made in 2020 and 2021. The rule that NMFS is developing to implement such WCPFC decisions would put into place a framework for the

implementation of such decisions as temporary specifications. This SEA analyzes a range of foreseeable temporary specifications that could be implemented under the framework, as further described below. However, the framework itself would be a purely administrative process with no expected environmental effects (i.e., an administrative process through which NMFS would implement the temporary specifications to put into effect short-notice WCPFC decisions that may need immediate implementation), and thus, is not considered further in this document.

Section 1.2.1 describes the development of alternatives for analysis and Section 1.2.2 describes the alternatives analyzed in depth in this SEA. Section 1.2.3 describes the alternatives initially considered but excluded from detailed analysis in this document.

1.2.1 Alternatives Development

Sections 1.2.1.1 to 1.2.1.16 below update the 2015 PEA's discussion on the alternatives development for the implementation of WCPFC tropical tuna measures and include discussion of a range of alternatives to analyze for potential WCPFC decisions that may need immediate implementation.

1.2.1.1 Bigeye Tuna Catch Limits in the Longline Fishery

Table 1 below shows the longline bigeye tuna catch limits in the WCPO that NMFS has implemented in accordance with WCPFC decisions since 2008. Under NMFS regulations, the limit will remain 3,554 mt in 2021 and future years unless modified by NMFS in response to a WCPFC decision.

Table 1. Longline Bigeye Tuna Catch Limits in the WCPO, 2008-2020

Year	Limit
2008	3,763 mt
2009	3,763 mt
2010	3,763 mt
2011	3,763 mt
2012	3,763 mt
2013	3,763 mt
2014	3,763 mt
2015	3,502 mt
2016	3,554 mt
2017	3,138 mt
2018	3,554 mt
2019	3,554 mt
2020	3,554 mt

To determine the longline bigeye tuna catch limits for the United States, the Commission used the 2004 U.S. bigeye tuna longline catch (4,181 mt) as the baseline from which the catch limits

were calculated. Based on these numbers, NMFS has identified the following as a reasonable range of options for this element of the proposed action, each of which would apply throughout the Convention Area:

1) A limit of 3,554 mt per year in the years 2021-2025.
2) A limit of 5,000 mt per year in the years 2021-2025.
3) A limit of 2,090 mt per year (50% of the 2004 catch) from 2021 through 2025, or a 50% reduction from the baseline, which would likely be the lowest reduction of bigeye tuna catch prescribed by the Commission in the reasonably foreseeable future.

1.2.1.2 Fishing Effort Limits in the Purse Seine Fishery

NMFS implemented fishing effort limits in terms of fishing days for the U.S. purse fleet from 2009 through 2020, in accordance with WCPFC decisions. The limits applied to the high seas and the U.S. EEZ within the Convention Area, between the latitudes of 20° N. and 20° S., an area referred to in U.S. fisheries regulations as the Effort Limit Area for Purse Seine, or ELAPS. The limits for the ELAPS for 2009-2020, as well as the fishing days used by the fleet through 2020 are shown in Table 2 below. Under NMFS regulations, the limit will remain at 1,828 fishing days in the ELAPS in 2021 and future years, unless modified by NMFS in response to a WCPFC decision.

Table 2. U.S. purse seine fishing effort limits and use in the U.S. EEZ and on the high seas in the Convention Area, 2009-2020.

Year	Limit (fishing days)			Used (fishing days)			Limit Reached	
	ELAPS (EEZ+HS)	U.S. EEZ	High Seas	ELAPS (EEZ+HS)	U.S. EEZ	High Seas	ELAPS closed	High Seas closed
2009	*2,588			1,867	107	1,760	--	--
2010	*2,588			449	26	423	--	--
2011	*2,588			621	40	581	--	--
2012	*2,588			1,483	205	1,278	--	--
2013	2,588			1,273	176	1,097	--	--
2014	1,828			1,312	227	1,085	--	--
2015	1,828			1,886	43	1,843	June 15**	--
2016	1,828			1,750	100	1,650	September 2**	--
2017	1,828			968	129	842	--	--
2018		458	1,370		91	1582	--	September 18**
2019[7]	1,616			1,598	46	1,552		

[7] Although the ELAPS limit was not reached in 2019, NMFS closed the fishery from October 9 to November 29, 2019, and then again from December 10 to December 31, 2019, due to calculations that the limit would be reached. See 84 FR 65690 (published November 29, 2019).

Year	Limit (fishing days)			Used (fishing days)			Limit Reached	
2020	1,828			1,789	126	1,663		

Based on the numbers in Table 2, NMFS has identified the following as a reasonable range of options for this element of the proposed action, each of which would apply in the Convention Area between the latitudes of 20° N. and 20° S.:

1) Separate annual limits of 431 fishing days on the high seas and 26 fishing days in the U.S. EEZ for each of the years 2021-2025. These numbers are based on the lowest per-vessel effort levels in the 1997-2019 period (which occurred in 2010), adjusted for a maximum of 40 vessels fleet, which is the maximum number of vessel licenses currently authorized.
2) Separate annual limits of 1,270 fishing days on the high seas and 558 fishing days in the U.S. EEZ for each of the years 2021-2025, which is the same total number of fishing days implemented in the effort limit for the ELAPS for 2020, but separated into separate limits for the two portions of the ELAPS.
3) A combined annual limit of 1,828 fishing days in the ELAPS for each of the years 2021-2025, which is identical to the effort limit for 2020.
4) A combined annual limit of 3,880 fishing days in the ELAPS for each of the years 2021-2025. This number is based on the highest per-vessel effort levels on the high seas and in the U.S. EEZ in the 1997-2019 period (which occurred in 2005 for the high seas and in 1997 for the U.S. EEZ), summed and adjusted for a maximum of 40 vessels in the fleet.

1.2.1.3 FAD Setting Prohibition Periods for the Entire Convention Area in the Purse Seine Fishery

NMFS implemented FAD setting prohibition periods for the entire Convention Area for the U.S. purse seine fleet from 2009-2020, in accordance with WCPFC decisions. The prohibition periods were as shown in Table 3 below. Under NMFS regulations, the time period for the FAD setting prohibition for the entire Convention Area will remain from July 1 through September 30 in 2021 and future years, unless modified by NMFS in response to a WCPFC decision.

Table 3. U.S. FAD prohibition periods for the entire Convention Area, 2009-2020

Year	**Time Period**
2009	August 1 – September 30
2010	July 1 – September 30
2011	July 1 – September 30
2012	July 1 – September 30
2013	July 1 – October 31
2014	July 1 – October 31
2015	July 1 – October 31
2016	July 1 – September 30
2017	July 1 – September 30

2018	July 1 – September 30
2019	July 1 – September 30
2020	July 1 – September 30

NMFS has identified the following as a reasonable range of options for this element of the proposed action, each of which would apply in the Convention Area between the latitudes of 20° N. and 20° S.:

1) A FAD setting prohibition period of three months (e.g., July through September) in each of the years 2021 through 2025.
2) A FAD setting prohibition period of four months (e.g., July through October) in each of the years 2021 through 2025.
3) A FAD setting prohibition period for the full year in each of the years 2021 through 2025.

1.2.1.4 FAD Set Limits in the Purse Seine Fishery

Past WCPFC decisions on tropical tunas have included the option for WCPFC members to limit the total number of FAD sets to specific numbers each year, as an alternative to FAD setting prohibition periods longer than three months in the Convention Area. NMFS limited the total number of FAD sets for the U.S. purse seine fleet to 2,522 FAD sets in 2016 and 2017, in accordance with WCPFC decisions. Based on these provisions, NMFS has identified the following as a reasonable range of options for this element of the proposed action, each of which would apply in the Convention Area between the latitudes of 20° N. and 20° S.:

1) A limit of 2,522 FAD sets per year in each of the years 2021 through 2025 (see Attachment A of CMM 2014-01).
2) A limit of 3,061 FAD sets per year in each of the years 2021 through 2025 (see Attachment A of CMM 2014-01).
3) A limit of 1,530 FAD sets per year in each of the years 2021 through 2025, which is 50% of the U.S. fleet's 2010-2012 average, the baseline period used to calculate the FAD set limits in CMM 2014-01.
4) A complete prohibition on FAD sets in each of the years 2021 through 2025.

1.2.1.5 Total Prohibition Periods in the Purse Seine Fishery

The Commission has also discussed, though not yet adopted, total closure periods for the purse seine fishery (during which all purse seine fishing, not just FAD-associated purse seine fishing, would be prohibited). NMFS has identified the following as a reasonable range of options for this element of the proposed action, each of which would apply in the Convention Area between the latitudes of 20° N. and 20° S.:

1) A total purse seine closure period of six months in each of the years 2021 through 2025.

2) A total purse seine closure period of three months in each of the years 2021 through 2025.

1.2.1.6 High Seas FAD Closures in the Purse Seine Fishery

NMFS implemented a high seas FAD closure for the U.S. purse seine fishery in 2017, in accordance with WCPFC decisions. Although the Commission did not extend the complete high seas FAD closure, the Commission did adopt two-month high seas FAD closures (either in April and May or November and December). NMFS implemented high seas FAD closures in November and December in 2018 and 2019. Under NMFS regulations, the November and December high seas FAD closures will remain in effect in 2021 and future years, unless modified by NMFS in response to a WCPFC decision. Based on past WCPFC decisions, NMFS has identified the following options for this element of the proposed action, which would apply in the Convention Area between the latitudes of 20° N. and 20° S.:

1) Prohibit U.S. purse seine vessels from fishing on FADs on the high seas, between the latitudes of 20° N. and 20° S., in each of the years 2021 through 2025.
2) Prohibit U.S. purse seine vessels from fishing on FADs on the high seas, between the latitudes of 20° N. and 20° S., in November and December in each of the years 2021 through 2025.

1.2.1.7 Active FAD Limits

NMFS implemented limits on active FADs in 2018, 2019, and 2020. As WCPFC adopted requirements for active FADs after publication of the 2015 PEA, these requirements were not included in the analysis in the 2015 PEA. Under NMFS regulations, an active FAD is a FAD that is equipped with a buoy with a clearly marked reference number allowing its identification and equipped with a satellite tracking system to monitor its position, as specified by the Commission's definition of instrumented buoy. The active FAD limits for those years were 350 active drifting FADs in the Convention Area at any one time per purse seine vessel. Under NMFS regulations, the active FAD limits will remain at 350 in 2021 and future years, unless modified by NMFS in response to a WCPFC decision.

Based on these regulations and anecdotal information indicating that each U.S. purse seine vessel does not have more than 350 active drifting FADs at any one time in the Convention Area, NMFS has identified the following as a reasonable range of options for this element of the proposed action:

1) Zero active drifting FADs at any one time in the Convention Area in the years 2021 through 2025.
2) 175 active drifting FADs at any one time in the Convention Area in the years 2021 through 2025.
3) 350 active drifting FADs at any one time in the Convention Area in the years 2021 through 2025.

1.2.1.8 Catch Retention

NMFS has implemented catch retention requirements for U.S. purse seine vessels from 2009-2020. NMFS implemented these regulations prior to development of the 2015 PEA and thus did not analyze these requirements as part of the 2015 PEA. The current regulations require that an owner and operator of a fishing vessel of the United States equipped with purse seine gear ensure the retention on board at all times while at sea within the Convention Area any bigeye tuna, yellowfin tuna, or skipjack tuna, except in the following circumstances and with the following conditions:

> 1) Fish that are unfit for human consumption, including but not limited to fish that are spoiled, pulverized, severed, or partially consumed at the time they are brought on board, may be discarded;
> 2) If at the end of a fishing trip there is insufficient well space to accommodate all the fish captured in a given purse seine set, fish captured in that set may be discarded, provided that no additional purse seine sets are made during the fishing trip;
> 3) If a serious malfunction of equipment occurs that necessitates that fish be discarded.

These catch retention requirements will remain in place in 2021 and future years, unless modified by NMFS in response to a WCPFC decision. NMFS has identified maintaining the current regulations without change for the years 2021 through 2025 as the one option for implementation of this element of the proposed action.

1.2.1.9 FAD Design

CMM 2020-01 includes provisions regarding non-entangling FADs. The provisions require the design and construction of FADs in the Convention Area to meet the following specifications:

- The floating or raft part (flat or rolled structure) of the FAD can be covered or not. To the extent possible the use of mesh net should be avoided. If the FAD is covered with mesh net, it must have a stretched mesh size less than 7 cm (2.5 inches) and the mesh net must be well wrapped around the whole raft so that there is no netting hanging below the FAD when it is deployed.
- The design of the underwater or hanging part (tail) of the FAD should avoid the use of mesh net. If mesh net is used, it must have a stretched mesh size of less than 7 cm (2.5 inches) or tied tightly in bundles or "sausages" with enough weight at the end to keep the netting taut down in the water column. Alternatively, a single weighted panel (less than 7 cm (2.5 inches) stretched mesh size net or solid sheet such as canvas or nylon) can be used.

NMFS has not yet implemented these provisions for U.S. purse seine vessel owners and operators. However, it is likely that NMFS will implement these regulations in the near future. NMFS has identified implementing these provisions for the years 2021 through 2025 as the one option for implementation of this element of the proposed action.

1.2.1.10 Yellowfin Tuna Catch Limits in the Longline Fishery

The Commission has discussed yellowfin tuna catch limits in the longline fishery in the past. Based on Commission decisions, NMFS has identified the following as a reasonable range of options for this element of the proposed action, each of which would apply throughout the Convention Area:

1) A catch limit for each of the years 2021 through 2025 set at the 2012 level of yellowfin tuna catch in the U.S. longline fishery, which was 576 mt (the most recent recommendation of the Commission's Scientific Committee is that WCPO yellowfin tuna catches not be increased from 2012 levels).
2) A catch limit for each of the years 2021 through 2025 of 2,054 mt, the highest annual catch of yellowfin tuna in the Hawaii-based deep-set longline fishery from 2001 through 2019.
3) A catch limit for each of the years 2021 through 2025 of 365 mt, 50% of the average annual catch in the Hawaii-based deep-set longline fishery in 2001-2004, the period used as the baseline for the longline yellowfin tuna catch limits in CMM 2008-01.

1.2.1.11 Yellowfin Tuna Catch Limits in the Purse Seine Fishery

The 2015 PEA included analysis of yellowfin tuna catch limits in the purse seine fishery. The Commission has not yet adopted yellowfin tuna catch limits in the purse seine fishery and appears unlikely to do so in the reasonably foreseeable future. Thus, analyses of yellowfin tuna catch limits in the purse seine fishery are not included in this SEA.

1.2.1.12 Bigeye Tuna Catch Limits in the Purse Seine Fishery

The 2015 PEA included analysis of bigeye tuna catch limits in the purse seine fishery. The Commission has not yet adopted bigeye tuna catch limits in the purse seine fishery and appears unlikely to do so in the reasonably foreseeable future. Thus, analyses of bigeye tuna catch limits in the purse seine fishery are not included in this SEA.

1.2.1.13 Waiver of Purse seine 100% observer coverage

NMFS implements the WCPFC purse seine observer coverage requirements at 50 CFR 300.223(e), which states:

> (e) *Observer coverage.* (1) A fishing vessel of the United States may not be used to fish with purse seine gear in the Convention Area without a WCPFC observer on board. This requirement does not apply to fishing trips that meet either of the following conditions: (i) The portion of the fishing trip within the Convention Area takes place entirely within areas under the jurisdiction of a single nation

other than the United States; or, (ii) No fishing takes place during the fishing trip in the Convention Area in the area between 20 °N. Latitude and 20 °S. latitude.

As stated above, the Commission has made an intersessional decision to suspend the requirements for observer coverage on purse seine vessels on fishing trips in the Convention Area until August 15, 2021.[8] By memorandum dated May 13, 2021, NMFS has issued a blanket waiver of these regulations for all U.S. purse seine vessels on all trips in the Convention Area until August 15, 2021. NMFS anticipates that this temporary waiver may need to be extended, or perhaps be modified, and has identified the following options for implementation of this element of the proposed action.

1) A blanket waiver of 50 CFR 300.223(e)(1) for all U.S. vessels on all trips in the Convention Area for a temporary period of time, not to exceed one year.
2) A waiver of purse seine observer coverage for individual vessels on a per trip basis, for a temporary period of time, not to exceed one year.
3) A substitution of another form of data collection for purse seine observer coverage (e.g., electronic monitoring, photographic information, reporting requirements, use of observers trained to collect information on vessels of other gear types) for a temporary period of time, not to exceed one year.
4) A reduced level of observer coverage (e.g., 20% instead of the current 100%) for a temporary period of time, not to exceed one year.

1.2.1.14 Purse Seine Transshipment at Sea

NMFS regulations at 50 CFR 300.216(b)(1) implement the WCPFC prohibition on purse seine transshipment at sea. As stated above, the Commission has made an intersessional decision to suspend this prohibition so that purse seine vessels can conduct at-sea transshipment in an area under the jurisdiction of a port State, if transshipment in port cannot be conducted, in accordance with the domestic laws and regulations of the port State (until August 15, 2021). NMFS anticipates that this temporary waiver may need to be extended, or perhaps be modified, and has identified the following options for implementation of this element of the proposed action.

- Purse seine transshipment at sea allowed in areas under the national jurisdiction of the port state in accordance with the regulations and laws of the port state for a temporary period of time, not to exceed one year.
- Purse seine transshipment allowed anywhere at sea for a temporary period of time, not to exceed one year.

1.2.1.15 At-sea Transshipment Observer Waiver

[8] Pursuant to the SPTT and through a separate contractual agreement between the American Tunaboat Association and the Pacific Islands Forum Fisheries Agency (FFA), U.S. purse seine vessels fishing in the Convention Area carry observers deployed by the FFA observer program.

NMFS regulations at 50 CFR 300.215(d) and 50 CFR 300.216(b)(2) implement the WCPFC requirements for at-sea transshipment observer coverage. The regulations require fishing vessels of the United States used for commercial fishing that receive or offload in the Convention Area a transshipment of HMS at sea to carry observers, with requirements being slightly different for receiving vessels and offloading vessels. As stated above, the Commission has made an intersessional decision to temporarily waive (until August 15, 2021) the at-sea transshipment observer requirements. NMFS anticipates that this temporary waiver may need to be extended, or perhaps be modified, and has identified the following options for implementation of this element of the proposed action.

- A blanket waiver of 50 CFR 300.215(d) and 50 CFR 300.216(b)(2) for all at sea transshipments for a temporary period of time, not to exceed one year.
- A waiver of 50 CFR 300.215(d) and 50 CFR 300.216(b)(2) for individual vessels on a per trip basis for a period of time, not to exceed one year.
- A substitution of another form of data collection for at sea transshipments (e.g., electronic monitoring) for a temporary period of time not to exceed one year.
- A reduced level of observer coverage for at sea transshipments (20%) for a temporary period of time, not to exceed one year.

1.2.2 Alternatives Analyzed in Depth

The following sections describe the alternatives analyzed in depth in this SEA.

1.2.2.1 Alternative A: The No-Action Alternative

Under Alternative A, the No-Action Alternative, NMFS would not implement WCPFC decisions on tropical tunas for 2021 through 2025 or any WCPFC decision needing immediate implementation. Thus, as stated above, this alternative would result in conditions that are treated as the baseline for the purposes of assessing the impacts of the other alternatives. The inclusion of the No-Action Alternative serves the important function of facilitating comparison of the effects of the action alternatives and is a required part of a NEPA document. Under Alternative A, the U.S. fleets fishing for HMS in the Convention Area would continue to be managed under existing laws and regulations, which are described in Section 1.3 of this SEA.

1.2.2.2 Action Alternatives Analyzed in Depth in this SEA

All the elements of the alternatives would be limited to the Convention Area and as further described below.

Table below presents information on each of the alternatives described below.

Table 4: Table of Action Alternatives.

	Longline Bigeye Tuna Catch Limit	**Purse Seine Fishing Effort Limit**	**Purse Seine FAD Fishing/Setting Prohibition or Total Purse Seine Fishing Prohibition Period**	**Purse Seine FAD Set Limit**	**High Seas FAD Closure**	**Active FAD Limits**	**Purse Seine Catch Retention**	**FAD Design Requirements**	**Longline Yellowfin Tuna Catch Limit**	**WCPFC Decisions that Need Immediate Implementation**
Area of application[9]	Convention Area	Convention Area between latitudes of 20° N. and 20° S.	Convention Area between latitudes of 20° N. and 20° S.	Convention Area between latitudes of 20° N. and 20° S.	Convention Area between latitudes of 20° N. and 20° S.	Convention Area	Convention Area	Convention Area	Convention Area	Convention Area
Alternative B, Least Restrictive	5,000 mt in each of the CYs[10] 2021-2025	3,880 fishing days in the ELAPS in each of the CYs 2021-2025	3-month FAD setting prohibition period in each of the CYs 2021-2025	Not included	Not included	No	No	No	2,054 mt in each of the CYs 2021-2025	Temporary suspension of the following: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers

[9] The alternatives would not apply in the territorial seas or archipelagic waters of any nation, as defined by the domestic laws and regulations of that nation and recognized by the United States. The alternatives also would not apply in the overlap area unless the alternative includes a temporary modification of a regulation that currently applies in the overlap area (e.g., 50 CFR 300.221(b) regarding facilitating high seas boarding and inspection, applies in the overlap area).

[10] " CY" stands for calendar year.

Alternative C, Most restrictive	2,090 mt in each of the CYs 2021-2025	431 fishing days on the high seas and 26 fishing days in the U.S. EEZ in each of the CYs 2021-2025	6-month total fishing prohibition period in each of the CYs 2021-2025	1,530 sets in each of the CYs 2021-2025	Yes, in 2021-2025	175 active FADs per purse seine vessel in each of the CYs 2021-2025	Yes	Yes	365 mt in each of the CYs 2021-2025	Not included
Alternative D, Most Restrictive FAD Setting Prohibition Variation	2,090 mt in each of the CYs 2021-2025	431 fishing days on the high seas and 26 fishing days in the U.S. EEZ in each of the CYs 2021-2025	Full year FAD setting prohibition period in each of the CYs 2021-2025	No FAD sets allowed	Yes, in 2021-2025	No active FADs allowed	Yes	Not applicable	365 mt in each of the CYs 2021-2025	Not included
Alternative E, Additional FAD setting Prohibition Period, Active FAD Limit, Catch Retention, and FAD Design Elements	5,000 mt in each of the CYs 2021-2025	3,880 fishing days in the ELAPS in each of the CYs 2021-2025	4-month FAD setting prohibition period in each of the CYs 2021-2025	Not included	Not included	350 active FADs per vessel in each of the CYs 2021-2025	Yes	Yes	2,054 mt in each of the CYs 2021-2025	Temporary suspension of the following: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers
Alternative F, FAD Set Limit Variation	5,000 mt in each of the CYs 2021-2025	3,880 fishing days in the ELAPS in each of the CYs 2021-2025	3 month FAD setting prohibition period in each of the CYs 2021-2025	2,522 sets	Not included	350 active FADs per vessel in each of the CYs 2021-2025	Yes	Yes	2,054 mt in each of the CYs 2021-2025	Temporary suspension of the following: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers

Alternative G, Total Purse Seine Closure Variation	5,000 mt in each of the CYs 2021-2025	3,880 fishing days in the ELAPS in each of the CYs 2021-2025	3 month total fishing prohibition period in each of the CYs 2021-2025	Not included	Not included	350 active FADs per vessel in each of the CYs 2021-2025	Yes	Yes	2,054 mt in each of the CYs 2021-2025	Temporary suspension of the following: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers
Alternative H, Most Restrictive Without High Seas FAD Closure	2,090 mt in each of the CYs 2021-2025	431 fishing days on the high seas and 26 fishing days in the U.S. EEZ in each of the CYs 2021-2025	6 month total fishing prohibition period in each of the CYs 2021-2025	1,530 sets in each of the CYs 2021-2025	Not included	175 active FADs per vessel in each of the CYs 2021-2025	Yes	Yes	365 mt in each of the CYs 2021-2025	Not included
Alternative I, Status Quo 1	3,554 mt in each of the CYs 2021-2025	1,828 fishing days in the ELAPS in each of the CYs 2021-2025	3 month FAD setting prohibition period in each of the CYs 2021-2025	Not included	2 month high seas FAD prohibition period in each of the CYs 2021-2025	350 active FADs per vessel in each of the CYs 2021-2025	Yes	Yes	Not included	Temporary suspension of the following: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers
Alternative J, Status Quo 2	3,554 mt in each of the CYs 2021-2025	1,270 fishing days in the high seas and 558 fishing days in the U.S. EEZ in each of the CYs 2021-2025	3 month FAD setting prohibition period in each of the CYs 2021-2025	Not included	2 month high seas FAD prohibition period in each of the CYs 2021-2025	350 active FADs per vessel in each of the CYs 2021-2025	Yes	Yes	Not included	Temporary suspension of the following: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea

										transshipment observers
Alternative K, Temporary Specifications 1	3,554 mt in each of the CYs 2021-2025	1,828 fishing days in the ELAPS in each of the CYs 2021-2025	3 month FAD setting prohibition period in each of the CYs 2021-2025	Not included	2 month high seas FAD prohibition period in each of the CYs 2021-2025	350 active FADs per vessel in each of the CYs 2021-2025	Yes	Yes	Not included	Temporary suspension of the following: purse seine observer coverage (with substitution included); prohibition on purse seine transshipment at sea in areas of national jurisdiction; at-sea transshipment observers
Alternative L, Temporary Specifications 2	3,554 mt in each of the CYs 2021-2025	1,828 fishing days in the ELAPS in each of the CYs 2021-2025	3 month FAD setting prohibition period in each of the CYs 2021-2025	Not included	2 month high seas FAD prohibition period in each of the CYs 2021-2025	350 active FADs per vessel in each of the CYs 2021-2025	Yes	Yes	Not included	Temporary suspension of the following: purse seine observer coverage (with 20% coverage required); prohibition on purse seine transshipment at sea in areas of national jurisdiction; at-sea transshipment observers
Alternative M	Multiyear variation of Alternative B: includes three-year catch and effort limits rather than single-year limits.									

1.2.2.2.1 Alternative B, Least Restrictive Action Alternative

Under this alternative, in each of the years from 2021-2025, there would be a U.S. longline bigeye tuna catch limit of 5,000 mt, a U.S. purse seine fishing effort limit of 3,880 fishing days in the ELAPS, a three month FAD setting prohibition period for U.S. purse seine vessels, and a yellowfin tuna catch limit of 2,054 mt for U.S. longline vessels (the elements for purse seine vessels would apply between the latitudes of 20° N. and 20° S.). This alternative would also include the temporary suspension of the following for a period of time no longer than one year: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers.

1.2.2.2.2 Alternative C, Most Restrictive Action Alternative

Under this alternative, in each of the years from 2021-2025, there would be a U.S. longline bigeye tuna catch limit of 2,090 mt, a U.S. purse seine fishing effort limit of 431 fishing days on the high seas and 26 fishing days in the U.S. EEZ, a total prohibition on U.S. purse seine fishing for six months, in the remaining six months a limit of 1,530 FAD sets per year, a yellowfin tuna catch limit of 365 mt for U.S. longline vessels, a complete prohibition on fishing on FADs on the high seas for U.S. purse seine vessels, a limit of 175 active FADs per purse seine vessel, catch retention requirements for purse seine vessels, and FAD design requirements for purse seine vessels. Most of the elements for purse seine vessels would apply between the latitudes of 20° N. and 20° S., and the active FAD limit, catch retention requirements, and FAD design requirements would apply in the entire Convention Area.

1.2.2.2.3 Alternative D, Most Restrictive FAD Setting Prohibition Period Variation

This alternative would be the same as Alternative C, except that instead of a total prohibition on U.S. purse seine fishing for six months, there would be a FAD setting prohibition period for the full year each year.

1.2.2.2.4 Alternative E, Additional FAD Setting Prohibition Period, Including Active FAD Restrictions, Catch Retention Requirements, and FAD design requirements

This alternative would be the same as Alternative B, except that instead of a three month FAD setting prohibition period, there would be a four-month FAD setting prohibition

period each year, a limit of 350 active FADs per purse seine vessel, purse seine catch retention requirements, and FAD design requirements.

1.2.2.2.5 Alternative F, FAD Set Limit Variation

This alternative would be the same as Alternative E, except that there would be a limit of 2,522 FAD sets per year and a three month FAD setting prohibition period.

1.2.2.2.6 Alternative G, Total Purse Seine Closure Variation

This alternative would be the same as Alternative E, except that instead of a four month FAD setting prohibition period, there would be a total prohibition on U.S. purse seine fishing for three months each year.

1.2.2.2.7 Alternative H, Most Restrictive Without High Seas FAD Closure

This alternative would be the same as Alternative C, except that there would be no prohibition on fishing on FADs on the high seas for U.S. purse seine vessels in 2021 through 2025.

1.2.2.2.8 Alternative I, Variation of Status Quo 1 (Meaning Variation of Regulations in Effect in 2021)

This alternative would be identical to the regulations that are in place for 2021, with the addition of some of the temporary suspensions, and thus is termed variation of status quo 1. This alternative would include the regulations that NMFS anticipates implementing in the near future. Under this alternative, for each of the calendar years 2021-2025, there would be a U.S. longline bigeye tuna catch limit of 3,554 mt, a U.S. purse seine fishing effort limit of 1,828 fishing days in the ELAPS, a three month FAD setting prohibition period in the entire Convention Area, a two month FAD setting prohibition period on the high seas, a limit of 350 active FADs per purse seine vessel, catch retention requirements for purse seine vessels, and FAD design requirements for purse seine vessels. Most of the elements for purse seine vessels would apply between the latitudes of 20° N. and 20° S., and the active FAD limit, catch retention requirements, and FAD design requirements would apply in the entire Convention Area. This alternative would also include the temporary suspension, pursuant to Commission decisions, of the following for a period of time no longer than one year: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers.

1.2.2.2.9 Alternative J, Variation of Status Quo 2 (Meaning a Second Variation of Regulations in Effect in 2021)

This alternative would the same as Alternative I, except that the U.S. purse seine fishing effort limit would be 1,270 fishing days per year on the high seas and 558 fishing days per year in the U.S. EEZ.

1.2.2.2.10 Alternative K, Variation of Temporary Specifications 1 (Meaning a Variation of the Temporary Specifications that Would Be in Effect)

This alternative would be the same as Alternative I, except that the temporary suspension of purse seine observer coverage would include substitutions, such as electronic monitoring, photographs, additional reporting, or use of observers trained to monitor other gear types, and the temporary suspension of the prohibition on purse seine transshipments at sea would be limited to areas under the national jurisdiction of the port State.

1.2.2.2.11 Alternative L, Variation of Temporary Specifications 2 (Meaning a Variation of the Temporary Specifications that Would Be in Effect)

This alternative would be the same as Alternative K, except that the temporary suspension of purse seine observer coverage would require a reduced observer coverage amount of 20% instead of the current 100%.

1.2.2.2.12 Alternative M, Multiyear Limits

This alternative would be the same as Alternative B, except that the longline bigeye tuna catch limits, the purse seine fishing effort limit, and the longline yellowfin tuna catch would be applied on a multiyear basis. In other words, rather than being calendar year annual limits, all of these limits would be applied to three-year periods. NMFS has implemented WCPFC decisions on tropical tunas as three-year limits in the past and may do so in the future.

1.2.3 Alternatives Excluded from Detailed Analyses

As described in Section 1.2.1 of this SEA, NMFS identified multiple options for many of the elements of the proposed action. The alternatives for detailed analysis described in Section 1.2.2 do not include all possible combinations of the identified options. However, NMFS believes that the action alternatives described in Section 1.2.2 constitute a reasonable range of combinations of the various options that meet the purpose of and need for the proposed action.

1.3 Affected Environment

Chapter 3 of the 2015 PEA describes the affected environment that could be affected by the proposed action under any of the action alternatives. The following sections provide updated information on the affected environment. NMFS notes that 2020 has been an unusual year in terms of supply and demand for various target stocks of the fisheries analyzed in this SEA, due to disruptions to markets from global events. As 2020 data for the fisheries is preliminary and incomplete, they are not included in this SEA.

1.3.1 Physical Environment of the WCPO

Section 3.1 of the 2015 PEA is incorporated by reference here and there is no substantive new information to include for the purposes of this document.

The physical reach of the Convention Area, comprises all waters of the Pacific Ocean bounded to the south and to the east by the following line: from the south coast of Australia due south along the 141° meridian of east longitude to its intersection with the 55° parallel of south latitude; thence due east along the 55° parallel of south latitude to its intersection with the 150° meridian of east longitude; thence due south along the 150° meridian of east longitude to its intersection with the 60° parallel of south latitude; thence due east along the 60° parallel of south latitude to its intersection with the 130° meridian of west longitude; thence due north along the 130° meridian of west longitude to its intersection with the 4° parallel of south latitude; thence due west along the 4° parallel of south latitude to its intersection with the 150° meridian of west longitude; thence due north along the 150° meridian of west longitude.

The WCPO contains several major currents and gyres that control most of the mixing patterns and nutrient flow of the system. Climate change can affect the marine environment by impacting the established hydrologic cycle, as well as a shift in food web dynamics, such as a reduction in primary productivity, which affects HMS migration and distribution. Other impacts to ocean habitat come from pollution, and construction.

1.3.2 U.S. WCPO Purse Seine Fishery

Section 3.2 of the 2015 PEA is incorporated by reference here and includes information on fleet characteristics, fleet management, participation, effort, and catch, use of FADs, and fleet economics. Section 1.2 of the 2019 SEA provides updated information on the U.S. WCPO purse seine fishery since publication of the 2015 PEA and is also incorporated by reference here. The following sections include updated information.

1.3.2.1 Management of the U.S. Purse Seine Fleet in the WCPO

As stated in the Executive Summary of this document, the parties to the SPTT agreed to a revised treaty in December 2016 that provides for access by U.S. purse seine vessels to the waters of the PIPs to the SPTT. The parties to the SPTT, including the United States, signed a memorandum of understanding, agreeing to provisionally apply provisions of the revised SPTT until it enters into force. The United States is continuing to proceed on the domestic implementation of the revised SPTT. The SPTT was transmitted by the White House to the Senate for advice and consent to ratification in August 2018. The High Seas Fishing Compliance Act and implementing regulations (50 CFR 300 Subpart R), the WCPFCIA and implementing regulations (50 CFR 300 Subpart O), and regulations implementing the Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region (Pelagics FEP) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (50 CFR Part 665) also regulate this fishery. Regulations for this fleet that have gone into effect since publication of the 2015 PEA are included in the Executive Summary of this document and listed below:

- NMFS implemented provisions of WCPFC conservation and management measures on tropical tunas by rulemaking – CMM 2015-01, CMM 2016-01, and CMM 2017-01 – for purse seine fisheries. The provisions include purse seine FAD restrictions and purse seine fishing effort limits. See final rule published in 2018 and interim final rule published in 2019 for the most recent rulemakings on these provisions (see 83 FR 33851, published July 18, 2018; and 84 FR 37145, published July 31, 2019).
- NMFS published a final rule to change management measures in the overlap area so that all NMFS regulations implementing IATTC management measures now apply in the overlap area and a few regulations implementing WCPFC management measures continue to apply in the overlap area (see 85 FR 37376, published June 22, 2020).

1.3.2.2 Participation, Effort, and Catch

As of May 2021, there were 18 U.S. purse seine vessels listed on the WCPFC Record of Fishing Vessels (Record).

The U.S. WCPO purse seine fleet spent, from 1997 through 2019, about 4% of its effort in the U.S. EEZ, 20% on the high seas, and the remainder in the EEZs of PIPs (unpublished NMFS data). The percentages for any given year during that period ranged from about <0.5% to 21% for the U.S. EEZ, about 5% to 36% for the high seas, and about 60% to 95% for the EEZs of PIPs. Table 5 shows the effort data for the high seas, U.S. EEZ, and PIPs EEZ regions for 1997-2019 (unpublished NMFS data).

Table 5: U.S. WCPO purse seine fleet fishing effort (1997-2019) in the Convention Area. [11]

1997	1,470	21%	1,306	19%	4,179	60%	6,956	35	5,675
1998	460	8%	1,555	25%	4,101	67%	6,116	39	4,857
1999	234	5%	1,145	24%	3,368	71%	4,747	36	3,417
2000	128	3%	883	19%	3,529	78%	4,539	33	3,669
2001	336	7%	923	19%	3,713	75%	4,972	31	4,067
2002	440	8%	1,272	23%	3,804	69%	5,516	29	4,775
2003	215	5%	900	19%	3,643	77%	4,758	26	3,175
2004	288	7%	1,017	25%	2,795	68%	4,100	21	2,670
2005	138	4%	829	26%	2,177	69%	3,144	15	2,406
2006	184	7%	543	20%	1,932	73%	2,659	13	1,991
2007	92	3%	787	29%	1,869	68%	2,747	20	2,030
2008	60	1%	1,506	22%	5,415	78%	6,981	36	6,598
2009	101	1%	1,681	20%	6,500	78%	8,283	39	8,294
2010	24	0%	399	5%	7,688	95%	8,110	37	8,652
2011	38	0%	573	7%	7,220	92%	7,831	36	6,295
2012	201	2%	1243	14%	7,146	83%	8,589	39	8,704
2013	174	2%	1073	13%	7,097	85%	8,344	40	7,699
2014	216	3%	1,105	17%	5,126	80%	6,447	40	9,486
2015	42	1%	1,836	27%	4,885	72%	6,763	39	7,772
2016	98	2%	1,628	29%	3,870	69%	5,596	37	5,503
2017	126	2%	842	15%	4,661	83%	5,629	34	5,091
2018	91	2%	1,582	28%	4,032	71%	5,705	34	5,661
2019	46	1%	1,552	36%	2,752	63%	4,350	31	5,033
Total	5,202		26,180		101,502		132,882		123,520
AVG.	226	4%	1,138	20%	4,413	76%	5,777	32	5,370

Source: NMFS unpublished data.

As shown in Table 6 below, skipjack tuna generally account for the majority of the catch, followed by yellowfin tuna, with bigeye tuna accounting for only a small proportion.

Table 6 shows the retained catch in the Convention Area by U.S. purse seine vessels.

[11] A fishing day is defined as any day in which a fishing vessel of the United States equipped with purse seine gear searches for fish, deploys a FAD, services a FAD, or sets a purse seine, with the exception of setting a purse seine solely for the purpose of testing or cleaning the gear and resulting in no catch.

[12] Number of vessels indicates the total number of unique vessels contributing to the data for a given year.

Table 6: Retained catch of the U.S. purse seine fishery in the Convention Area, 1997-2019.

Year	Skipjack tuna retained catches (mt)	Yellowfin tuna retained catches (mt)	Bigeye tuna retained catches (mt)
1997	79,386	54,638	10,058
1998	131,573	37,530	5,525
1999	129,262	35,820	17,403
2000	80,272	32,126	12,953
2001	85,436	23,430	6,658
2002	88,535	27,191	4,889
2003	62,907	20,079	4,470
2004	47,896	14,492	5,031
2005	62,379	17,685	6,108
2006	55,633	8,448	4,364
2007	75,210	10,541	2,985
2008	159,741	45,363	4,220
2009	253,783	21,245	6,561
2010	207,074	32,494	4,878
2011	169,154	24,442	7,838
2012	215,702	31,679	5,503
2013	226,609	23,277	8,157
2014	269,243	40,959	2,802
2015	219,550	17,019	1,595
2016	178,284	18,162	4,711
2017	140,081	23,197	3,267
2018	167,235	20,565	6,958
2019	143,587	17,777	2,974

Source: U.S. Annual Report Part 1 to WCPFC for catches for 2002-2019 (available at www.wcpfc.int). Coan, Sakagawa and Yamasaki 2002 for 1997-2001.

1.3.2.3 FADs

Table 7 shows the breakdown of catch by set type for the U.S. purse seine fleet between the years 2010-2019.

Table 7. Annual U.S. WCPO purse seine catch estimates in metric tons by set type (unassociated and associated), 2010-2019.

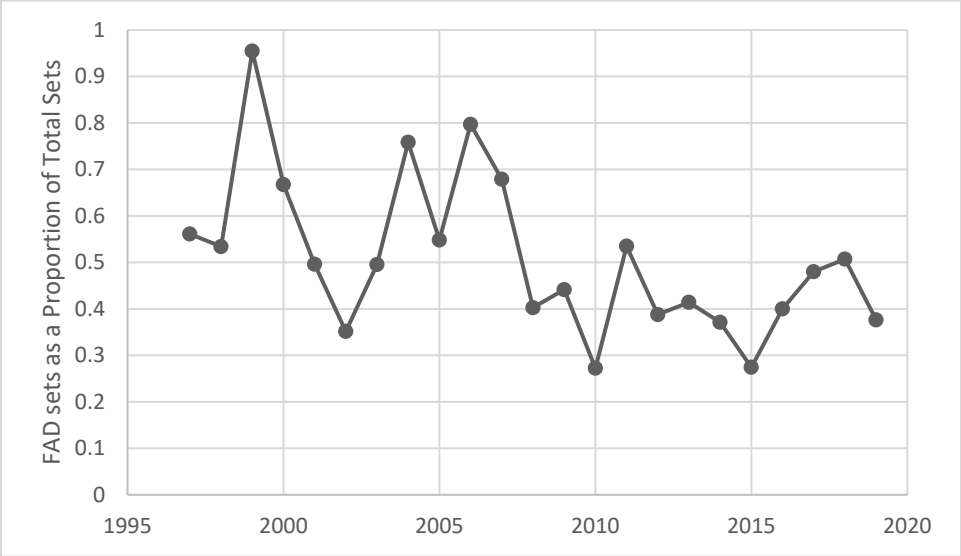
Year	Skipjack		Yellowfin		Bigeye		Totals
	Unass.	Ass.	Unass.	Ass.	Unass.	Ass.	
2010	109,791	90,676	22,013	15,556	1,005	6,104	245,524
2011	48,931	112,004	10,893	20,448	120	10,845	203,240
2012	98,583	109,242	24,024	18,627	1183	8,043	259,759
2013	97,147	112,516	8,170	25,108	769	10,450	254,273

2014	117,160	146,857	22,317	17,850	419	8,402	313,005
2015	111,940	96,195	13,307	11,076	606	4,955	238,079
2016	75,602	88,209	10,518	17,923	396	8,489	201,152
2017	43,630	82,305	15,397	17,639	302	7,177	166,449
2018	54,131	101,631	15,003	16,590	192	9,905	197,451
2019	69,218	69,146	12,283	10,632	276	4,829	166,441
Total	1,068,425	1,469,543	210,386	264,280	7,445	108,626	3,129,323

Source: WCPFC 2020 (https://www.wcpfc.int/node/46718)

Figure 1 shows FAD sets as a proportion of all sets by the U.S. WCPO purse seine fleet from 1997-2019.

Figure 1: FAD sets as proportion of all sets by U.S. WCPO purse seine fleet, 1997-2019.



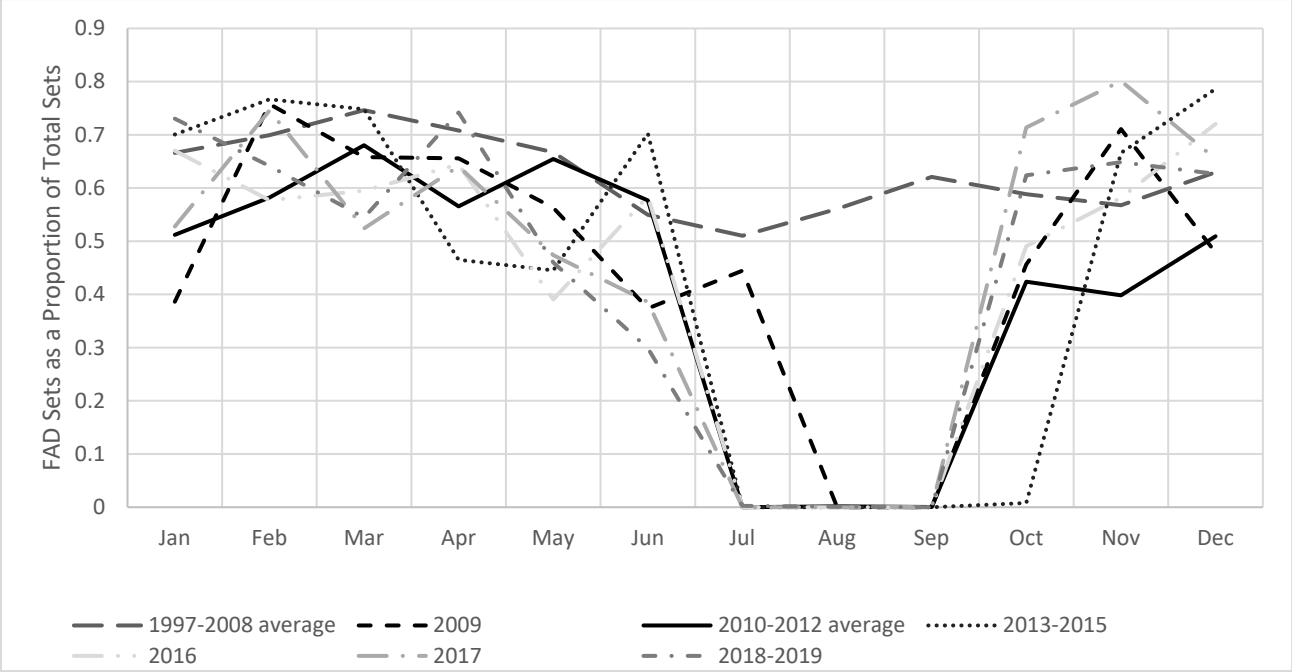
Source: NMFS unpublished data.

Figure 2 below shows FAD sets as a proportion of all sets by the U.S. WCPO purse seine fleet, by month, for the periods 1997-2008 and 2009, 2010-2012, 2013-2015, 2016, 2017 and 2018-2019. FAD restrictions pursuant to WCPFC CMMs were in effect in August and September in 2009, from July through September in 2010-2012 and in 2016-2019, and July-October in 2013-2015.[13] As shown in Figure 3 below, over 70% of the U.S. purse seine fleet in the WCPO fished throughout the entire year from 1997 through 2008 and at least 68% of the fleet fished throughout the entire year in each of the years from

[13] FAD restrictions were also in effect on the high seas in from November 1 through December 31 in 2018 and 2019, but as indicated in Table 2, above, the fishery was closed in the high seas for all of that time in 2018 and most of that time in 2019.

2009 through 2019, with the exception of the first few months of 2016.[14] The percent of licensed vessels that fished in the years when the 2009-2019 FAD restrictions were in effect was generally constant throughout the year.

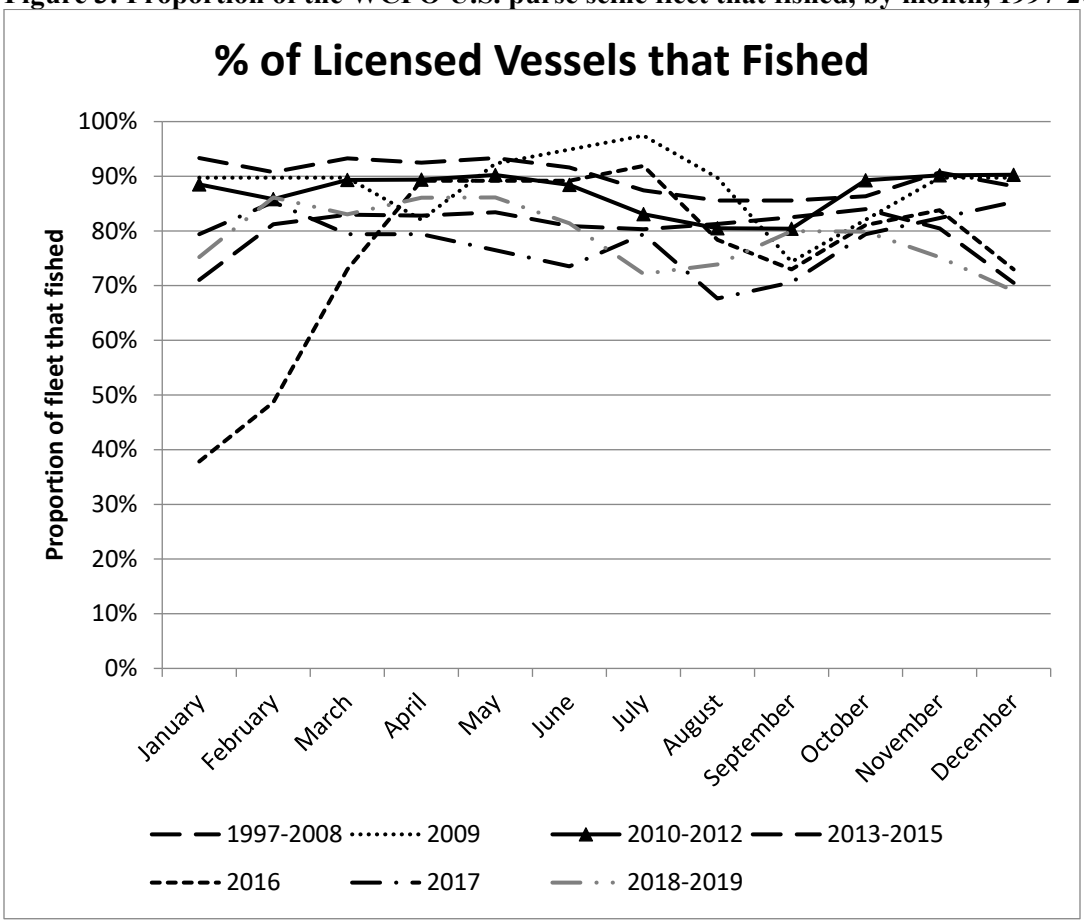
Figure 2: FAD sets as proportion of all sets by U.S. WCPO purse seine fleet, by month, 1997-2008 average, 2009, 2010-2012 average, 2013-2015 average, 2016, 2017 and 2018-2019



Source: NMFS unpublished data.

[14] The low level of fishing effort in early 2016 may be attributed to matters regarding fishing days available under the SPTT.

Figure 3: Proportion of the WCPO U.S. purse seine fleet that fished, by month, 1997-2019.



Source: NMFS unpublished data.

Table 8 shows fishing patterns in the fishery in the U.S. WCPO purse seine fishery in 2010-2019. The FAD set ratio averaged 39% in those four years. The FAD set ratio during those periods when FAD setting was allowed (that is, not during the seasonal FAD closures) averaged 58% in those years. Table 9 shows the number of total sets and FAD sets made by the fleet from 1997-2019 by area of operation.

Table 8: Total sets, FAD sets, and fishing days in the U.S. WCPO purse seine fishery, 2010-2019.

	Total sets	FAD sets	FAD set ratio	FAD set ratio when FAD sets allowed	Fishing days	Sets per fishing day
2010	8,652	2,356	27%	41%	8,110	1.07
2011	6,295	3,368	54%	69%	7,831	0.80
2012	8,704	3,375	39%	54%	8,589	1.01
2013	7,699	3,188	41%	66%	8,344	0.92
2014	9,486	3,521	37%	58%	6,447	1.47

2015	7,772	2,132	27%	41%	6,763	1.15
2016	5,503	2,202	40%	58%	5,596	0.98
2017	5,091	2,444	48%	61%	5,629	0.90
2018	5,661	2,871	51%	66%	5,705	0.99
2019	5,033	1,895	38%	52%	4,350	1.16
2010-2019 ave	6,990	2,735	40%	57%	6,736	1.05

Source: NMFS unpublished data.

Table 9: Total sets and FAD sets in the U.S. EEZ, on the high seas and in EEZs of other PIPs, 1997-2019.

Year	All Sets			FAD Sets		
	U.S. EEZ	High Seas	PIP	U.S. EEZ	High Seas	PIP
1997	1,405	1,062	3,207	631	554	1,999
1998	435	1,392	3,030	43	572	1,979
1999	164	838	2,411	156	807	2,299
2000	74	691	2,901	69	496	1,884
2001	206	676	3,175	112	479	1,427
2002	356	1,046	3,366	37	368	1,273
2003	102	490	2,574	77	319	1,177
2004	166	592	1,890	52	484	1,489
2005	81	578	1,728	62	348	909
2006	154	384	1,441	107	303	1,177
2007	35	579	1,396	33	420	925
2008	30	1,414	5,113	30	643	1,983
2009	96	1,664	6,514	33	684	2,945
2010	16	325	8,300	10	143	2,203
2011	24	391	5,831	13	219	3,136
2012	162	1,306	7,334	70	277	3,028
2013	92	750	7,368	68	522	2,598
2014	252	1,142	8,092	44	264	3,213
2015	22	2,405	5,345	21	651	1,460
2016	106	1,815	3,582	48	614	1,540
2017	129	659	4,303	63	1	2,380
2018	106	1,522	4,033	26	513	2,332
2019	48	2,169	2,816	14	454	1,427

Source: NMFS unpublished data.

1.3.2.4 Economics

Within the purse seine fleet, analysis of average revenue, by vessel, for 2017-2019 reveals that average annual revenue was $8,890,000 (NMFS unpublished data combined with price data from https://www.ffa.int/node/425 and https://www.wcpfc.int/node/46580 (Williams and Ruaia 2020) accessed on July 27, 2020), calculated by taking each vessel's three-year average to calculate the fleet-wide annual average per vessel for the the-year period.

1.3.3 WCPO Longline Fisheries

Section 3.3 of the 2015 PEA is incorporated by reference here, and includes information on fleet characteristics, management, catch and effort, and economics. See the NMFS web page at the following address for the most updated regulations summaries for the WCPO longline fisheries https://www.fisheries.noaa.gov/pacific-islands/resources-fishing/regulation-summaries-and-compliance-guides-pacific-islands. The following sections provide updated information.

1.3.3.1 Hawaii-based Deep-Set and Shallow-Set Longline Fisheries

1.3.3.1.1 Management

For shallow-set fishing, the sea turtle interaction limits have been modified (see 85 FR 57988; published September 17, 2020). The current annual limit for leatherback sea turtles (*Dermochelys coriacea*) is 16. There are individual trip interaction limits of two leatherback and five North Pacific loggerhead turtle (*Caretta caretta*) interactions, with accountability measures for reaching a limit.

NMFS has also implemented provisions of WCPFC conservation and management measures on tropical tunas by rulemaking – CMM 2015-01, CMM 2016-01, and CMM 2017-01 – for longline fisheries. The provisions include longline bigeye tuna catch limits See final rule published in 2018 for the most recent rulemaking on these provisions (see 83 FR 33851; published July 18, 2018).

1.3.3.1.2 Catch and Effort

Table 10 and Table 11 show the performance of the Hawaii-based deep-set longline fishery and Hawaii-based shallow-set longline fishery from 2000-2019. Figure 4, Figure 5, and Figure 6 show the retained catch of bigeye tuna and swordfish in the fisheries, by month in the years 2005-2019.

Table 10: Hawaii-based deep set longline fishery performance factors in the WCPFC area, 2000-2019

Year	Active Vessels	Number of Sets	Total Hooks Set	Total Retained Catch (mt)	Bigeye tuna retained catch (mt)	Swordfish retained catch (mt)	Yellowfin tuna retained catch (mt)	Albacore retained catch (mt)
2000	79	8,800	17,051,986	5,480	2,293	53	988	845
2001	100	11,363	21,424,448	6,616	2,264	90	971	1,249
2002	102	13,431	26,022,336	7,336	4,222	184	425	516
2003	110	14,320	28,715,053	7,644	3,396	131	810	523
2004	125	15,336	30,661,713	8,001	4,175	154	696	352
2005	124	15,436	31,248,838	8,163	4,426	161	706	282
2006	127	16,305	34,265,236	8,574	4,310	178	941	254
2007	129	16,659	36,180,074	8,912	5,313	198	835	236
2008	127	15,307	34,100,313	8,487	4,633	242	826	295
2009	127	14,577	32,682,233	6,896	3,895	187	436	174
2010	120	12,316	28,452,663	6,940	4,072	172	503	361
2011	127	14,274	33,671,822	8,694	4,654	160	877	598
2012	127	15,881	38,380,990	9,113	5,024	211	852	586
2013	135	14,628	36,222,991	8,185	4,427	207	684	295
2014	137	13,717	34,620,536	8,707	5,044	215	587	185
2015	136	13,160	33,429,940	9,724	5,691	268	777	216
2016	134	15,026	39,111,740	10,822	6,136	305	1,257	242
2017	135	14,041	37,720,153	10,165	5,261	300	2,017	88
2018	135	16,011	43,989,557	10,295	5,167	382	2,054	68
2019	140	18,238	51,011,895	11,365	6,020	335	1,763	99

Source: U.S. data submitted to the WCPFC. This table represents total amount of bigeye tuna catch landed by the Hawaii-based longline fleet, including catch attributed to the U.S. Participating Territories

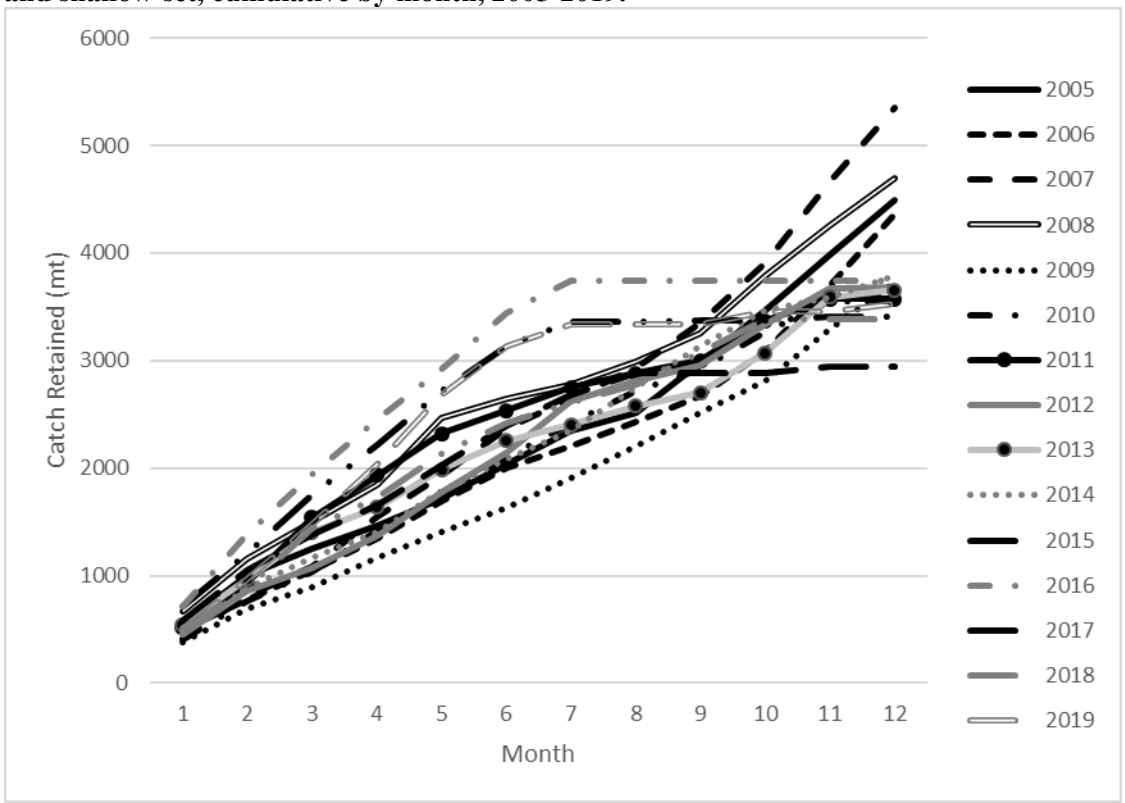
Table 11: Hawaii-based shallow set longline fishery performance factors in the WCPFC area, 2000-2019

Year	Active Vessels	Number of Sets	Total Hooks Set	Total Retained Catch (mt)	Bigeye tuna retained catch (mt)	Swordfish retained catch (mt)	Yellowfin tuna retained catch (mt)	Albacore retained catch (mt)
2000	57	3,161	2,397,687	2,816	283	1,867	154	41
2001	22	542	492,015	287	74	72	17	16
2002	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0
2004	3	15	11,200	15	0	15	0	0
2005	31	1,452	1,226,414	1,546	65	1,288	9	7
2006	35	821	683,127	1,035	54	953	5	5

2007	27	1,283	1,130,515	1,341	42	1,225	6	7
2008	26	1,010	959,489	1,260	59	1,045	25	11
2009	28	1,346	1,325,226	1,217	32	1,069	11	6
2010	27	1,252	1,240,276	984	42	864	10	7
2011	20	829	867,812	840	34	707	16	8
2012	17	822	898,835	788	23	690	12	6
2013	10	435	478,043	459	18	376	10	2
2014	18	619	691,755	737	14	665	10	1
2015	17	473	524,952	478	14	421	6	0
2016	9	363	394,278	393	10	334	11	0
2017	15	596	622,363	784	31	668	45	3
2018	8	153	171,212	299	16	249	24	2
2019	13	178	215,465	255	14	220	13	1

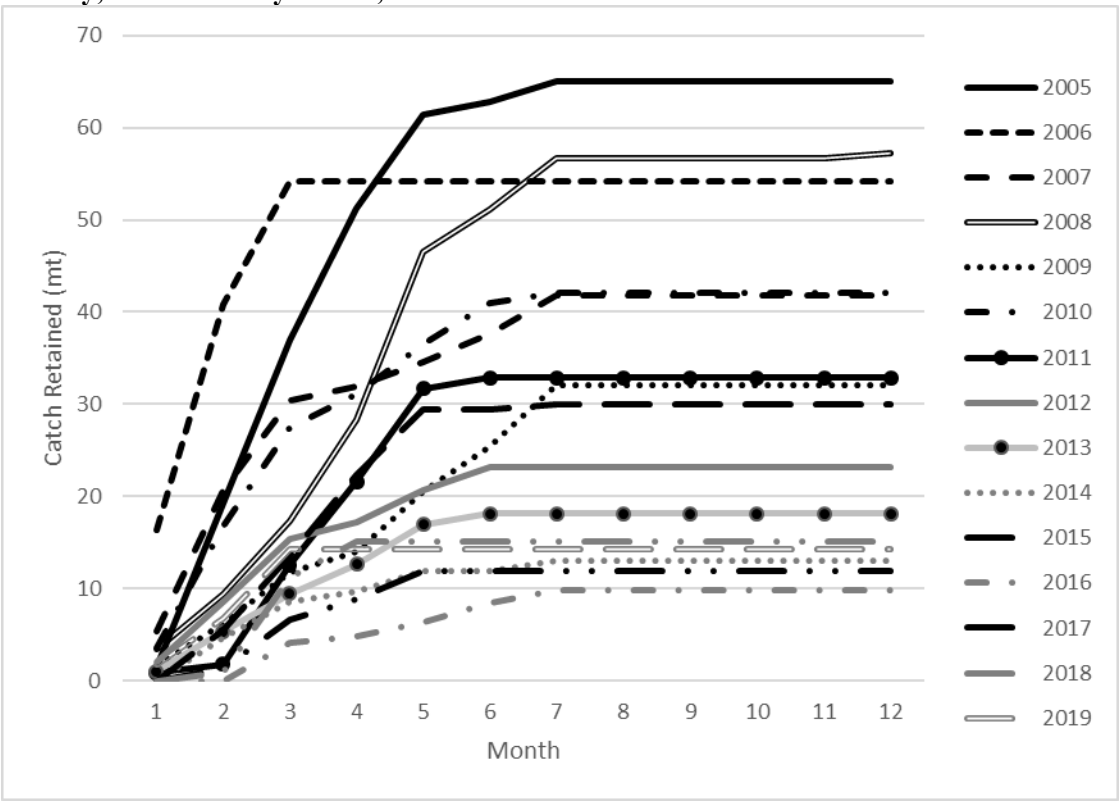
Source: U.S. data submitted to the WCPFC. This table represents total amount of bigeye tuna catch landed by the Hawaii-based longline fleet, including catch attributed to the U.S. territories participating in the WCPFC (American Samoa, Guam, or the CNMI, collectively U.S. Participating Territories).

Figure 4: Estimates of bigeye tuna kept in the U.S. longline fisheries, WCPO only, deep-set and shallow-set, cumulative by month, 2005-2019.



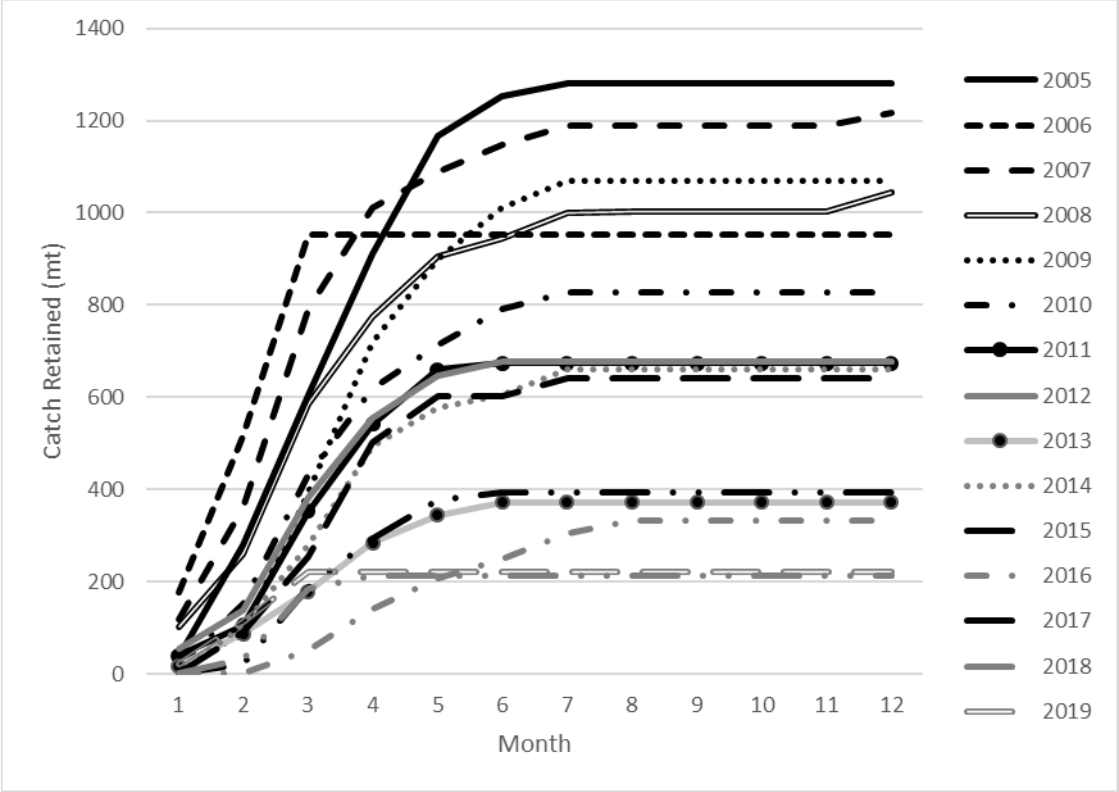
Source: NMFS unpublished data. This figure does not include catch attributed to the U.S. Participating Territories.

Figure 5: Estimates of bigeye tuna kept in the U.S. longline fisheries, WCPO only, shallow-set only, cumulative by month, 2005-2019.



Source: NMFS unpublished data. This figure does not include catch attributed to the U.S. Participating Territories.

Figure 6: Estimates of swordfish kept in U.S. shallow-set longline fishery, WCPO only, cumulative by month, 2005-2019.



Source: NMFS unpublished data.

1.3.3.1.3 Economics

As of March 2021, the U.S. Hawaii-based longline fleet consisted of 144 permitted (under the Pelagics FEP) vessels. Out of the 145 permitted vessels, 140 also have a high seas fishing permit (issued under the HSFCA).

In 2019, the most recent year for which published data is available, the ex-vessel value for the landings of the deep-set fishery was approximately $92.9 million and the ex-vessel revenue for the shallow-set fishery was approximately $2 million (WPRFMC 2020).

1.3.3.2 American Samoa Longline Fishery

1.3.3.2.1 Catch and Effort

Albacore (*Thunnus alalunga*) continued to dominate the catch of pelagic species in 2019. Table 12 shows catch and effort information from 2000-2019.

Table 12: American Samoa-based longline fishery performance factors in the Convention Area, 2000-2019.

Year	Active Vessels	Number of Sets	Hooks Set	Retained Catch (mt)	Albacore retained catch (m)	Bigeye tuna retained catch (mt)	Swordfish retained catch (mt)	Yellowfin tuna retained catch (mt)
2000	37	2,805	1,330,244	789	609	25	1	83
2001	62	4,800	5,795,241	3,880	3,416	79	10	183
2002	58	6,872	13,095,625	7,118	5,959	196	17	469
2003	50	6,220	14,165,172	5,222	3,984	253	14	559
2004	41	4,853	11,741,900	4,080	2,498	231	10	853
2005	36	4,374	11,133,576	4,026	2,920	135	6	537
2006	28	5,069	14,264,130	5,683	4,376	223	38	526
2007	29	5,907	17,537,251	6,967	5,507	268	9	749
2008	29	4,757	14,445,081	4,464	3,610	135	6	364
2009	26	4,910	15,075,575	5,111	4,086	211	11	427
2010	26	4,537	13,184,096	5,114	4,105	210	9	490
2011	24	3,891	11,073,923	3,566	2,487	175	11	593
2012	25	4,210	12,111,590	4,395	3,345	185	12	376
2013	22	3,411	10,183,968	2,781	2,119	87	9	367
2014	23	2,748	7,667,329	2,327	1,503	96	8	484
2015	21	2,785	7,806,376	2,548	1,786	83	7	455
2016	20	2,451	6,908,896	2,176	1,527	71	6	385
2017	15	2,488	7,008,822	2,311	1,495	63	6	559
2018	13	2,212	6,008,906	2,016	1,542	53	6	261
2019	17	1,695	4,768,621	1,350	1,012	30	4	181

Source: NMFS unpublished data.

1.3.3.2.2 Economics

As of March 2021, there were 40 American Samoa vessels with longline permits.

Total revenue for the American Samoa longline fishery in 2019 was approximately $3.9 million, dominated by albacore revenue (over 89%) (WPRFMC 2020).

1.3.4 U.S. Albacore Troll Fisheries in the Convention Area

The 2015 PEA did not include discussion and analysis of the U.S. albacore troll fisheries in the Convention Area as these fisheries do not target tropical tunas and thus, are not included in WCPFC decisions regarding management of tropical tunas. However, these fisheries may be affected by WCPFC decisions that need immediate implementation, so they are included in this SEA.

U.S. vessels that fish with troll gear in the Pacific Ocean targeting albacore can be described as part of the North Pacific albacore troll fishery and the South Pacific albacore troll fishery. The South Pacific albacore troll fishery occurs almost exclusively in the Convention Area from November through April. The North Pacific albacore troll fishery occurs mostly in the EPO, outside the Convention Area, from April through November (Childers and Pease 2012), and thus, is not discussed further in this document.

U.S. vessels fish for albacore in the Pacific with troll gear (artificial lures with barbless hooks that are towed behind a vessel, also called jigs). The basic troll vessel gear consists of between 8 and 12 lines towed up to 30 meters behind the vessel. Lateral spacing of the lines is accomplished by using outriggers or long poles extended to each side of the vessel with fairleads spreading 3 or more lines to each side, with the remainder attached to the stern. Terminal gear is generally chrome-headed jigs with varying colored plastic fringed skirts and a double barbless undulated hook. The gear is relatively inexpensive. Retrieval is done by hand or by powered gurdies, similar to salmon troll vessels (Childers and Pease, 2012).

The albacore troll fleets are managed under the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species. Table 13, below, show catch and effort data for the U.S. South Pacific albacore troll fishery, from 2005-2019, the years for which the most recent data is available.

Table 13. South Pacific Albacore Troll Fishery, Catch and Effort Data, 2005-2019

Year	Vessels	Vessel-Days	Albacore retained catch (mt)
2005	8	665	412
2006	7	434	440
2007	5	222	175
2008	3	162	117
2009	4	188	236
2010	6	334	305
2011	6	285	402
2012	10	401	259

2013	6	395	436
2014	13	784	447
2015	6	296	152
2016	6	323	168
2017	13	663	465
2018	11	779	429
2019	8	546	789

Source: NMFS unpublished data.

1.3.5. Convention Area HMS Fisheries

Section 3.4 of the 2015 PEA provides information on Convention Area fisheries other than U.S. fisheries and is incorporated by reference here, and includes general information on these fisheries. Updated information is included here.

The provisional total Convention Area tuna catch for 2019 was estimated to be 2,961,059 mt, the highest on record (Williams and Ruaia 2020).

1.3.6 Target Species

Section 3.5 of the 2015 PEA provides information on the main target species that would be affected by the proposed action and is incorporated by reference here, and includes information on the biology and life history of these species. Updated information is included here.

Table 14. Stock Status Summary of Main Target HMS in the Pacific Ocean

Species	Stock	Overfishing?	Overfished?
Albacore (*Thunnus alalunga)*	North Pacific	No	No
	South Pacific	No	No
Bigeye tuna (*Thunnus obesus)*	Eastern Pacific	No	No
	Western and Central Pacific	No	No
Skipjack tuna *(Katsuwonus pelamis)*	Eastern Pacific	No	No
	Western and Central Pacific	No	No
Swordfish (*Xiphias gladius*)	Eastern Pacific	Yes	No
	Western and Central North Pacific	No	No
Yellowfin tuna (*Thunnus albacares)*	Eastern Pacific	Yes	No
	Western and Central Pacific	No	No

Source: https://www.fisheries.noaa.gov/national/population-assessments/fishery-stock-status-updates

Figures 7 through 12 provide updated information on Convention Area catch of each of the target species.

Figure 7. Convention Area Yellowfin Tuna Catch by Gear

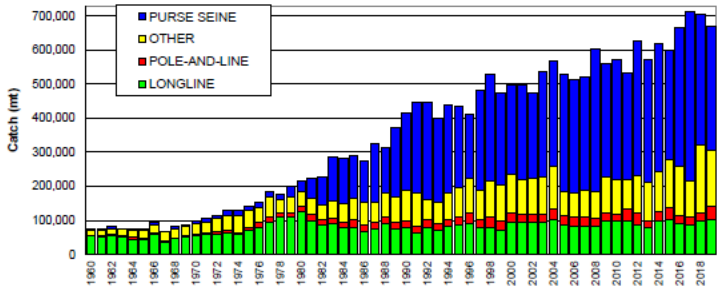


Figure 8.2.1 WCP–CA yellowfin catch (mt) by gear

Source: Williams and Ruaia 2020

Figure 8. Convention Area Bigeye Tuna Catch by Gear

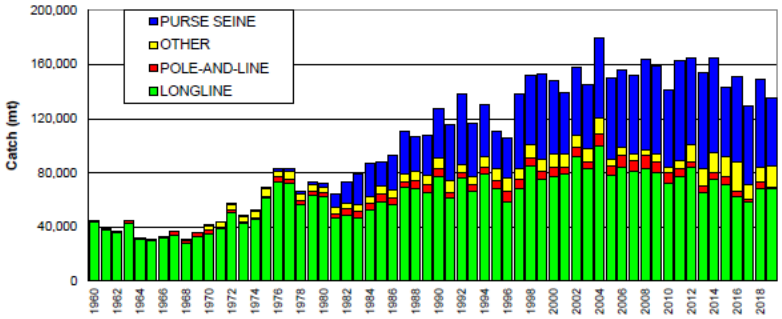


Figure 8.3.1 WCP–CA bigeye catch (mt) by gear

Source: Williams and Ruaia 2020

Figure 9. Convention Area South Pacific Albacore Catch by Gear

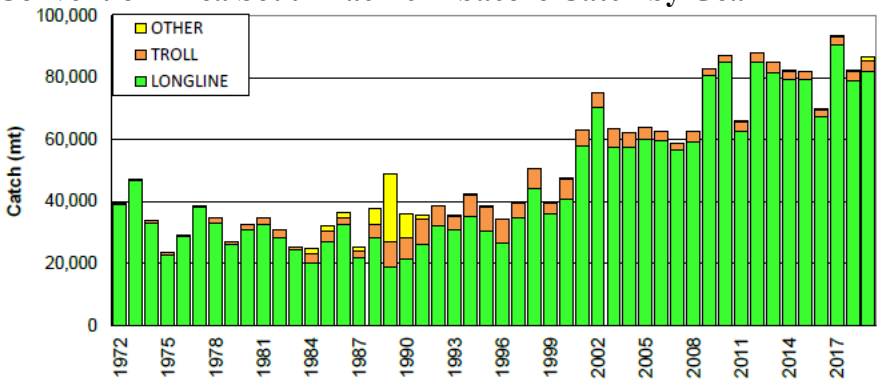


Figure 8.4.1 South Pacific albacore catch (mt) by gear ("Other" is primarily catch by the driftnet fishery.)

Source: Williams and Ruaia 2020

Figure 10. Convention Area Skipjack Catch by Gear

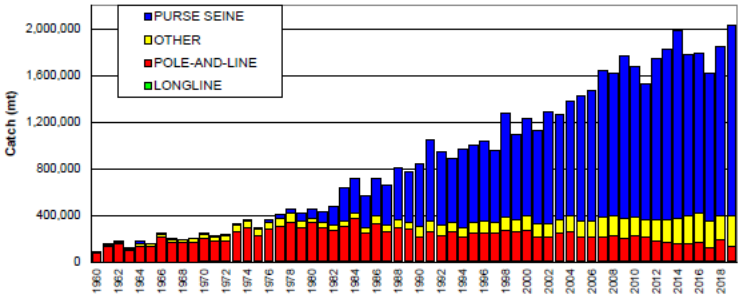


Figure 8.1.1 WCP–CA skipjack catch (mt) by gear

Source: Williams and Ruaia 2020

Figure 11. Convention Area Longline Swordfish Catch by Fleet

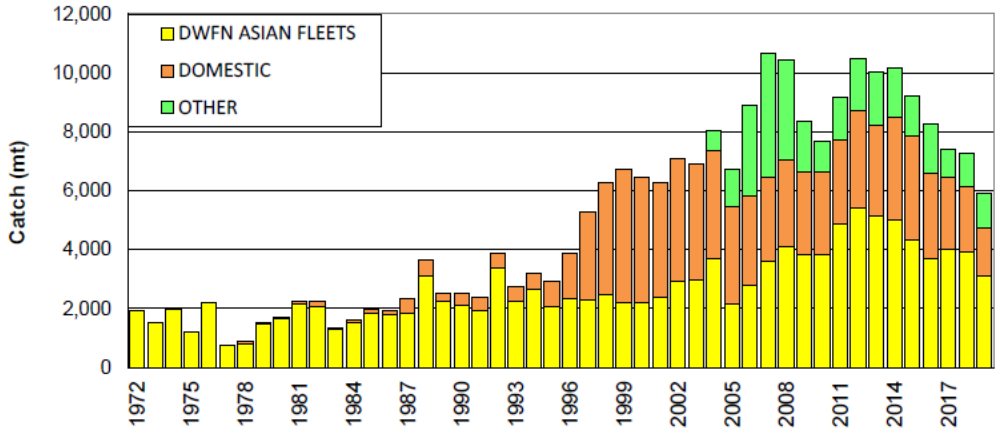


Figure 8.5.2 WCP–CA (south of equator) longline swordfish catch (mt) by fleet

Source: Williams and Ruaia 2020

Figure 12. Convention Area South Pacific Longline Swordfish Catch by Fleet

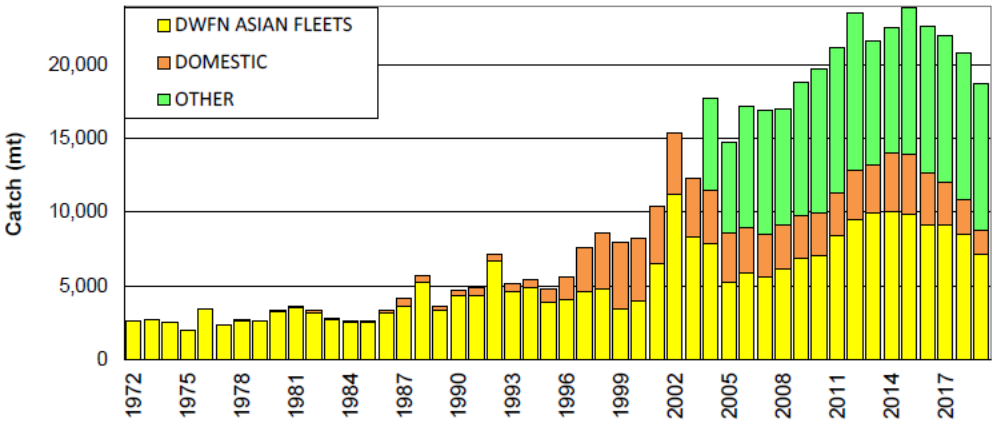


Figure 8.5.1 South Pacific longline swordfish catch (mt) by fleet

Source: Williams and Ruaia 2020

1.3.7 Non-target Species

Section 3.6 of the 2015 PEA provides information on the non-target species that would be affected by the proposed action and is incorporated by reference here and includes general information on non-target species. Updated information is included here.

Table 15 shows non-target species caught in the U.S. WCPO purse seine fishery. Species shown compose 97% of the catch of non-target species by weight excluding tropical tunas and protected species. Species that compose more than 1% of the non-target species catch by weight are included.

Table 15. Non-target (bycatch) species, metric tons (2015-2019) in the U.S. WCPO purse seine fishery, and relative percentage of total contribution from fishery logbook data.

Species	Metric Tons (2015-2019)	Relative percentage of total non-target catch
Billfish		
Blue Marlin	298	8%
Black Marlin	97	3%
Striped Marlin	45	1%
Other Fish		
Albacore	36	1%
Rainbow Runner	1,065	29%
Mahi Mahi/Dolphinfish	144	4%
Wahoo	119	3%
Mackerel Scad/Saba	251	7%
Sand Whiting	213	6%
Triggerfish (unidentified)	39	1%
Ocean Triggerfish (spotted)	125	3%
Shark		
Silky Shark	698	19%
Mobula (Unidentified)	33	1%
Whale Shark	402	11%

Source: NMFS unpublished data.

In general, albacore troll fisheries catch minimal non-target species (Kelleher 2005). Non-target species of the longline fisheries operating in the Pacific Ocean include other species of tuna, billfish and sharks. Detailed information regarding these species is included in Section 3.1 of The *Environmental Assessment for Bigeye Tuna Catch and Allocation Limits for Pelagic Longline Fisheries in U.S. Pacific Island Territories (RIN 0648-XG925*) (NMFS 2019a) and is incorporated here by reference.

1.3.8 Biological Environment

Section 3.7 of the 2015 PEA describes the other primary biological resources in the Convention Area as well as ecological interactions between the species and is incorporated by reference here, and there is no substantive new information to include for the purposes of this document.

1.3.9 Protected Resources

Section 3.8 of the 2015 PEA describes the protected resources in the Convention Area that could be affected by the proposed action under any of the action alternatives. As stated in the Executive Summary of this document, several species have been listed under the ESA since publication of the 2015 PEA.

The following sections include updates to the information in the 2015 PEA.

1.3.9.1 ESA-listed Species

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 a Biological Opinion (BiOp) prepared by NMFS or USFWS. 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[15] of listed species except under limited circumstances. 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.

Table 16 shows the ESA-listed species with which the fisheries analyzed in this SEA could interact.

Table 16. Potentially Affected Species Listed as Endangered or Threatened Under the ESA.

Scientific Name	Common Name	ESA	Agency with Jurisdiction
Corals			
Acropora globiceps	Coral (no common name)	Threatened	NMFS
Acropora jacquelineae	Coral (no common name)	Threatened	NMFS
Acropora lokani	Coral (no common name)	Threatened	NMFS
Acropora pharaonis	Coral (no common name)	Threatened	NMFS
Acropora retusa	Coral (no common name)	Threatened	NMFS
Acropora rudis	Coral (no common name)	Threatened	NMFS
Acropora speciosa	Coral (no common name)	Threatened	NMFS
Acropora tenella	Coral (no common name)	Threatened	NMFS
Anacropora spinose	Coral (no common name)	Threatened	NMFS
Euphyllia paradivisa	Coral (no common name)	Threatened	NMFS
Isopora crateriformis	Coral (no common name)	Threatened	NMFS
Montipora australiensis	Coral (no common name)	Threatened	NMFS
Pavona diffluens	Coral (no common name)	Threatened	NMFS
Porites napopora	Coral (no common name)	Threatened	NMFS
Seriatopora aculeate	Coral (no common name)	Threatened	NMFS
Cephalopods			
Nautilus pompilius	Chambered nautilus	Threatened	NMFS

[15] 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.

Scientific Name	Common Name	ESA	Agency with Jurisdiction
Marine Mammals			
Artocephalus townsendi	Guadalupe Fur Seal	Threatened	NMFS
Balaenoptera borealis	Sei whale	Endangered	NMFS
Balaenoptera musculus	Blue whale	Endangered	NMFS
Balaenoptera physalus	Fin whale	Endangered	NMFS
Eschrichtius robustus	Gray whale	Endangered	NMFS
Eubalaena australis	Southern right whale	Endangered	NMFS
Physeter macrocephalus	Sperm whale	Endangered	NMFS
Eubalaena japonica	North Pacific right whale	Endangered	NMFS
Pseudorca crassidens	False killer whale, Main Hawaiian Islands Insular DPS	Endangered	NMFS
Megaptera novaeangliae	Humpback whale, Central America	Endangered	NMFS
Megaptera novaeangliae	Humpback whale, Mexico	Threatened	NMFS
Megaptera novaeangliae	Humpback whale, Western North Pacific DPS	Endangered	NMFS
Monachus schauinslandi	Hawaiian monk seal	Endangered	NMFS
Orcinus orca	Killer whale, Southern Resident	Endangered	NMFS
Dugong dugon	Dugong	Endangered	USFWS
Fish			
Carcharhinus longimanus	Oceanic Whitetip shark	Threatened	NMFS
Sphyrna lewini	Scalloped hammerhead shark, Indo-West Pacific DPS	Threatened	NMFS
Sphyrna lewini	Scalloped hammerhead shark, Eastern Pacific DPS	Endangered	NMFS
Manta birostris	Giant Manta Ray	Threatened	NMFS
Acipenser medirostris	Southern North American green sturgeon	Threatened	NMFS
Oncorhynchus mykiss	California coast steelhead	Endangered	NMFS

Scientific Name	Common Name	ESA	Agency with Jurisdiction
Oncorhynchus mykiss	California Central Valley steelhead	Threatened	NMFS
Oncorhynchus mykiss	Central California coast steelhead	Threatened	NMFS
Oncorhynchus tshawytscha	Sacramento River winter-run Chinook salmon	Endangered	NMFS
Oncorhynchus kisutch	Central California coast coho salmon	Endangered	NMFS
Turtles			
Caretta caretta	Loggerhead turtle, North Pacific DPS	Endangered	NMFS
Caretta caretta	Loggerhead turtle, South Pacific DPS	Endangered	NMFS
Caretta caretta	Loggerhead turtle, Southeast Indo-Pacific DPS	Threatened	NMFS
Chelonia mydas	Green turtle, East Indian-West Pacific DPS	Threatened	NMFS
Chelonia mydas	Green turtle, Central West Pacific DPS	Endangered	NMFS
Chelonia mydas	Green turtle, Southwest Pacific DPS	Threatened	NMFS
Chelonia mydas	Green turtle, Central South Pacific DPS	Endangered	NMFS
Chelonia mydas	Green turtle, Central North Pacific DPS	Threatened	NMFS
Chelonia mydas	Green turtle, East Pacific DPS	Threatened	NMFS
Dermochelys coriacea	Leatherback turtle	Endangered	NMFS
Eretmochelys imbricate	Hawksbill turtle	Endangered	NMFS
Lepidochelys olivacea	Olive Ridley turtle	Threatened	NMFS
Birds			
Diomedia amsterdamensis	Amsterdam albatross	Endangered	USFWS
Fregata andrewesi	Andrew's frigatebird	Endangered	USFWS
Larus relictus	Relict gull	Endangered	USFWS
Oceanodroma castro	Band-rumped storm petrel	Endangered	USFWS
Phoebastria albatrus	Short-tailed albatross	Endangered	USFWS

Scientific Name	Common Name	ESA	Agency with Jurisdiction
Pseudobulweria macgillivrayi	Fiji petrel	Endangered	USFWS
Pterodroma axillaris	Chatham Island petrel	Endangered	USFWS
Pterodroma magenta	Magenta petrel	Endangered	USFWS
Pterodroma phaeopygia sandwichensis	Hawaiian dark-rumped petrel	Endangered	USFWS
Puffinus auricularis newelli	Newell's Townsend's shearwater	Threatened	USFWS
Puffinus heinrothi	Heinroth's shearwater	Threatened	USFWS
Marine Invertebrates			
Haliotis cracherodii	Black abalone	Endangered	NMFS
Haliotis sorenseni	White abalone	Endangered	NMFS

Sources: NOAA Fisheries Species Directory; ECOS Threatened and Endangered Species.

Designated critical habitat with which the fisheries analyzed in this SEA could interact include leatherback sea turtle critical habitat, Hawaiian monk seal critical habitat, MHI false killer whale critical habitat, stellar sea lion critical habitat, central California coast coho salmon critical habitat, Sacramento River winter run Chinook salmon critical habitat, California coast steelhead critical habitat, North American green sturgeon critical habitat, and black abalone critical habitat.

Each fishery has the potential to interact with a different set of listed species and critical habitat, depending on the area of operation and the type of gear used. In other words, each fishery does not interact with all the species and critical habitat described above.

The following identifies the valid Biological Opinions (BiOps) under which U.S. WCPO purse seine fishery, Hawaii-based and American Samoa longline fisheries, and albacore troll fisheries in the Pacific Ocean currently operate:

NMFS. 2006. Biological Opinion on the U.S. Western and Central Pacific Purse Seine Fishery as Authorized by the South Pacific Tuna Act and the High Seas Fishing Compliance Act. National Marine Fisheries Service, Pacific Islands Region (2006 BiOp).

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 (2014 BiOp).

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

NMFS. 2017a. Supplement to the 2014 Biological Opinion on Continued Operation of the Hawaii-based Deep-set Pelagic Longline Fishery (2017 Supplemental BiOp).

NMFS. 2019b. Biological Opinion on the Continued Authorization of the Hawaii Pelagic Shallow-Set Longline Fishery (2019 BiOp).

NMFS completed informal ESA Section 7 consultation for species under the jurisdiction of NMFS for the South Pacific albacore troll fishery. Memoranda dated August 10, 2004; September 17, 2004; and October 7, 2004 (2004 Memoranda). Letter dated September 17, 2020 (2020 Letter).

NMFS has also completed informal ESA Section 7 consultation for species under the jurisdiction of USFWS for the U.S. WCPO purse seine fishery. Letter from NMFS dated August 28, 2017; concurrence letter from USFWS dated October 11, 2017.

The 2006 BiOp for the U.S. WCPO purse seine fishery analyzed the effects of the fishery on the green turtle (*Chelonia mydas*), the hawksbill turtle (*Eretmochelys imbricate*), the leatherback turtle (*Demochelys coriacea*), the loggerhead turtle (*Caretta caretta*), the olive ridley turtle (*Lepidochelys olivacea*), the blue whale (*Balaenoptera musculus*), the fin whale (*Balaenoptera physalus*), the humpback whale (*Megaptera novaengliae*), the sei whale (*Balaenoptera borealis*), and the sperm whale (*Physeter macrocephalus*).

Since completion of the 2006 BiOp, the following species that occur in the area of operation of the U.S. WCPO purse seine fishery have been listed as threatened or endangered under the ESA: (1) the Indo-West Pacific distinct population segment (DPS) and the Eastern Pacific DPS of the scalloped hammerhead shark (*Sphyrna lewini*); (2) 15 species of coral (*Acropora globiceps*, *Acropora jacquelineae*, *Acropora lokani*, *Acropora pharaonis*, *Acropora retusa*, *Acropora rudis*, *Acropora speciosea*, *Acropora tenella*, *Anacropora spinosa*, *Euphyllia paradivisa*, *Isopara crateriformis*, *Montipora australiensis*, *Pavona diffluens*, *Porites napopora*, and *Seriatopora aculeata*); the giant manta ray (*Manta birostris*); the oceanic whitetip shark (*Carcharhinus longimanus*); and the chambered nautilus (*Nautilus pompilius*). In addition, three DPSs of loggerhead turtles have been designated in the area of operation of the U.S. WCPO purse seine fishery – the North Pacific DPS, the South Pacific DPS, and the Southeast Indo-Pacific Ocean DPS. Six DPSs of the green turtle have also been designated in areas where overlap could occur with the area of operation of the U.S. WCPO purse seine fishery. These DPSs of the green turtle include: (1) East Indian-West Pacific; (2) Central West

Pacific; (3) Southwest Pacific; (4) Central South Pacific; (5) Central North Pacific; and (6) East Pacific. Finally, NMFS revised the ESA listing for the humpback whale to identify 14 DPS, listing one as threatened, four as endangered, and identifying nine others as not warranted for listing. One DPS of the humpback whale has been designated as endangered in the area of operation of the WCPO purse seine fishery – the Western North Pacific DPS.

NMFS prepared a Biological Assessment (BA) (NMFS 2017b) for the U.S. WCPO purse seine fishery in 2017. Based on the information in the BA, and pursuant to criteria (2), (3), and (4) of the regulations at 50 CFR § 402.16, NMFS reinitiated formal ESA Section 7 consultation on the effects of the U.S. WCPO purse seine fishery on the following species: the blue whale; the sei whale; the sperm whale; the following DPSs of the green turtle: East Indian-West Pacific, Central West Pacific, Southwest Pacific, Central South Pacific, Central North Pacific, and East Pacific; the hawksbill turtle; the leatherback turtle; the following DPSs of the loggerhead turtle: Southeast Indo-Pacific Ocean, South Pacific Ocean, and North Pacific Ocean; the olive ridley turtle, and the following DPSs of the scalloped hammerhead shark: Indo-West Pacific DPS and Eastern Pacific DPS. In May 2018, NMFS included the giant manta ray and the oceanic whitetip in the pending consultation.

In the BA, NMFS determined that the U.S. WCPO purse seine fishery may affect but is not likely to adversely affect the 15 ESA-listed species of coral that occur in the area of operation of the fishery. The only potential for interaction of these species with the fishery would be during entry and exit of ports by fishing vessels and while at port, including during offloading and transshipment activities. During vessel transit and during transshipment activities, there is the potential for vessel grounding, and spills and leaks of pollutants. However, as fishing vessels avoid coral reef structures to avoid groundings and damage to their hulls, the chance of interactions between the U.S. WCPO purse seine fishery and listed coral species would be extremely unlikely and therefore discountable. Due to the spatial separation between fishing operations and ESA-listed corals, exposure of ESA-listed corals or coral reef habitat to hydrocarbon-based chemicals such as fuel oils, gasoline, lubricants, and hydraulic fluids that may enter the marine environment during at-sea operations, including fishing and transiting, is unlikely. While fishing operations may cause small volumes of hydrocarbon-based chemicals to enter the marine environment, wind and waves disperse the chemicals widely, such that exposure of ESA-listed corals would be limited and therefore discountable.

Similarly, by memorandum dated December 6, 2018, NMFS determined that the U.S. WCPO purse seine fishery may affect but is not likely to adversely affect the chambered nautilus (see Memorandum from T. Graham to A. Garrett, dated December 6, 2018). The chambered nautilus occurs in near shore areas, such as in coral reef structures, steep-sloped reefs, and fore reefs. It does not occur in the open ocean where the U.S. purse seine fishery operates. The only potential for interaction of this species with the fishery

would be during entry and exit of ports by fishing vessels, including during offloading and transshipment activities. During vessel transit and during transshipment activities, there is the potential for vessel grounding, and spills and leaks of pollutants. However, as fishing vessels avoid coral reef and other reef structures to avoid groundings and damage to their hulls, the chance of interactions between the U.S. WCPO purse seine fishery and chambered nautilus would be extremely unlikely and therefore discountable. Due to the spatial separation between fishing operations and the chambered nautilus, exposure of the chambered nautilus to hydrocarbon-based chemicals such as fuel oils, gasoline, lubricants, and hydraulic fluids that may enter the marine environment during operations, including fishing and transiting, is unlikely. While fishing operations may cause small volumes of hydrocarbon-based chemicals to enter the marine environment, wind and waves would likely disperse the chemicals widely, such that exposure of the chambered nautilus would be limited and therefore discountable.

NMFS also determined in the BA that the U.S. WCPO purse seine fishery may affect but is unlikely to adversely affect the following two marine mammal species: (1) the fin whale because there have been no recorded interactions with fin whales in the fishery during the years for which data were analyzed (the 2008-2015 time period); and (2) the Western North Pacific DPS of the humpback whale, as the best available data does not indicate the likelihood of interactions with any ESA-listed humpback DPS.

By memorandum, dated July 29, 2020 (see Memorandum from T. Graham to A. Garrett, dated July 29, 2020), NMFS addressed supplemental information on the fishery and determined that the fishery may affect but is not likely to adversely affect the Guadalupe fur seal, the Mexico DPS of the humpback whale, and the Central America DPS of the humpback whale. The risks of interaction between these species and vessels in the fishery are limited to transit, transshipment, and landing activities. Transit, transshipment, and landing activities from vessels could expose these ESA-listed species to the following stressors: (1) vessel noise, (2) vessel collision, (3) vessel groundings, waste, discharge, and emissions. All of these potential stressors would be expected to have discountable effects on the three ESA-listed species for the reasons explained below.

Given the size of the U.S. WCPO purse seine fishery (the small number of vessels in the fishery and the wide area they cover), the fact that the sound field produced by the vessels in the fishery is relatively small and would move with the vessel, the animals would be moving as well, vessel speeds would be slow,[16] vessel transit vectors would be predictable, sudden or loud noises would be unlikely or infrequent, and generally the sound field would be in motion, any exposure to noises generated by this fishery would

[16] Purse seine vessel speed is anticipated to be about 10 knots during setting activities, 2.5 knots during the rest of fishing and brailing activities, and about 15 knots during non-fishing activities (de Souza et. al. 2016). Anecdotal information from industry indicates that U.S. purse seine vessels can sometimes travel at speeds up to 16.5 knots per day, depending on current.

be expected to be short-term and transient. Thus, it is likely that any sounds emanating from vessels in the fishery during transit would generally be ignored by animals that are temporarily exposed to the sounds.

Given the small number of vessels participating in the fishery, the small number of anticipated vessel trips,[17] the slow vessel speeds during vessel transit, transshipment and landing activities, and the expectation that ESA-listed marine species would be widely scattered, the potential for an incidental vessel strike is extremely unlikely to occur.

Although leakage, wastes, gear loss and vessel emissions would occur as a result of the transit, transshipment, and landing activities of vessels in the U.S. WCPO purse seine fishery, given the small number of vessels participating in the fishery, the small number of anticipated vessel trips, the small chance that ESA-listed resources would be exposed to measurable or detectable amounts of wastes, gear, or emissions from this fishery, and the dilution of any pollutants, any effects to ESA-listed species would be expected to be discountable. Vessels generally take precautions to avoid groundings and damage to hulls, so vessel groundings would be extremely unlikely and therefore discountable.

As set forth in the analysis in Chapter 5 of the BA, NMFS determined that the U.S. WCPO purse seine fishery may adversely affect the blue whale; the sei whale; the sperm whale; the following DPSs of the green turtle: East Indian-West Pacific, Central West Pacific, Southwest Pacific, Central South Pacific, Central North Pacific, and East Pacific; the hawksbill turtle; the leatherback turtle; the following DPSs of the loggerhead turtle: Southeast Indo-Pacific Ocean, South Pacific Ocean, and North Pacific Ocean; the olive ridley turtle; and the following DPSs of the scalloped hammerhead shark: Indo-West Pacific DPS and Eastern Pacific DPS. Subsequent to preparation of the BA, in a memorandum dated May 17, 2018, NMFS also determined that the U.S. WCPO purse seine fishery may adversely affect the oceanic whitetip shark and the giant manta ray. However, in memoranda dated December 5, 2017, May 17, 2018, and December 6, 2018, June 28, 2019, January 15, 2020, July 14, 2020, and February 23, 2021, NMFS determined that continuation of the fishery during the period of consultation is not likely to jeopardize the continued existence of any of these species and would not constitute an irreversible or irretrievable commitment of resources under ESA Section 7(d).

The 2019 BiOp for the Hawaii shallow-set longline fishery analyzed the effects of the fishery on the following: the leatherback turtle; the North Pacific DPS of the loggerhead turtle; the Eastern Pacific DPS of the green turtle; the Central North Pacific DPS of the green turtle; the East Indian-West Pacific DPS of the green turtle; the Central West Pacific DPS of the green turtle; the Southwest Pacific DPS of the green turtle; the Central

[17] In the years 2014-2019, the U.S. WCPO purse seine fleet took a total of 1,494 trips, or an average of 249 trips per year. Of the total number of trips during that time period, 160 trips (or an average of 27 trips per year) involved transit in areas outside of the main fishing grounds shown in Figure 1.

South Pacific DPS of the green turtle; the olive ridley turtle; the hawsbill turtle; the Guadalupe fur seal; the Hawaiian monk seal; the MHI insular false killer whale; the Central America DPS of the humpback whale; the Mexico DPS of the humpback whale; the fin whale; the blue whale; the North Pacific right whale; the sei whale; the sperm whale; the Southern Resident DPS of the killer whale; the Eastern Pacific DPS of the scalloped hammerhead shark; the oceanic whitetip shark; the giant manta ray; the central California coast coho salmon; the Central valley spring-run Chinook salmon; the Sacramento River winter-run Chinook salmon; the Central California coast steelhead; the California coast steelhead; and the Southern North American green sturgeon. The 2019 BiOp also analyzed the effects of the fishery on the following designated critical habitat: leatherback turtle critical habitat; Hawaiian monk seal critical habitat; MHI false killer whale critical habitat; stellar sea lion critical habitat; central California coast coho salmon critical habitat; Sacramento River winter run Chinook salmon critical habitat; California coast steelhead critical habitat; North American green sturgeon critical habitat; and black abalone critical habitat. The 2019 BiOp indicated that a limited number of these species could be adversely affected by the fishery: the leatherback turtle; the North Pacific DPS of the loggerhead turtle; the six DPS of the green turtle that occur in the Pacific Ocean; the olive ridley turtle; the oceanic whitetip shark; the giant manta ray; and the Guadalupe fur seal. The 2019 BiOp concluded that the continued operation of the Hawaii shallow-set longline fishery is not likely to jeopardize the continued existence of those species.

Under the 2014 BiOp, NMFS determined that the Hawaii deep-set longline fishery was not likely to jeopardize the continued existence for humpback whales, sperm whales, MHI insular false killer whales, North Pacific loggerhead turtles, leatherback turtles, olive ridley turtles, green turtles, and the Indo-West Pacific DPS of the scalloped hammerhead shark. The 2017 Supplemental BiOp for the fishery concluded that the fishery was not likely to jeopardize the continued existence of the North Pacific DPS of the loggerhead turtle, the olive ridley turtle, six DPS of the green turtle occurring in the Pacific Ocean, nor result in the destruction or modification of critical habitat. Consultation for the Hawaii deep-set fishery was reinitiated on October 4, 2018, due to reaching several reinitiation triggers. The fishery exceeded the incidental take statement 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 MHI insular false killer whale (IFKW) critical habitat (83 FR 35062) also triggered the requirement for reinitiated consultation. By memorandum dated December 18, 2020, NMFS concluded that the determinations in the 2014 BiOp, as supplemented, remained valid, and the continued authorization of the fishery during the period of reinitiated consultation would not violate ESA Section 7(a)(2) and 7(d). The memorandum also concluded that the continued authorization of the fishery during the period of consultation would not jeopardize the recently listed oceanic whitetip shark and giant manta ray.

The 2015 BiOp concluded that the American Samoa longline fishery was not likely to jeopardize the green turtle, hawksbill turtle, leatherback turtle, olive ridley turtle, South

Pacific DPS of the loggerhead turtle, Indo-West Pacific DPS of the scalloped hammerhead shark, and six species of reef-building corals. Consultation for the American Samoa deep-set longline fishery was reinitiated on April 3, 2019, due to reaching several reinitiation triggers. The fishery exceeded the incidental take statement for the east Indian west Pacific, southwest Pacific, central South Pacific, and east Pacific green sea turtle DPS; hawksbill; and olive ridley sea turtles in 2018. Listing of the oceanic whitetip shark (83 FR 4153), giant manta ray (83 FR 2916), and chambered nautilus (83 FR 48976) as threatened species also triggered the requirement for reinitiated consultation. By memorandum dated May 6, 2020, NMFS concluded that the determinations in the 2015 BiOp remained valid, and that the continued authorization of the fishery during the period of reinitiated consultation would not violate ESA Section 7(a)(2) and 7(d). The memorandum also concluded that the continued authorization of the fishery during the period of consultation would not jeopardize the recently listed oceanic whitetip shark, giant manta ray, and chambered nautilus.

In the 2004 Memoranda, NMFS concluded that the continued operation of the U.S. South Pacific albacore troll fishery may affect but is not likely to adversely affect listed species for the following reasons: (1) there has been no documented or reported take of any listed species in this fishery; (2) the nature of the fishery, including the gear used, makes it highly unlikely that a listed species would be taken; and (3) although there have been limited sea turtles takes in the U.S. North Pacific albacore troll fishery, according to biologists, there have been no documented sea turtle takes in any commercial troll fisheries off of the east coast of the United States, making the likelihood that a listed sea turtle would be taken by the U.S. South Pacific albacore troll fishery extremely low. The 2020 Letter concluded that a proposed action for five longline vessels to explore albacore trolling in the south Pacific ocean may affect, but is not likely to adversely affect, the following species:

• Leatherback, loggerhead, olive ridley, green, and hawksbill sea turtles;
• Blue, fin, sei, and sperm whales;
• Indo-West Pacific DPS of scalloped hammerhead and oceanic whitetip shark,
• Giant manta ray;
• Chambered nautilus;
• Six reef-building corals – *Acropora globiceps*, *A. jacquelineae*, *A. retusa*, *A. speciosa*, *Euphyllia paradivisa*, and *Isopora crateriformis*; and
• Four giant clams (ESA-candidate species) – *Hippopus hippopus*, *Tridacna squamosa*, *T. derasa*, and *T. gigas*.

Based on the information available to date from the ESA consultation histories of the U.S. WCPO purse seine fishery, the Hawaii shallow-set longline fishery, the Hawaii deep-set longline fishery, the American Samoa longline fishery, and the South Pacific albacore troll fishery, continued authorization of these fisheries under existing

management regimes for the foreseeable future would not have a substantial effect on ESA-listed species or designated critical habitat.

1.3.9.2 Marine Mammals

The U.S. WCPO purse seine fishery corresponds to the following fisheries on the 2021 List of Fisheries (LOF)[18]: South Pacific Tuna Fisheries – purse seine gear and Western Pacific Pelagic Fisheries – purse seine gear. Both of these fisheries are listed as Category II fisheries under the regulations implementing the MMPA, meaning that it is a commercial fishery determined to have occasional incidental mortality and serious injury of marine mammals. MMPA 101(a)(5)(E) authorizations are required for commercial fisheries with frequent or occasional incidental mortality or serious injury (M&SI) of ESA-listed marine mammals, as documented on the List of Fisheries (LOF). Authorizations are not required for commercial fisheries involving a remote likelihood of or no known incidental taking of marine mammals. Because these fisheries have no documented incidental M&SI of ESA-listed marine mammals on the 2021 LOF, a 101(a)(5)(E) authorization under the MMPA is not required at this time.

The Hawaii deep-set longline fishery is a Category I fishery on the 2021 LOF, meaning that it is a commercial fishery with frequent serious injuries and mortalities of marine mammals. As stated above, humpback whales, sperm whales, MHI insular false killer whales are the ESA-listed marine mammals that may be adversely affected by the fishery. By memorandum dated December 18, 2020, NMFS concluded that continued authorization of the fishery during the period of reinitiated consultation would not violate ESA Section 7(a)(2) and 7(d) for these species.

The Hawaii shallow-set longline fishery is a Category II fishery on the 2021 LOF, meaning that it is a commercial fishery determined to have occasional incidental mortality and serious injury of marine mammals. The 2019 Biological Opinion stated that the Guadalupe fur seal could be adversely affected by the Hawaii shallow-set longline fishery. The 2019 BiOp concluded that the continued operation of the Hawaii shallow-set longline fishery is not likely to jeopardize the continued existence of this species.

On October 16, 2014, NMFS authorized a permit under the MMPA section 101(a)(5)(E), addressing the Hawaii longline 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, 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

[18] See 86 FR 3028, published January 14, 2021.

the affected stocks of marine mammals. NMFS has prepared a draft negligible impact determination to update the 2014 MMPA permit, but the permit under MMPA Section 101(a)(5)(E) remains valid and effective until replaced in accordance with 5 U.S.C. § 558(c). Since the issuance of this permit, the Central North Pacific humpback whale was designated a DPS and is not a listed species under the ESA (81 FR 62259, September 8, 2016).

The American Samoa longine fishery and the South Pacific albacore troll fishery are Category II fisheries on the 2021 LOF.

1.3.9.3 Other Protected Resources

Section 3.8.2 of the 2015 PEA describes the Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) in the Convention Area. This section is incorporated by reference and updated here.

The MSA defines 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. HAPC are subsets of EFH that merit special conservation attention because they meet at least one of the following four considerations:

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.

The EFH provisions (50 CFR Part 600 Subpart J) of the MSA are intended to maintain sustainable fisheries. NMFS and the Regional Fishery Management Councils must identify and describe EFH and HAPC for each managed species using the best available scientific data and must ensure that fishing activities being conducted in such areas do not have adverse effects to the extent practicable. This process consists of identifying specific areas and the habitat features within them that provide essential functions to a particular

species for each of its life stages. Both the EFH and the HAPC are documented in the FEPs established under the MSA[19].

Section 3.8.3 of the 2015 PEA describes the National Wildlife Refuges and Monuments in the Convention Area. Since publication of the 2015 PEA, the Papahanaumokuakea Marine National Monument was expanded by Presidential Proclamation 9478 (see 81 FR 60227; published August 31, 2016).

Under regulations implementing Section 106 of the National Historic Preservation Act (NHPA; 16 U.S.C. 470f), federal agencies must determine whether a proposed action would cause potential effects on historic properties. Shipwrecks would be the only historic properties potentially within the area that could be affected by the proposed action under any of the action alternatives.

[19] The FEPs being the FEP for the American Samoa Archipelago, the FEP for the Mariana Archipelago; the FEP for the Pacific Remote Island Areas; the FEP for the Hawaii Archipelago; and the FEP for Pacific Pelagic Fisheries of the Western Pacific Region.

Chapter 2 Environmental Consequences

This chapter provides an analysis of the direct, indirect, and cumulative environmental effects that could be caused by the implementation of the proposed action under any of the action alternatives. This chapter incorporates by reference and builds from the analysis in the 2015 PEA and 2019 SEA to analyze the No-Action Alternative and the 12 action alternatives described in Chapter 1.

The discussion of potential impacts to the fisheries is presented first to establish the changes that the affected fisheries could experience from implementation of each of the alternatives. Then Sections 2.5 to 2.10 analyze the environmental impacts the anticipated changes to the fisheries could cause to each of the potentially affected resources in the affected environment. Section 2.11 presents a summary that compares the different impacts of the alternatives. Section 2.12 presents the cumulative impacts analysis.

2.1 The U.S. WCPO Purse Seine Fleet

The direct and indirect effects to the U.S. WCPO purse seine fishery from implementation of each of the alternatives would fall into two categories: (1) economic; and (2) changes to fishing patterns and practices. General information regarding economic impacts is provided in the discussion below to help compare the alternatives assessed and to determine whether the economic impacts are interrelated with environmental impacts. More specific information regarding economic impacts would be provided for each regulatory action undertaken by NMFS to implement the elements of the proposed action through preparation of a Regulatory Impact Review (RIR), prepared under Executive Order 12866. The RIR for the rulemaking to establish the framework process to implement short-notice WCPFC decisions includes analysis of the temporary specifications that would be implemented under the framework. The potential impacts from implementation of each of the alternatives to each of the potentially affected resources are analyzed in Sections 2.5 to 2.10.

2.1.1 Alternative A: The No-Action Alternative

Under Alternative A, the No-Action Alternative, the management measures for the U.S. purse seine fleet that would be implemented under the action alternatives would not go into effect, and the fleet would continue to be managed under existing regulatory requirements. Thus, under this alternative there would be no direct changes to the fishing patterns and practices of the fleet.

As described in Section 1.1 of this SEA, the purpose of NMFS' domestic implementation of WCPFC decisions on tropical tunas through 2025, is to contribute to the underlying

objectives of the Commission's management of tropical tuna stocks in the WCPO, which, as stated in CMM 2018-01, are, pending the establishment of harvest strategies, and any implementing CMM, to provide for a robust transitional management regime that ensures the sustainability of bigeye, skipjack, and yellowfin tuna stocks. The purpose of NMFS' domestic process to implement WCPFC decisions that require immediate action is to respond to urgent situations in a timely manner. The need for the domestic implementation of WCPFC decisions on tropical tunas and WCPFC decisions that require immediate action is to satisfy the obligations of the United States as a Contracting Party to the Convention, pursuant to the authority of the WCPFCIA.

There are unlikely to be indirect effects to the fleet under the No-Action Alternative. As stated in Section 1.3.6 of this SEA, the stocks of bigeye tuna, yellowfin tuna, and skipjack tuna in the WCPO are not subject to overfishing nor are they overfished. Skipjack tuna accounts for the majority of the U.S. WCPO purse seine fleet's catch, with the proportion of catch of each of the three tropical tuna species being approximately 81% skipjack tuna, 15% yellowfin tuna, and 4% bigeye tuna for the period 1997-2019. However, it is conceivable that under this alternative the indirect effects (or long-term effects) would be that the objectives of the proposed action for the sustainability of tropical tuna stocks would be less likely to be reached, because the specific management measures would not be in effect. This could be expected to adversely affect the catch rates of the U.S. WCPO purse seine fleet and the profitability of fishing businesses. However, many other factors affect the stock status of bigeye tuna, yellowfin tuna, and skipjack tuna in the WCPO (such as oceanographic conditions and fishing by non-U.S. fleets).

2.1.2 Alternative B: Least Restrictive Action Alternative

Under this alternative, the management measures that would affect the U.S. purse seine fleet include a fishing effort limit of 3,880 fishing days in the ELAPS and a three month FAD setting prohibition period in each of the calendar years 2021-2025. These measures would apply in the Convention Area between the latitudes of 20° N. and 20° S. This alternative would also include the temporary suspension of the following for a period of time no longer than one year: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers; MCS measures. The potential effects of each of the elements of Alternative B on the fishing patterns and practices of the fleet are described in the following subsections.

2.1.2.1 Fishing Effort Limit

As indicated in Table 5 above, from the years 1997 through 2019, the fleet spent an average of approximately 4% of its total effort per year in the U.S. EEZ and 20% of its total effort per year on the high seas, and the remainder (or 76%) in the EEZs of PIPs to the SPTT. Given that the fishing effort limit in the ELAPS under this alternative exceeds

the average number of days fished in the ELAPS during the years 1997 through 2019 by a considerable amount, it is unlikely that the limit would be reached under this alternative. However, should the limit be reached, the fishery would be closed on the high seas and in the U.S. EEZ for the remainder of the calendar year. Although the length of any such closure cannot be predicted with any degree of certainty, due to the large variation in the number of days fished in the U.S. EEZ and on the high seas from year to year, as shown in Table 5, given the large number of fishing days under this alternative, it is likely any closure would take place toward the end of the year, if at all.

If the limit is reached in any year, vessels in the fleet could continue to fish in the EEZs of PIPs to the SPTT, where the fleet expends the majority of its effort. Vessels in the fleet would also have the option to continue to fish in the EPO in the area managed by the IATTC.

Two factors could have a substantial influence on the amount of fishing effort in the ELAPS in 2021-2025: First, the number of fishing days available in foreign waters (the fleet's main fishing grounds) pursuant to the SPTT will influence the incentive to fish outside those waters, including in the U.S. EEZ and on high seas. Second, El Niño Southern Oscillation (ENSO) conditions will influence where the best fishing grounds are at any given time.

Regarding fishing opportunities in foreign waters, the increasing cost of fishing in foreign zones in the WCPO, which receive most of the fleet's fishing effort, could influence the amount of fishing in other areas, including the ELAPS. Those costs, which are expressed in terms of cost per vessel-fishing-day, are partly determined through the SPTT (the cost per fishing day for a certain number of "upfront" days is determined in the SPTT, but vessel owners have the opportunity to buy "additional" days on terms they negotiated with particular countries). If the number of available fishing days is relatively small, or the cost of additional fishing days is relatively high, fishing effort in the ELAPS might be relatively great.

Regarding ENSO conditions, the eastern areas of the WCPO tend to be comparatively more attractive to the U.S. purse seine fleet during El Niño events, when warm surface water spreads from the western Pacific to the eastern Pacific and large, valuable yellowfin tuna become more vulnerable to purse seine fishing and trade winds lessen in intensity. Consequently, the ELAPS, much of which is situated in the eastern range of the fleet's fishing grounds, is likely to be more important fishing grounds to the fleet during El Niño events. This is supported by there being a statistically significant correlation between annual average per-vessel fishing effort in the ELAPS and the Oceanic Niño

Index, a common measure of ENSO conditions, over the life of the SPTT through 2010.[20] For 2021, there is an approximately 60% chance of a transition from La Niña to ENSO-Neutral during Northern Hemisphere spring 2021 and continuing through at least the summer. ENSO conditions cannot be usefully forecast beyond that period. (National Weather Service (NWS) 2021). This suggests that the western portion of the Convention Area may be favored fishing grounds through the first half of 2021.

A third potentially important factor is that the EEZ and high seas limits would be competitive, so their establishment could cause a "race to fish" in the two areas. That is, vessel operators might seek to take advantage of the limited number of fishing days available in the areas before the limits are reached, and fish harder in the ELAPS than they would if there were no limits. On the one hand, any such race-to-fish effect might be reflected in the history of fishing in the ELAPS, described above. On the other hand, anecdotal information from the fishing industry suggests that the limits might have been internally allocated by the fleet, which might have tempered any race to fish. It is not known whether the industry intends to internally allocate the limits.

With respect to fishing in the EPO, U.S. purse seine vessels have been fishing more in the EPO in recent years (see NMFS 2020a). In order to fish in the EPO, a vessel must be on the IATTC's Regional Vessel Register and categorized as active (50 CFR 300.22(b)).[21] In addition, as stated in the Executive Summary of this document, NMFS recently published a final rule to change management in the overlap area (area of overlapping jurisdiction between the WCPFC and the IATTC). The ELAPS limits and any closure in the ELAPS would not apply in the overlap area, so there are greater fishing opportunities in the EPO than previously. There are currently 16 U.S. purse seine vessels listed on both the WCPFC Record of Fishing Vessels and the IATTC Regional Vessel Register. However, the IATTC has adopted capacity limits for purse seine vessels operating in the EPO, and the United States has very little remaining of its allocated capacity (based on data provided by the IATTC, as of March 5, 2021, 34 cubic meters of available capacity remained). [22]

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[20] The three-month running averages of the Oceanic Niño Index from the National Weather Service were averaged for each calendar year. The correlation between those annual values and annual average per-vessel fishing effort in the ELAPs was positive and statistically significant at a probability level of 99%.

[21] As an exception to this rule, an SPTT-licensed vessel is allowed to make one fishing trip in the EPO each year without being categorized as active on the IATTC Regional Vessel Register. The trip must not exceed 90 days in length, and there is an annual limit of 32 such trips for the entire SPTT-licensed fleet (50 CFR 300.22(b)(1)).

[22] Regulations at 50 CFR 300.25(e) require U.S. purse seine vessels to observe one of two closure periods in the EPO in the area managed by the IATTC in 2021 – July 29 through October 8 or November 9 through January 19, 2022. Similar measures may be in effect in the years 2022-2025, if the IATTC adopts such measures and NMFS implements them through regulations. Should the purse seine fishery closure in the

Overall, though hard to predict, 2021-2025 could be years in which the U.S. EEZ or high seas provides more attractive fishing grounds than usual, and in that case, the fleet could be restricted by the effort limits. On the other hand, since the fleet generally conducts more fishing activity in areas outside of the ELAPS, it is possible that there could be no overall change in the amount of fishing effort of the fleet in 2021-2025 compared to the No-Action Alternative.

2.1.2.2 FAD Setting Prohibition Period

Under this alternative, there would be a prohibition on setting on FADs and on fish that have aggregated in association with a fishing vessel, in the Convention Area between the latitudes of 20° North and 20° South, for three months of the year for each of the years 2021 through 2025 (for the purposes of this analysis, the three months are not specified, and could be any three months of each calendar year). During the three months in which no fishing on FADs would be allowed, no fishing on or near schools associated with FADs, and no deploying or servicing FADs, would be permitted in the Convention Area in the area between 20° N. and 20° S. latitude.

The specific prohibitions, which include details for enforcement purposes, would be the following:

- No setting of a purse seine around a FAD or within one nautical mile of a FAD;
- No setting of a purse seine in a manner intended to capture fish that have aggregated in association with a FAD or a vessel, such as by setting the purse seine in an area from which a FAD has been moved or removed within the previous eight hours, or setting the purse seine in an area in which a FAD has been inspected or handled within the previous eight hours, or setting the purse seine in an area into which fish were drawn by a vessel from the vicinity of a FAD;
- No deployment of a FAD into the water;
- No repairing, cleaning, maintaining, or otherwise servicing a FAD, including any electronic equipment used in association with a FAD, in the water or on a vessel while at sea, except that: a FAD may be inspected and handled as needed to identify the owner of the FAD, identify and release incidentally captured animals, un-foul fishing gear, or prevent damage to property or risk to human safety; and a FAD may be removed from the water and if removed may be cleaned, provided that it is not returned to the water.

Convention Area overlap with the fishery closure in the EPO, U.S. WCPO purse seine vessels would not have the option of continuing to the fish in the EPO.

- No submerging lights under water, suspending or hanging lights over the side of the purse seine vessel or any associated skiffs, other watercraft or equipment, or directing or using lights in a manner other than as needed to illuminate the deck of the purse seine vessel or associated skiffs, watercraft or equipment, except as needed to comply with navigational requirements, to ensure the health and safety of the crew, and in emergencies and as needed to prevent human injury or the loss of human life, the loss of the purse seine vessel, skiffs, watercraft or aircraft, or environmental damage.

As discussed in Section 3.2.4 of the 2015 PEA, although being more successful at catching fish, FAD sets tend to yield smaller fish, including smaller bigeye and yellowfin tuna, while unassociated sets tend to yield larger fish – primarily skipjack tuna and yellowfin tuna, typically with very few bigeye tuna.

The overall composition of the catch, in terms of both species and fish sizes, made by the fleet would likely be affected by the FAD setting prohibition period. It is expected that there would be a transfer of effort to fishing on unassociated sets during the prohibition period (see Figure 2, above) given that represents the only viable fishing option if vessels continue to operate – so the composition of the catch during those periods would likely consist of less bigeye tuna than would occur under the No-Action Alternative and perhaps more larger-sized yellowfin tuna and skipjack tuna. As shown in Table 7, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known.

During the FAD setting prohibition period, vessel operators fishing would be able to set only on unassociated schools. This constraint on the type of set that may be made at any given time may adversely affect vessels' profitability depending on the availability of school fish. Vessel operators might be able to mitigate those impacts by choosing to schedule their routine vessel and equipment maintenance during time when FAD setting is prohibited. Nonetheless, it is conceivable that the FAD restrictions could lead a change in fishing effort by the U.S. WCPO purse seine fleet in the years 2021 through 2025 than would occur without the restrictions. However, as shown in Figure 3 above, during the FAD setting prohibition period in 2009-2019, there was no substantial change in the proportion of the fleet that fished during those months in each of those years when compared to the proportion that fished during those months in 1997-2008 when no FAD setting prohibition periods were in place. Thus, little effect on overall fishing effort is expected to result from this element of the alternative. Overall, the three month FAD setting prohibition period is expected to affect the fishing patterns and practices of the

fleet by transferring fishing effort from FAD sets to unassociated sets, which could incur additional costs in terms of searching and more sets, as compared to the No-Action Alternative.

2.1.2.3 Temporary Measures

Alternative B would include the temporary suspension of the following regulations for a period of time no longer than one year: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers.

The temporary suspension of purse seine observer coverage would be unlikely to affect current fishing patterns and practices in a substantial manner. When the regulations at 50 CFR 300.223(e) for purse seine observer coverage were first implemented in 2009, NMFS calculated that the costs per year would be $5,700 per vessel for observer accommodations and between $33,400 to $43,200 per vessel for observer deployments (see initial regulatory flexibility analysis in 74 FR 26160 (published June 1, 2009)). Adjusting for inflation, the costs would be approximately $6,850 per vessel for observer accommodations and between $40,135 to $51,911 per vessel for observer deployments in 2020 (see https://www.usinflationcalculator.com/). Average revenue, by vessel, for 2017-2019 reveals that average annual revenue was $8,890,000 (NMFS unpublished data combined with price data from https://www.ffa.int/node/425 and https://www.wcpfc.int/node/46580 accessed on July 27, 2020). Thus, though the temporary suspension of purse seine observer coverage could provide some cost savings to the fleet, those cost savings would be unlikely to affect overall fishing patterns and practices (i.e., vessels would be unlikely to fish more or less due to the costs savings). In addition, vessels would be unlikely to change fishing routes or locations due to suspension of observer coverage, as vessel operators currently coordinate observer deployments with FFA to accommodate their planned trip departure locations and port calls. However, it may be necessary initially to modify planned trip routes to return observers that are already on board the vessel to specific ports.[23]

The temporary suspension on purse seine transshipment anywhere at sea could lead to some changes in fishing patterns and practices. Vessels in the fleet would have new opportunities to stay at sea for longer periods of time and to develop business partnerships with other vessels that may wish to receive their catch. U.S. purse seine vessels have not transshipped at sea in recent years, due to restrictions under the SPTT

[23] Vessel owners would likely be responsible for the costs of repatriation or return to port of any observer on the vessel. While these costs are difficult to predict, they could be substantial and would counteract any cost savings from the temporary suspension of the observer coverage requirements. However, NMFS has information to indicate that repatriation has been completed for U.S. purse seine vessels operating in the Convention Area, so such a cost is unlikely to be incurred in the reasonably foreseeable future.

and the WCPFC regulations at 50 CFR 300.216(b)(1) so whether many or any vessels would take advantage of new fishing opportunities is unknown.

The temporary suspension of at-sea observer coverage provisions would not be expected to affect the fishing patterns and practices of the U.S. purse seine fleet. Vessels in the fleet are currently prohibited from at-sea transshipment, so these regulations do not apply to them. Should the prohibition on at-sea transshipment be temporarily suspended, as discussed above, and vessels in the fleet begin to transship at sea, the temporary suspension of at-sea observer coverage provisions would neither impose new requirements or remove existing ones on the fleet.

2.1.2.4 Summary of Effects under Alternative B

Overall, Alternative B would be unlikely to substantially affect the fishing patterns and practices of the fleet. Should the fishing effort limit in the ELAPS be reached in any of the years 2021-2025, the fleet could fish more in the EEZs of PIPs to the SPTT or in the EPO and could cause a reduction in the total fishing effort of the fleet, but it is unlikely that the limit would be reached under this alternative. The three month FAD setting prohibition period for each calendar year would likely lead to the transfer of some fishing effort from FAD sets to unassociated sets, with consequent impacts in terms of species composition of the catch. The temporary suspension of observer coverage requirements, the at-sea transshipment prohibition, the at-sea transshipment observer requirements, and the identified MCS measures are unlikely to affect the fishing patterns and practices of the fleet in any meaningful way.

2.1.3 Alternative C, Most Restrictive Action Alternative

Under this alternative, the management measures that would affect the U.S. purse seine fleet for each of the calendar years 2021-2025 include a U.S. purse seine fishing effort limit of 431 fishing days on the high seas and 26 fishing days in the U.S. EEZ, a total prohibition on U.S. purse seine fishing for six months, in the remaining six months a limit of 1,530 FAD sets per year, a complete prohibition on fishing on FADs on the high seas for U.S. purse seine vessels, a limit of 175 active FADs per purse seine vessel, catch retention requirements for purse seine vessels, and FAD design requirements for purse seine vessels. Most of the elements for purse seine vessels would apply between the latitudes of 20° N. and 20° S., and the active FAD limit, catch retention requirements, and FAD design requirements would apply in the entire Convention Area. The potential effects of each of the elements of Alternative C on the fishing patterns and practices of the fleet are described in the following subsections.

2.1.3.1 Fishing Effort Limit

Under Alternative C, it would be highly likely that the fishing effort limits would be reached. Given that the limits on the high seas and in the U.S. EEZ are the lowest levels in recent years, the limits would not be reached only if the high seas or U.S. EEZ proves to be unproductive fishing grounds.

If the limits are reached in any year, vessels in the fleet could continue to fish in the EEZs of PIPs to the SPTT, where the fleet expends the majority of its effort. Vessels in the fleet would also have the option to continue to fish in the EPO in the area managed by the IATTC.

Two factors could have a substantial influence on the amount of fishing effort in the ELAPS in 2021-2025: First, the number of fishing days available in foreign waters (the fleet's main fishing grounds) pursuant to the SPTT would influence the incentive to fish outside those waters, including in the U.S. EEZ and on high seas. Second, ENSO conditions would influence where the best fishing grounds are at any given time.

Regarding fishing opportunities in foreign waters, the increasing cost of fishing in foreign zones in the WCPO, which receive most of the fleet's fishing effort, could influence the amount of fishing in other areas, including the ELAPS. Those costs, which are expressed in terms of cost per vessel-fishing-day, are partly determined through the SPTT (the cost per fishing day for a certain number of "upfront" days is determined in the SPTT, but vessel owners have the opportunity to buy "additional" days on terms they negotiated with particular countries). If the number of available fishing days is relatively small, or the cost of additional fishing days is relatively high, fishing effort in the ELAPS might be relatively great.

Regarding ENSO conditions, the eastern areas of the WCPO tend to be comparatively more attractive to the U.S. purse seine fleet during El Niño events, when warm surface water spreads from the western Pacific to the eastern Pacific and large, valuable yellowfin tuna become more vulnerable to purse seine fishing and trade winds lessen in intensity. Consequently, the ELAPS, much of which is situated in the eastern range of the fleet's fishing grounds, is likely to be more important fishing grounds to the fleet during El Niño events. This is supported by there being a statistically significant correlation between annual average per-vessel fishing effort in the ELAPs and the Oceanic Niño Index, a common measure of ENSO conditions, over the life of the SPTT through 2010.[24] For 2021, there is an approximately 60% chance of a transition from La Niña to ENSO-

[24] The three-month running averages of the Oceanic Niño Index, from NWS (2014), were averaged for each calendar year. The correlation between those annual values and annual average per-vessel fishing effort in the ELAPs was positive and statistically significant at a probability level of 99%.

Neutral during Northern Hemisphere spring 2021 and continuing through at least the summer. ENSO conditions cannot be usefully forecast beyond that period. (National Weather Service (NWS) 2021). This suggests that the western portion of the Convention Area may be favored fishing grounds through the first half of 2021.

A third potentially important factor is that the EEZ and high seas limits would be competitive, so their establishment could cause a "race to fish" in the two areas. That is, vessel operators might seek to take advantage of the limited number of fishing days available in the areas before the limits are reached, and fish harder in the ELAPS than they would if there were no limits. On the one hand, any such race-to-fish effect might be reflected in the history of fishing in the ELAPS, described above. On the other hand, anecdotal information from the fishing industry suggests that the limits might have been internally allocated by the fleet, which might have tempered any race to fish. It is not known whether the industry intends to internally allocate the limits.

With respect to fishing in the EPO, U.S. purse seine vessels have been fishing more in the EPO in recent years (see NMFS 2020a). In order to fish in the EPO, a vessel must be on the IATTC's Regional Vessel Register and categorized as active (50 CFR 300.22(b)).[25] In addition, as stated in the Executive Summary of this document, NMFS recently published a final rule to change management in the overlap area (area of overlapping jurisdiction between the WCPFC and the IATTC). The ELAPS limits and any closure in the ELAPS would not apply in the overlap area, so there are greater fishing opportunities in the EPO than previously. As of May 7, 2021, there are 15 U.S. purse seine vessels listed on both the WCPFC Record of Fishing Vessels and the IATTC Regional Vessel Register. However, the IATTC has adopted capacity limits for purse seine vessels operating in the EPO, and the United States has very little remaining of its allocated capacity (as of May 4, 2021, 3,287 cubic meters of available capacity remained). [26]

The effort limit could change the temporal patterns of fishing effort. Since the limit would be a competitive allocation whereby high seas or U.S. EEZ fishing days would not be allocated among individual vessels and would be available to the entire fleet until the cap is reached, some vessel operators might have an incentive to fish harder in these areas

[25] As an exception to this rule, an SPTT-licensed vessel is allowed to make one fishing trip in the EPO each year without being categorized as active on the IATTC Regional Vessel Register. The trip must not exceed 90 days in length, and there is an annual limit of 32 such trips for the entire SPTT-licensed fleet (50 CFR 300.22(b)(1)).

[26] Regulations at 50 CFR 300.25(e) require U.S. purse seine vessels to observe one of two closure periods in the EPO in the area managed by the IATTC in 2021 – July 29 through October 8 or November 9 through January 19, 2022. Similar measures may be in effect in the years 2022-2025, if the IATTC adopts such measures and NMFS implements them through regulations. Should the purse seine fishery closure in the Convention Area overlap with the fishery closure in the EPO, U.S. WCPO purse seine vessels would not have the option of continuing to the fish in the EPO.

earlier in the calendar year than they otherwise would in an attempt to obtain as many fishing days as they can (i.e., "the race to fish") before the limit is reached. To the extent such a shift does occur, it would affect the seasonal timing of deliveries to canneries. A race to fish could also bring costs if it causes vessel operators to forego vessel maintenance or to fish in weather or ocean conditions that it otherwise would not. This could bring costs in terms of human safety as well as the performance of the vessel and its fishing gear and crew, but the effects are not expected to be substantial, as the fleet does not exert the majority of its fishing effort in the ELAPS. This race to fish effect could also be expected in the time period between when a closure of the fishery is announced and when the fishery is closed.

Under this alternative, the limit in one area could be reached before the limit in the other area – i.e., the high seas could be closed to fishing before the U.S. EEZ is closed to fishing or vice versa. Currently eleven vessels in the fleet are authorized to fish in the U.S. EEZ and some of these vessels deliver to canneries while others transship. So if the limit on the high seas is reached first, the eleven vessels authorized to fish in the U.S. EEZ may fish harder in the U.S. EEZ than they otherwise would. If the limit in the U.S. EEZ is reached first, the eleven vessels authorized to fish in the U.S. EEZ may fish harder on the high seas than they otherwise would. However, as stated above, other factors, such as climate and ocean conditions, affect the location of optimal fishing grounds for the fleet, and so those other factors would affect whether the eleven vessels authorized to fish in the U.S. EEZ would fish harder in either location if one limit is reached before the other.

Since the fleet generally fishes in areas outside of the ELAPS, it is also possible that there could be no overall change in the amount of fishing effort of the fleet in 2021-2025 compared to the No-Action Alternative.

2.1.3.2 Purse Seine Fishing Closed Period

Under this alternative, purse seine fishing would be prohibited in the Convention Area for six months of each calendar year in 2021 through 2025. For the purposes of analyzing this element of Alternative C, it is assumed that the closure could take place in any six months of the calendar year, rather than for a specific six-month period. As indicated in Figure 3 in this document, the percentage of licensed vessels that fished is generally constant throughout the year, so it is assumed that the effects of the closure on the fleet would be the same regardless of when it takes place (e.g., a closure from January through June would be expected to have the same effects on the fleet as a closure from January through March and September through November).

As indicated in Table 5, above, the fishing effort per calendar year in the Convention Area for the U.S. WCPO purse seine fleet varies considerably from year to year. The

average fishing effort per calendar year, using data from the years 1997-2019 and not adjusting for the variation in the number of active fishing vessels, is 5,777 fishing days per year. Adjusting the data for each year to accommodate the maximum number of vessels in fleet (40 vessels)[27] yields an average of 4,137 fishing days per calendar year. Thus, assuming that the fishing effort of the fleet in the Convention Area remains generally the same in 2021 through 2025 as in the past 23 years, a six month total closure of fishing for the fleet could equate to a large reduction in fishing effort. A 50% reduction in fishing effort would be a reduction of about 2,069 fishing days per calendar year, though it is unlikely that closing the fishery for 50% of the year would equate to a full 50% reduction in fishing effort, as effort could increase in the six months of the year when the fishery would remain open.

During the six-month fishing closure, vessels in the fleet would be prohibited from conducting any purse seine fishing operations in the Convention Area. Vessels in the fleet could continue to fish in the EPO in the area managed by the IATTC.[28] With respect to fishing in the EPO, U.S. purse seine vessels have been fishing more in the EPO in recent years (see NMFS 2020a). In order to fish in the EPO, a vessel must be on the IATTC's Regional Vessel Register and categorized as active (50 CFR 300.22(b)).[29] In addition, as stated in the Executive Summary of this document, NMFS recently published a final rule to change management in the overlap area (area of overlapping jurisdiction between the WCPFC and the IATTC). The six month purse seine fishing closure in the Convention Area would not apply in the overlap area. There are currently 16 U.S. purse seine vessels listed on both the WCPFC Record of Fishing Vessels and the IATTC Regional Vessel Register. However, the IATTC has adopted capacity limits for purse seine vessels operating in the EPO, and the United States has very little remaining of its allocated capacity (as of May 4, 2021, 3,287 cubic meters of available capacity remained).

[27] As indicated in Section 1.3.2.2, there are currently 18 U.S. purse seine listed on the WCPFC Record of Fishing Vessels and NMFS does not expect an increase in the number of U.S. purse seine vessels in the 2021-2025 time period. Thus, the actual number of fishing days that could be reduced by the fishery closure under this alternative would be proportionally reduced.

[28] Regulations at 50 CFR 300.25(e) require U.S. purse seine vessels to observe one of two closure periods in the EPO in the area managed by the IATTC in 2021 – July 29 through October 8 or November 9 through January 19, 2022. Similar measures may be in effect in the years 2022-2025, if the IATTC adopts such measures and NMFS implements them through regulations. Should the purse seine fishery closure in the Convention Area overlap with the fishery closure in the EPO, U.S. WCPO purse seine vessels would not have the option of continuing to the fish in the EPO.

[29] As an exception to this rule, an SPTT-licensed vessel is allowed to make one fishing trip in the EPO each year without being categorized as active on the IATTC Regional Vessel Register. The trip must not exceed 90 days in length, and there is an annual limit of 32 such trips for the entire SPTT-licensed fleet (50 CFR 300.22(b)(1)).

Vessels would have no other purse seine fishing opportunities available in the Pacific Ocean during the closure period, so it is possible that many or all vessels in the fleet would cease fishing for most or all of the closure period.

Given the length of the closure period, this element of Alternative C would be expected to lead to substantial adverse economic consequences for the fleet. Average revenue, by vessel, for 2017-2019 reveals that average annual revenue was $8,890,000 (NMFS unpublished data combined with price data from https://www.ffa.int/node/425 and https://www.wcpfc.int/node/46580 accessed on July 27, 2020). The closure under Alternative C could lead to a large reduction in the revenue generated by the fleet, which, depending on how much of this reduction in revenue is experienced by individual businesses, could cause vessel owners and operators to leave the purse seine fishery and seek other opportunities. Exactly what those opportunities would be is difficult to predict. The one other opportunity that is reasonable to consider for the purposes of this analysis is that vessels may be reflagged to other countries with fleets that operate in the WCPO, since business operations would be more similar to existing business operations than other opportunities (i.e., vessel owners and operators could continue to fish for tuna in the WCPO rather than having to fish for tuna or other species elsewhere or having to undertake training or lifestyle changes to pursue other careers).

2.1.3.3 FAD Set Limit

Under Alternative C, there would be a limit of 1,530 FAD sets in each of the calendar years 2021-2025. NMFS believes that the range of 1,500 to 3,354 total sets per year in the Convention Area is a reasonable range of the number of sets that the fleet would likely make in calendar years 2021-2025.[30] As indicated in Figure 1, the proportion of all sets that are FAD sets ("FAD set ratio") in the U.S WCPO purse seine fishery has varied widely from year to year – from less than 30% to more than 90%. Thus, it is difficult to predict what the FAD set ratio would be in those periods of 2021-2025 in which FAD sets are allowed. For this analysis, it is assumed that FAD setting patterns in 2021-2025 would be similar to those in the last 10 years for which complete data are available, 2010-2019. Using the information from Table 8, which shows total sets, FAD sets, and fishing days in the U.S. WCPO purse seine fishery from 2010-2019, the estimated average number of FAD sets per year under Alternative C would range from 428 FAD sets per

[30] As a lower bound, NMFS considers 1,500 sets per year to be plausible. For example, if the waters of the PIPs were to be closed to fishing, and if the Commission were to slightly reduce the allowable number of fishing days per year on the high seas and in the U.S. EEZ (in the ELAPS) from the 1,828 fishing days/year that are currently allowed, it is conceivable the U.S. fleet could have access to as few as 1,500 sets per year in the Convention Area (1,828 fishing days/year times 1.05 sets per fishing day – see Table 8 – equals 1,865 sets/year). Given the recent data regarding fishing effort in the fishery (see Table 5), and the current fleet size of 20 vessels, NMFS believes that 3,354 total sets per year in the Convention Area is a reasonable upper bound (159.7 annual average fishing days per vessel in 2015-2019, with 20 vessels in the fleet, and 1.05 sets per fishing day).

year to 956 FAD sets. Calculations are based on the six-month prohibition on purse seine fishing under this alternative and an average FAD set ratio of 57% of total sets made when FAD sets are allowed.

The 1,530 FAD set limit would not be expected to be reached under either the lower bound estimate or the higher bound estimate of total sets.

In summary, under Alternative C, fishing on FADs would not be expected to be prohibited for the six months of each year that purse seine fishing would be allowed in the Convention Area. In the unlikely event that the FAD set limit is reached under this alternative, the fishing patterns and practices of the fleet could be affected by a transfer of fishing effort from FAD sets to unassociated sets, with resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin tuna and more larger-sized skipjack tuna, and likely less bigeye tuna. As shown in Table 6 in this document, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna may be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known.

After the FAD set limit is reached in a given year, vessel operators would be able to set only on unassociated schools. This constraint on the type of set that may be made at any given time could adversely affect vessels' profitability. Vessel operators might be able to mitigate those impacts by choosing to schedule their routine vessel and equipment maintenance during a time when FAD setting is prohibited. Nonetheless, it is conceivable that the FAD setting restrictions could lead a change in fishing effort by the U.S. WCPO purse seine fleet in the years 2021 through 2025 than would occur without the restrictions. However, as shown in Figure 3 of this SEA, during the periods when FAD restrictions were in effect in 2009-2019, there was no substantial change in the proportion of the fleet that fished during those months in each of those years when compared to the proportion that fished during those months in 1997-2008 when no FAD restrictions were in place. Thus, little effect on overall fishing effort is expected to result from the FAD restrictions.

2.1.3.4 High Seas FAD Closure

Under this alternative, the U.S. WCPO purse seine fleet would be prohibited from fishing on FADs on the high seas in 2021-2025. Table 9 shows the number of total sets and FAD sets in the U.S. EEZ, on the high seas, and in the EEZs of PIPs from 1997-2019. The table indicates that the fleet makes a sizable proportion of FAD sets on the high seas each year in comparison to total sets, but the proportion varies each year. As indicated above

and in Table 5, Table 6, and Figure 1, catch, effort, and number of FAD sets for the fleet varies from year to year, and is influenced by various factors, including oceanographic and economic conditions. The data also indicate that the high seas appear to be no different in importance relative to the other fishing grounds in terms of FAD sets. During 1997-2019, on average, the high seas accounted for about 18% of total FAD sets—slightly less than for all sets (about 19%). This was also the case in more recent years; in 2009-2019, when FAD closure periods were in effect, the high seas accounted for about 18% of all sets, on average, and about 14% of FAD sets.

As indicated in Table 5, the fleet spent an average of approximately 4% of its total effort per year in the U.S. EEZ and 20% of its total effort per year on the high seas (in terms of days fished), and the remainder (or 76%) in the EEZs of PIPs to the SPTT. Thus, under Alternative C, the fleet would still be able to fish on FADs throughout the six months of the calendar year in 2020-2025 when fishing is allowed in locations where the majority of its effort is spent, unless the FAD set limit is reached, as discussed above.

The prohibition on fishing on FADs on the high seas could cause the fleet to transfer some of its effort from associated sets to unassociated sets, if it continues to fish at the same rate on the high seas, or could cause the fleet to transfer its effort from the high seas to the U.S. EEZ or to PIP EEZs, so that it could fish more on FADs in the U.S. EEZ or in the EEZs of PIPs. Should the high seas FAD setting prohibition result in fewer overall FAD sets, there could be resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin tuna and more larger-sized skipjack tuna, and likely less bigeye tuna. As shown in Table 6, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known.

As stated above, as shown in Figure 3 of this SEA, during the periods when FAD restrictions were in effect in 2009-2019, there was no substantial change in the proportion of the fleet that fished during those months in each of those years when compared to the proportion that fished during those months in 1997-2008 when no FAD setting restrictions were in place. In addition, the fleet would be able to fish on FADs in the U.S. EEZ and PIPs EEZs when the high seas are closed to FAD fishing. Also, under Alternative C, it is highly likely that the fishing effort limit on the high seas and in the U.S. EEZ would be reached in a calendar year, so the fleet would be expected to spend more time fishing in PIPs EEZs regardless of the FAD setting prohibitions on the high seas. Thus, little effect on overall fishing effort is expected to result from the high seas FAD closure in 2021-2025 under this alternative.

2.1.3.5 Active FAD Limit

Under Alternative C, there would be a limit of 175 active FADs per purse seine vessel at any one time in the Convention Area from the years 2021-2025. Recent research suggests that most purse seine vessels operating in the Convention Area may deploy less than 150 FADs per year (Escalle et al. 2020). Thus, this element of Alternative C may not affect the fishing patterns and practices of vessels in the U.S. purse seine fleet. However, if some U.S. purse seine vessels typically have more than 175 active FADs in the Convention Area, the active FAD limit could affect the number of FADs they use and could shift fishing effort from FADs to unassociated sets. There could be resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin tuna and more larger-sized skipjack tuna, and likely less bigeye tuna. As shown in Table 6, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known.

2.1.3.6 Catch Retention Requirements

Under Alternative C, U.S. purse seine vessels would be required to retain on board at all times while at sea within the Convention Area any bigeye tuna, yellowfin tuna, or skipjack tuna, except in the following circumstances and with the following conditions:

> 1) Fish that are unfit for human consumption, including but not limited to fish that are spoiled, pulverized, severed, or partially consumed at the time they are brought on board, may be discarded;
> 2) If at the end of a fishing trip there is insufficient well space to accommodate all the fish captured in a given purse seine set, fish captured in that set may be discarded, provided that no additional purse seine sets are made during the fishing trip;
> 3) If a serious malfunction of equipment occurs that necessitates that fish be discarded.

The impacts of this provision would likely be different for those vessels that fish out of a port and deliver their fish to canneries versus those vessels that transship most of their catch to other vessels. Vessels fishing out of ports typically try to maximize trip revenue, because they have to travel large distances from port to reach fishing grounds, so they may be forced to retain catches that decrease the already limited storage room on the vessels given the fishing trips typically only terminate for these vessels when all the fish holds are full. For vessels that transship most of their catch to other vessels and are less

dependent on vessel capacity, this provision would likely have a lower impact on vessel profitability, and fishing patterns and practices. There are also instances where the canneries charge the vessels to unload small fish in which case these costs (typically on a per ton basis) would be a deduction from gross trip revenues.

2.1.3.7 FAD Design Requirements

Under Alternative C, U.S. purse seine vessels would be required to design FADs so that there is less risk of entangling non-target and bycatch species. FADs would be required to meet the provisions of CMM 2018-01 that include the following specifications:

- The floating or raft part (flat or rolled structure) of the FAD can be covered or not. To the extent possible the use of mesh net should be avoided. If the FAD is covered with mesh net, it must have a stretched mesh size less than 7 cm (2.5 inches) and the mesh net must be well wrapped around the whole raft so that there is no netting hanging below the FAD when it is deployed.
- The design of the underwater or hanging part (tail) of the FAD should avoid the use of mesh net. If mesh net is used, it must have a stretched mesh size of less than 7 cm (2.5 inches) or tied tightly in bundles or "sausages" with enough weight at the end to keep the netting taut down in the water column. Alternatively, a single weighted panel (less than 7 cm (2.5 inches) stretched mesh size net or solid sheet such as canvas or nylon) can be used.

It is unknown exactly how many FADs used by the U.S. purse seine fleet would need to be redesigned to meet these requirements. NMFS has implemented similar regulations for requirements adopted by the IATTC (see 83 FR 15503, published April 11, 2018; 83 FR 62732, published December 6, 2018). In the analysis for those regulations, NMFS stated that although information compiled by International Seafood Sustainability Foundation (ISSF) showed that the majority of the U.S. purse seine fleet currently use materials on FADs that have a high risk of entanglement (e.g., hanging nets), according to discussions between industry representatives and NMFS, the purse seine fleet in the Pacific Ocean is in the process of transitioning to materials that do not have the highest risk of entanglement. This is a result of coordination between ISSF and U.S. industry and was expected to become effective in March 2018. NMFS anticipated costs associated with the transition in FAD design in the EPO, which would vary depending on the materials available to the vessel and which materials the vessel uses, but the measures were not expected to reduce the profitability of the fishery. Similarly, NMFS does not believe implementation of the FAD design requirements specified in CMM 2018-01 would substantially affect the fishing patterns and practices of the U.S. WCPO purse seine fleet.

2.1.3.8 Summary of Effects under Alternative C

Under Alternative C, the purse seine effort limit of 432 fishing days on the high seas and 25 fishing days in the U.S. EEZ would be likely to be reached in each of the calendar years 2021-2025, which could either reduce overall purse seine fishing effort or shift effort to PIPs EEZs or the EPO. The six-month total fishery closure could substantially reduce purse seine fishing effort in the Convention Area, which could lead to vessel owners and operators leaving the fishery and seeking other opportunities. If the FAD set limit is reached in any of the calendar years, fishing effort could be transferred to unassociated sets, with resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin and skipjack tuna and likely less bigeye tuna. As shown in Table 6, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known. The high seas FAD setting prohibition period in each of the calendar years 2021-2025 could also transfer effort to unassociated sets on the high seas or to FAD sets in the U.S. EEZ or in PIPs EEZs. The active FAD limit could also transfer effort from FAD sets to unassociated sets with the effects described above. The catch retention requirements may affect the amount and type of catch that would be unloaded by certain vessels in the fleet (i.e., the vessels that land in port rather than transship in port). The FAD design requirements are not expected to substantially affect the fishing patterns and practices of the fleet.

2.1.4 Alternative D, Most Restrictive FAD Setting Prohibition Period Variation

This alternative would be the same as Alternative C, except that instead of a total prohibition on U.S. purse seine fishing for six months and a FAD set limit, there would be a FAD setting prohibition period for the full year. Thus, under this alternative, there would be a transfer of purse seine fishing from FAD sets to unassociated sets for the full year for 2021-2025 so the composition of the catch during those years would perhaps consist of more larger-sized yellowfin and skipjack tuna and likely less bigeye tuna. As shown in Table 6, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known.

It is conceivable that the FAD setting restrictions could lead to a change in fishing effort by the U.S. WCPO purse seine fleet in the years 2021 through 2025 than would occur without the restrictions. However, as shown in Figure 3 of this SEA, during the time periods when the FAD restrictions were in effect in 2009-2019, there was no substantial change in the proportion of the fleet that fished during those months in each of those years when compared to the proportion that fished during those months in 1997-2008 when no FAD restrictions were in place. Thus, little effect on overall fishing effort is expected to result from the FAD restrictions.

The effects on the fishing patterns and practices of the fleet from the remaining elements of Alternative D would be identical to those under Alternative C.

2.1.5 Alternative E, Additional FAD Setting Prohibition Period, Including Active FAD Restrictions, Catch Retention Requirements, and FAD Design Requirements

This alternative would be the same as Alternative B, except that instead of a three month FAD setting prohibition period, there would be a four-month FAD setting prohibition period each year, a limit of 350 active FADs per purse seine vessel, purse seine catch retention requirements, and FAD design requirements.

Thus, under this alternative, there would be an additional month during which there would be transfer of purse seine fishing from FAD sets to unassociated sets, with resulting consequences on the composition of the catch – probably more larger-sized yellowfin and skipjack tuna and likely less bigeye tuna. As shown in Table 6, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but recent studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known.

During the FAD setting prohibition period, vessel operators would be able to set only on unassociated schools. This constraint on the type of set that may be made at any given time could adversely affect vessels' profitability. Vessel operators might be able to mitigate those impacts by choosing to schedule their routine vessel and equipment maintenance during a time when FAD setting is prohibited. Nonetheless, it is conceivable that the FAD setting restrictions could lead to less fishing effort by the U.S. WCPO purse seine fleet in the years 2021 through 2025 than would occur without the restrictions. However, as shown in Figure 3 of this SEA, during the times when the FAD setting restrictions were in effect in 2009-2019, there was no substantial change in the proportion

of the fleet that fished during those months in each of those years when compared to the proportion that fished during those months in 1997-2008 when no FAD restrictions were in place. Thus, little effect on overall fishing effort is expected to result from the FAD setting prohibition period.

The active limit would not be expected to affect fishing activity by the fleet. Recent research suggests that most purse seine vessels operating in the Convention Area may deploy less than 150 FADs per year. Anecdotal information from the U.S. purse seine fleet indicates that vessels in the fleet typically do not have more than 350 FADs active at the same time in the Convention Area.

The effects from the catch retention requirements and FAD design requirements to vessels in the fleet would be the same as under Alternative C.

The effects on fishing patterns and practices of the fleet from the remaining elements of Alternative E would be identical to those under Alternative B.

2.1.6 Alternative F, FAD Set Limit Variation

This alternative would be the same as Alternative E, except that there would be a limit of 2,522 FAD sets per year and a three month FAD setting prohibition period.

NMFS believes that the range of 1,500 to 3,354total sets per year in the Convention Area is a reasonable range of the number of sets that the fleet would likely make in calendar years 2021-2025.[31] As indicated in Figure 1, the proportion of all sets that are FAD sets ("FAD set ratio") in the U.S WCPO purse seine fishery has varied widely from year to year – from less than 30% to more than 90%. Thus, it is difficult to predict what the FAD set ratio would be in those periods of 2021-2025 in which FAD sets are allowed. For this analysis, it is assumed that FAD setting patterns in 2021-2025 would be similar to those in the last 10 years for which complete data are available, 2010-2019. Using the information from Table 8, which shows total sets, FAD sets, and fishing days in the U.S. WCPO purse seine fishery from 2010-2019, the estimated number of FAD sets per year when FAD sets are allowed under Alternative F would range from 641 to 1,434. Calculations are based on an average FAD set ratio of 57% of total sets made.

[31] As a lower bound, NMFS considers 1,500 sets per year to be plausible. For example, if the waters of the PIPs were to be closed to fishing, and if the Commission were to slightly reduce the allowable number of fishing days per year on the high seas and in the U.S. EEZ (in the ELAPS) from the 1,828 fishing days/year that are currently allowed, it is conceivable the U.S. fleet could have access to as few as 1,500 sets per year in the Convention Area (1,828 fishing days/year times 1.05 sets per fishing day – see Table 8 – equals 1,865 sets/year). Given the recent data regarding fishing effort in the fishery (see Table 5), and the current fleet size of 20 vessels, NMFS believes that 3,354 total sets per year in the Convention Area is a reasonable upper bound (159.7 annual average fishing days per vessel in 2015-2019, with 20 vessels in the fleet, and 1.05 sets per fishing day).

The 2,522 FAD set limit would not be expected to be reached under either the lower bound estimate of the total number of sets per year or the higher bound estimate of total sets.

In summary, under Alternative F, fishing on FADs would not be expected to be prohibited outside of the three-month FAD prohibition period. In the unlikely event that the FAD set limit is reached under this alternative, the fishing patterns and practices of the fleet could be affected by a transfer of fishing effort from FAD sets to unassociated sets, with resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin tuna and more larger-sized skipjack tuna, and likely less bigeye tuna. As shown in Table 6 in this document, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna may be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known.

After the FAD set limit is reached in a given year, vessel operators would be able to set only on unassociated schools. This constraint on the type of set that may be made at any given time could adversely affect vessels' profitability. Vessel operators might be able to mitigate those impacts by choosing to schedule their routine vessel and equipment maintenance during time when FAD setting is prohibited. Nonetheless, it is conceivable that the FAD setting restrictions could lead a change in fishing effort by the U.S. WCPO purse seine fleet in the years 2021 through 2025 than would occur without the restrictions. However, as shown in Figure 3 of this SEA, during the time period when FAD restrictions were in effect in 2009-2019, there was no substantial change in the proportion of the fleet that fished during those months in each of those years when compared to the proportion that fished during those months in 1997-2008 when no FAD restrictions were in place. Thus, little effect on overall fishing effort is expected to result from the FAD restrictions.

The effects on fishing patterns and practices of the fleet from the remaining elements of Alternative F would be identical to those under Alternative E, except the FAD setting prohibition period would be reduced by one month each year. It is unlikely that reducing the FAD setting prohibition period from four months to three months under this alternative would substantially affect the fishing patterns and practices of the fleet.

2.1.7 Alternative G, Total Purse Seine Closure Variation

This alternative would be the same as Alternative E, except that instead of a four month FAD setting prohibition period, there would be a total prohibition on U.S. purse seine fishing for three months each year.

For the purposes of analyzing this element of Alternative G, it is assumed that the closure could take place in any three months of the calendar year, rather than for a specific three-month period. As indicated in Figure 3 of this document, the percentage of licensed vessels that fished is generally constant throughout the year, so it is assumed that the effects of the closure on the fleet would be the same regardless of when it takes place (e.g., a closure from January through March would be expected to have the same effects on the fleet as a closure from July through September).

As indicated in Table 5, the fishing effort per calendar year in the Convention Area for the U.S. WCPO purse seine fleet varies considerably from year to year. Using data from the years 1997-2019 and not adjusting for the variation in the number of active fishing vessels, it is 5,777 fishing days per year. Adjusting the data for each year to accommodate the maximum number of vessels in fleet (40 vessels)[32] yields an average of 4,137 fishing days per calendar year. Thus, assuming that the fishing effort of the fleet in the Convention Area remains generally the same in 2021 through 2025 as in the past 23 years, a three month total closure of fishing for the fleet could lead to a large reduction in fishing effort. A 25% reduction in fishing effort would be a reduction of about 1,034 fishing days, though it is unlikely that a three-month closure of the fishery would lead to a 25% reduction in fishing effort, since the fleet would likely increase its effort in the other months of the year when the fishery would be open.

Vessels in the fleet could continue to fish in the EPO in the area managed by the IATTC.[33] With respect to fishing in the EPO, U.S. purse seine vessels have been fishing more in the EPO in recent years (see NMFS 2020a). In order to fish in the EPO, a vessel must be on the IATTC's Regional Vessel Register and categorized as active (50 CFR 300.22(b)).[34] In addition, as stated in the Executive Summary of this document, NMFS

[32] As indicated in Section 1.3.2.2, there are currently 18 U.S. purse seine listed on the WCPFC Record of Fishing Vessels and NMFS does not expect an increase in the number of U.S. purse seine vessels in the 2021-2025 time period. Thus, the actual number of fishing days that could be reduced by the fishery closure under this alternative would be proportionally reduced.

[33] Regulations at 50 CFR 300.25(e) require U.S. purse seine vessels to observe one of two closure periods in the EPO in the area managed by the IATTC in 2021 – July 29 through October 8 or November 9 through January 19, 2022. Similar measures may be in effect in the years 2022-2025, if the IATTC adopts such measures and NMFS implements them through regulations. Should the purse seine fishery closure in the Convention Area overlap with the fishery closure in the EPO, U.S. WCPO purse seine vessels would not have the option of continuing to the fish in the EPO.

[34] As an exception to this rule, an SPTT-licensed vessel is allowed to make one fishing trip in the EPO each year without being categorized as active on the IATTC Regional Vessel Register. The trip must not exceed

recently published a final rule to change management in the overlap area (area of overlapping jurisdiction between the WCPFC and the IATTC). The three month purse seine fishing closure in the Convention Area would not apply in the overlap area. There are currently 16 U.S. purse seine vessels listed on both the WCPFC Record of Fishing Vessels and the IATTC Regional Vessel Register. However, the IATTC has adopted capacity limits for purse seine vessels operating in the EPO, and the United States has very little remaining of its allocated capacity (as of May 4, 2021, 3,287 cubic meters of available capacity remained).

Vessels would have no other purse seine fishing opportunities available in the Pacific Ocean during the closure period, so it is possible that many or all vessels in the fleet would cease fishing for most or all of the closure period.

Given the length of the closure period, this element of Alternative G could be expected to lead to some adverse economic consequences for the fleet. Average revenue, by vessel, for 2017-2019 reveals that average annual revenue was $8,890,000 (NMFS unpublished data combined with price data from https://www.ffa.int/node/425 and https://www.wcpfc.int/node/46580 accessed on July 27, 2020). The closure under Alternative G could lead to a large reduction in the revenue generated by the fleet, which, depending on how much of this reduction in revenue is experienced by individual businesses, could cause vessel owners and operators to leave the purse seine fishery and seek other opportunities. Exactly what those opportunities would be is difficult to predict. The one other opportunity that is reasonable to consider for the purposes of this analysis is that vessels may be reflagged to other countries with fleets that operate in the WCPO, since business operations would be more similar to existing business operations than other opportunities (i.e., vessel owners and operators could continue to fish for tuna in the WCPO rather than having to fish for tuna or other species elsewhere or having to undertake training or lifestyle changes to pursue other careers).

The effects on fishing patterns and practices of the fleet from the remaining elements of Alternative G would be identical to those under Alternative E. However, should the three-month closure period overlap with the FAD setting prohibition period, then the transfer of fishing effort to unassociated sets during the FAD setting prohibition period with resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin and skipjack tuna and likely less bigeye tuna – would not be expected to occur.

2.1.8 Alternative H, Most Restrictive Without High Seas FAD Closure

This alternative would be the same as Alternative C, except that there would be no prohibition on fishing on FADs on the high seas for U.S. purse seine vessels in 2021

90 days in length, and there is an annual limit of 32 such trips for the entire SPTT-licensed fleet (50 CFR 300.22(b)(1)).

through 2025. Thus, the effects to the fishing patterns and practices of the fleet would be the same as under Alternative C, except that there would be no potential additional transfer of fishing effort from FAD sets to unassociated sets on the high seas or to FAD sets in the U.S. EEZ and in PIPs EEZs in calendar years 2021-2025 from a FAD setting prohibition period on the high seas.

2.1.9 Alternative I, Variation of Status Quo 1 (Meaning Variation of Regulations in Effect in 2021)

This alternative would be identical to the regulations that are in place for 2021 and would include the regulations that NMFS anticipates implementing in the near future. Under this alternative, the provisions that would apply to U.S. purse seine vessels for each of the calendar years 2021-2025, would be a U.S. purse seine fishing effort limit of 1,828 fishing days in the ELAPS, a three month FAD setting prohibition period in the entire Convention Area, a two month FAD setting prohibition period on the high seas, a limit of 350 active FADs per purse seine vessel, catch retention requirements for purse seine vessels, and FAD design requirements for purse seine vessels. Most of the elements for purse seine vessels would apply between the latitudes of 20° N. and 20° S., and the active FAD limit, catch retention requirements, and FAD design requirements would apply in the entire Convention Area. This alternative would also include the temporary suspension of the following for a period of time no longer than one year: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers.

2.1.9.1 Fishing Effort Limit

As indicated in Table 5, the fleet spent an average of approximately 4% of its total effort per year in the U.S. EEZ and 20% of its total effort per year on the high seas (in terms of days fished), and the remainder (or 76%) in the EEZs of PIPs to the SPTT. It is uncertain whether the limit would be reached under this alternative for each of the years 2021-2025. However, should the limit be reached, the fishery would be closed on the high seas and in the U.S. EEZ for the remainder of the calendar year. The length of any such closure cannot be predicted with any degree of certainty, due to the large variation in the number of days fished in the U.S. EEZ and on the high seas from year to year, as shown in Table 5. As indicated in Table 2, NMFS implemented the 1,828 fishing day purse seine effort limit in the ELAPS in 2014, 2015, 2016, and 2017, 2019, and 2020, and closed the fishery in the ELAPS three times in those years (in 2015, the fishery was closed in the ELAPS from June 15, 2015 through the end of the calendar year; in 2016, the fishery was closed in the ELAPS from September 2, 2016 through the end of the year; in 2019, the fishery was closed in the ELAPS on October 9 through November 29, 2019 and then again from December 10, 2019 through the end of the calendar year).

If the limit is reached in any year, vessels in the fleet could continue to fish in the EEZs of PIPs to the SPTT, where the fleet expends the majority of its effort, as shown in Table 5, above. Vessels in the fleet would also have the option to continue to fish in the EPO in the area managed by the IATTC, subject to NMFS regulations implementing IATTC decisions.

Under the terms of the amended SPTT, the fleet may have a number of fishing days available in EEZs of the Pacific Island countries that are parties to the SPTT.[35]

With respect to fishing in the EPO, U.S. purse seine vessels have been fishing more in the EPO in recent years (see NMFS 2020a). In order to fish in the EPO, a vessel must be on the IATTC's Regional Vessel Register and categorized as active (50 CFR 300.22(b)).[36] In addition, as stated in the Executive Summary of this document, NMFS recently published a final rule to change management in the overlap area (area of overlapping jurisdiction between the WCPFC and the IATTC). The ELAPS limits and any closure in the ELAPS would not apply in the overlap area, so there are greater fishing opportunities in the EPO than previously. There are currently 16 U.S. purse seine vessels listed on both the WCPFC Record of Fishing Vessels and the IATTC Regional Vessel Register. However, the IATTC has adopted capacity limits for purse seine vessels operating in the EPO, and the United States has very little remaining of its allocated capacity (as of May 4, 2021, 3,287 cubic meters of available capacity remained). [37]

The effort limit could change the temporal patterns of fishing effort. Since the limit would be a competitive allocation whereby high seas, U.S. EEZ, or ELAPS fishing days would not be allocated among individual vessels and would be available to the entire fleet until the cap is reached, some vessel operators might have an incentive to fish harder in these areas earlier in the calendar year than they otherwise would in an attempt to obtain as many fishing days as they can (i.e., "the race to fish") before the limit is reached. To the extent such a shift does occur, it would affect the seasonal timing of deliveries to

[35] These include Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

[36] As an exception to this rule, an SPTT-licensed vessel is allowed to make one fishing trip in the EPO each year without being categorized as active on the IATTC Regional Vessel Register. The trip must not exceed 90 days in length, and there is an annual limit of 32 such trips for the entire SPTT-licensed fleet (50 CFR 300.22(b)(1)).

[37] Regulations at 50 CFR 300.25(e) require U.S. purse seine vessels to observe one of two closure periods in the EPO in the area managed by the IATTC in 2021 – July 29 through October 8 or November 9 through January 19, 2022. Similar measures may be in effect in the years 2022-2025, if the IATTC adopts such measures and NMFS implements them through regulations. Should the purse seine fishery closure in the Convention Area overlap with the fishery closure in the EPO, U.S. WCPO purse seine vessels would not have the option of continuing to the fish in the EPO.

canneries. A race to fish could also bring costs if it causes vessel operators to forego vessel maintenance or to fish in weather or ocean conditions that it otherwise would not. This could bring costs in terms of human safety as well as the performance of the vessel and its fishing gear and crew, but the effects are not expected to be substantial, as the fleet does not exert the majority of its fishing effort in the ELAPS. This race to fish effect could also be expected in the time period between when a closure of the fishery is announced and when the fishery is closed.

Overall, though hard to predict, 2021-2025 could be years in which the U.S. EEZ or high seas provides more attractive fishing grounds than usual, and in that case, the fleet could be restricted by the effort limits. On the other hand, since the fleet generally spends more fishing days in areas outside of the ELAPS, it is possible that there could be no overall change in the amount of fishing effort of the fleet in 2021-2025 compared to the No-Action Alternative.

The effort limits could change the temporal patterns of fishing effort. Since the limits would be a competitive allocation whereby fishing days would not be allocated among individual vessels and would be available to the entire fleet until the cap is reached, some vessel operators have an incentive to fish harder in these two areas earlier in the calendar year than they otherwise would in an attempt to obtain as many fishing days as they can (i.e., "the race to fish") before the limits are reached. To the extent such a shift does occur, it would affect the seasonal timing of deliveries to canneries. A race to fish could also bring costs if it causes vessel operators to forego vessel maintenance or to fish in weather or ocean conditions that it otherwise would not. This could bring costs in terms of human safety as well as the performance of the vessel and its fishing gear and crew, but the effects are not expected to be substantial.

2.1.9.2 FAD Setting Prohibition Period

Under this alternative, there would be a prohibition on setting on FADs and on fish that have aggregated in association with a fishing vessel, in the Convention Area between the latitudes of 20° North and 20° South, for three months of the year for each of the years 2021 through 2025 (for the purposes of this analysis, the three months are not specified, and could be any three months of each calendar year). This element of Alternative I would be identical to the same element under Alternative B.

2.1.9.3 High Seas FAD Closure

Under this alternative, the U.S. WCPO purse seine fleet would be prohibited from fishing on FADs on the high seas in two months of each calendar year in 2021-2025. For the purposes of this analysis, those two months could take place any time in the year. Table 9 shows the number of total sets and FAD sets in the U.S. EEZ, on the high seas, and in the

EEZs of PIPs from 1997-2019. The table indicates that the fleet makes a sizable proportion of FAD sets on the high seas each year in comparison to total sets, but the proportion varies each year. As indicated above and in Table 5, Table 6, and Figure 1, catch, effort, and number of FAD sets for the fleet varies from year to year, and is influenced by various factors, including oceanographic and economic conditions. The data also indicate that the high seas appear to be no different in importance relative to the other fishing grounds in terms of FAD sets. During 1997-2019, on average, the high seas accounted for about 18% of total FAD sets— slightly less than for all sets (about 19%). This was also the case in more recent years; in 2009-2019, when FAD closure periods were in effect, the high seas accounted for about 18% of all sets, on average, and about 14% of FAD sets.

As indicated in Table 5, the fleet spent an average of approximately 4% of its total effort per year in the U.S. EEZ and 20% of its total effort per year on the high seas (in terms of days fished), and the remainder (or 76%) in the EEZs of PIPs to the SPTT. Thus, under Alternative I, the fleet would still be able to fish on FADs throughout the 9 months of the calendar year in which FAD sets would be allowed in the remainder of the Convention Area.

The prohibition on fishing on FADs on the high seas for two months could cause the fleet to transfer some of its effort from associated sets to unassociated sets during those two months, if it continues to fish at the same rate on the high seas, or could cause the fleet to transfer its effort from the high seas to the U.S. EEZ or to PIP EEZs, so that it could fish more on FADs in the U.S. EEZ or in the EEZ of PIP. Should the high seas FAD setting prohibition result in fewer overall FAD sets, there could be resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin tuna and more larger-sized skipjack tuna, and likely less bigeye tuna. As shown in Table 6, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known.

As stated above, as shown in Figure 3 of this SEA, during the time periods when the FAD restrictions were in effect, there was no substantial change in the proportion of the fleet that fished during those months in each of those years when compared to the proportion that fished during those months in 1997-2008 when no FAD setting restrictions were in place. In addition, the fleet would be able to fish on FADs in the U.S. EEZ and PIP EEZs when the high seas are closed to FAD fishing.

If the high seas FAD prohibition period takes place towards the end of the year (e.g., November and December, as is set forth in the current regulations at 50 CFR 300.223(b)(2)(ii)), the fishing effort limit in the ELAPS may be reached and the fishery closed on the high seas, so the two month FAD prohibition would be expected to have little or no effect on overall fishing patterns and practices.

2.1.9.4 Active FAD Limit

Under Alternative I, there would be a limit of 350 active FADs per purse seine vessel at any one time in the Convention Area from the years 2021-2025. The effects of this element of the alternative would be identical to the effects of this element under Alternative E.

2.1.9.5 Catch Retention Requirements

Under Alternative I, U.S. purse seine vessels would be required to retain on board at all times while at sea within the Convention Area any bigeye tuna, yellowfin tuna, or skipjack tuna, except in the following circumstances and with the following conditions:

> 1) Fish that are unfit for human consumption, including but not limited to fish that are spoiled, pulverized, severed, or partially consumed at the time they are brought on board, may be discarded;
> 2) If at the end of a fishing trip there is insufficient well space to accommodate all the fish captured in a given purse seine set, fish captured in that set may be discarded, provided that no additional purse seine sets are made during the fishing trip;
> 3) If a serious malfunction of equipment occurs that necessitates that fish be discarded.

The effects of this element of the alternative would be identical to the effects of this element under Alternative E.

2.1.9.6 FAD Design Requirements

Under Alternative I, U.S. purse seine vessels would be required to design FADs so that there is less risk of entangling non-target and bycatch species. FADs would be required to meet the provisions of CMM 2018-01 that include the following specifications:

- The floating or raft part (flat or rolled structure) of the FAD can be covered or not. To the extent possible the use of mesh net should be avoided. If the FAD is covered with mesh net, it must have a stretched mesh size less than 7 cm (2.5

inches) and the mesh net must be well wrapped around the whole raft so that there is no netting hanging below the FAD when it is deployed.
- The design of the underwater or hanging part (tail) of the FAD should avoid the use of mesh net. If mesh net is used, it must have a stretched mesh size of less than 7 cm (2.5 inches) or tied tightly in bundles or "sausages" with enough weight at the end to keep the netting taut down in the water column. Alternatively, a single weighted panel (less than 7 cm (2.5 inches) stretched mesh size net or solid sheet such as canvas or nylon) can be used.

The effects of this element of the alternative would be identical to the effects of this element under Alternative C.

2.1.9.7 Temporary Measures

Alternative I would include the temporary suspension of the following regulations for a period of time no longer than one year: purse seine observer coverage; prohibition on purse seine transshipment anywhere at sea; at-sea transshipment observers. These effects of these elements of Alternative I would be identical to the effects of these elements under Alternative B.

2.1.9.8 Summary of Effects under Alternative I

Under Alternative I, the purse seine effort limit of 1,828 fishing days in the ELAPS may be reached in each of the calendar years 2021-2025, which could either reduce overall purse seine fishing effort or shift effort to PIPs EEZs or the EPO. During the three month FAD setting prohibition period, fishing effort could be transferred to unassociated sets, with resulting consequences on the composition of the catch – perhaps more larger-sizedyellowfin and skipjack tuna and likely less bigeye tuna. As shown in Table 6, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known. The two month high seas FAD setting prohibition period in each of the calendar years 2021-2025 could also transfer effort to unassociated sets on the high seas or to FAD sets in the U.S. EEZ or in PIPs EEZs. The active FAD limit could also transfer effort from FAD sets to unassociated sets with the effects described above. The catch retention requirements may affect the amount and type of catch that would be unloaded by certain vessels in the fleet (i.e., the vessels that land in port rather than transship in port). The FAD design requirements are not expected to substantially affect the fishing patterns and practices of the fleet. The

temporary suspension of observer coverage requirements, the at-sea transshipment prohibition, the at-sea transshipment observer requirements, and the identified MCS measures are also unlikely to affect the fishing patterns and practices of the fleet in any meaningful way.

2.1.10 Alternative J, Variation of Status Quo 2 (Meaning 2nd Variation of Regulations in Effect in 2021)

This alternative would the same as Alternative I, except that the U.S. purse seine fishing effort limit would be 1,270 fishing days per year on the high seas and 558 fishing days per year in the U.S. EEZ. As indicated in Table 5, the fleet spent an average of approximately 4% of its total effort per year in the U.S. EEZ and 20% of its total effort per year on the high seas (in terms of days fished), and the remainder (or 76%) in the EEZs of PIPs to the SPTT. It is uncertain whether the limits would be reached under this alternative for each of the years 2021-2025. However, should either or both of the limits be reached, the fishery would be closed on the high seas or in the U.S. EEZ for the remainder of the calendar year. The length of any such closure cannot be predicted with any degree of certainty, due to the large variation in the number of days fished in the U.S. EEZ and on the high seas from year to year, as shown in Table 5. As indicated in Table 2, NMFS implemented a separate limit of 1,370 fishing days for the high seas and 458 fishing days for the U.S. EEZ in 2018. The limit on the high seas was reached and the fishery was closed from September 18, 2018 through the rest of the calendar year. The U.S. EEZ limit was not reached.

If the limits are reached in any year, vessels in the fleet could continue to fish in the EEZs of PIPs to the SPTT, where the fleet expends the majority of its effort. Vessels in the fleet could also continue to fish in the EPO in the area managed by the IATTC.

Overall, 2021-2025 could be years in which the U.S. EEZ or high seas provides more attractive fishing grounds than usual, and in that case, the fleet could be restricted by the effort limits.

The effort limits could change the temporal patterns of fishing effort. Since the limits would be a competitive allocation whereby fishing days would not be allocated among individual vessels and would be available to the entire fleet until the cap is reached, some vessel operators might have an incentive to fish harder in these two areas earlier in the calendar year than they otherwise would in an attempt to obtain as many fishing days as they can (i.e., “the race to fish”) before the limit is reached. To the extent such a shift does occur, it would affect the seasonal timing of deliveries to canneries. A race to fish could also bring costs if it causes vessel operators to forego vessel maintenance or to fish in weather or ocean conditions that it otherwise would not. This could bring costs in terms of human safety as well as the performance of the vessel and its fishing gear and

crew, but the effects are not expected to be substantial, as the fleet does not exerts the majority of its fishing effort in the ELAPS. This race to fish effect could also be expected in the time period between when a closure of the fishery is announced and when the fishery is closed.

In addition, since the fleet generally spends more fishing days in areas outside of the ELAPS, it is possible that there could be no overall change in the amount of fishing effort of the fleet in 2021-2025 compared to the No-Action Alternative.

Alternative J would be essentially the same as Alternative I except that under Alternative J, the U.S. purse seine fishery on the high seas and in the U.S. EEZ could be closed at different times (i.e., the high seas could be closed to fishing before the U.S. EEZ is closed to fishing or vice versa). Currently eleven vessels in the fleet are authorized to fish in the U.S. EEZ, so if the limit on the high seas is reached first, the eleven vessels authorized to fish in the U.S. EEZ may fish harder in the U.S. EEZ than they otherwise would. If the limit in the U.S. EEZ is reached first, the eleven vessels authorized to fish in the U.S. EEZ may fish harder on the high seas than they otherwise would. However, as stated above, other factors, such as climate and ocean conditions, affect the location of optimal fishing grounds for the fleet, and so those other factors would affect whether the eleven vessels authorized to fish in the U.S. EEZ would fish harder in either location if one limit is reached before the other. Based on available data, it is more likely that the high seas would be closed and that the limit in the U.S. EEZ would not be reached.

The effects on fishing patterns and practices of the fleet from the remaining elements of Alternative J would be identical to those under Alternative I.

2.1.11 Alternative K, Variation of Temporary Specification 1 (Meaning a Variation of the Temporary Specifications that Would Be in Effect)

This alternative would be the same as Alternative I, except that the temporary suspension of observer coverage would include substitutions, such as electronic monitoring, photographic information, or the collection and submission of specific written information, or use of observers trained to monitor other gear types, and the temporary suspension of the prohibition on purse seine transshipments at sea would be limited to areas under the national jurisdiction of the port State.

The temporary suspension of purse seine observer coverage, including substitutions, such as electronic monitoring or use of observers trained to monitor other gear types, would be unlikely to affect current fishing patterns and practices in a substantial manner. When the regulations at 50 CFR 300.223(e) for purse seine observer coverage were first implemented in 2009, NMFS calculated that the costs per year would be $5,700 per vessel for observer accommodations and between $33,400 to $43,200 per vessel for

observer deployments (see initial regulatory flexibility analysis in 74 FR 26160 (published June 1, 2009)). Adjusting for inflation, the costs would be approximately $6,850 per vessel for observer accommodations and between $40,135 to $51,911 per vessel for observer deployments in 2020 (see https://www.usinflationcalculator.com/). Average revenue, by vessel, for 2017-2019 reveals that average annual revenue was $8,890,000 (NMFS unpublished data combined with price data from https://www.ffa.int/node/425 and https://www.wcpfc.int/node/46580 accessed on July 27, 2020). The temporary suspension of purse seine observer coverage could provide some cost savings to the fleet, but those cost savings would be offset by any costs for substitutions of observer coverage, such as the costs for electronic monitoring or the costs to use observers trained to monitor other gear types. The costs to use observers trained to monitor other gear types would likely be similar to the costs for the FFA observer currently used. The costs for each vessel to implement an electronic monitoring system are unknown, but the start-up costs for purchasing and installing equipment could be substantial.[38] Photographic information or the collection of specific written requirements could also lead to some costs, but those costs are not possible to quantify at this time. It is unlikely that any cost changes (either savings from suspension of observer coverage or costs from substitutions) would affect overall fishing patterns and practices (i.e., vessels would be unlikely to fish more or less due to the costs savings or changed costs). Such costs would likely be much less than the overall revenue that could be obtained by a vessel if it continued to fish. In addition, vessels would be unlikely to change fishing routes or locations due to suspension of observer coverage or substitutions of observer coverage. Vessel operators currently coordinate observer deployments with FFA to accommodate their planned trip departure locations and port calls; observers from other gear types that could be used to monitor trips would likely be from a NMFS observer program and NMFS would work with vessel operators to accommodate planned trip departure locations and port calls. However, it may be necessary initially to modify planned trip routes to return observers that are already on board the vessel to specific ports.[39]

[38] A recent study suggests that initial costs to implement an electronic monitoring program in a fishery could range from $30,654 to $130,777 per vessel for program management, equipment purchase, and equipment installation, and that the annual costs per fishery would depend on many factors, including fishing effort and level of observer coverage. The study suggests that an electronic monitoring program could be within 50% to 150% of the costs of an at-sea observer program, depending on the characteristics of the fishery and the resource management system (Sylvia G. et al. 2016).

[39] Vessel owners would likely be responsible for the costs of repatriation or return to port of any observer on the vessel. While these costs are difficult to predict, they could be substantial and would counteract any cost savings from the temporary suspension of the observer coverage requirements. However, NMFS has information to indicate that NMFS has information to indicate that repatriation has been completed for the U.S. purse seine vessels operating in the Convention Area, so such a cost is unlikely to be incurred in the reasonably foreseeable future.

The temporary suspension on the prohibition on purse seine transshipment at sea to locations under the national jurisdiction of the port State could lead to some minor changes in fishing patterns and practices. Vessels in the fleet would transship in different locations than they have in the past. However, under this alternative, it is likely such locations would be restricted to certain areas close to ports that are designated for transshipment by the port State. Thus, this aspect of Alternative K is not expected to substantially affect fishing patterns and practices of the fleet.

The effects on fishing patterns and practices of the fleet from the remaining elements of Alternative K would be identical to those under Alternative I.

2.1.12 Alternative L, Variation of Temporary Specifications 2 (Meaning a Variation of the Temporary Specifications that Would Be in Effect)

This alternative would be the same as Alternative K, except that the temporary suspension of observer coverage would require a reduced observer coverage amount of 20% from the 100% observer coverage currently in place. This reduced purse seine observer coverage, would be unlikely to affect current fishing patterns and practices in a substantial manner. When the regulations at 50 CFR 300.223(e) for purse seine observer coverage were first implemented in 2009, NMFS calculated that the costs per year would be $5,700 per vessel for observer accommodations and between $33,400 to $43,200 per vessel for observer deployments (see initial regulatory flexibility analysis in 74 FR 26160 (published June 1, 2009)). Adjusting for inflation, the costs would be approximately $6,850 per vessel for observer accommodations and between $40,135 to $51,911 per vessel for observer deployments in 2020 (see https://www.usinflationcalculator.com/). Average revenue, by vessel, for 2017-2019 reveals that average annual revenue was $8,890,000 (NMFS unpublished data combined with price data from https://www.ffa.int/node/425 and https://www.wcpfc.int/node/46580 accessed on July 27, 2020). The reduced purse seine observer coverage could provide some cost savings to the fleet, but those cost savings would be unlikely to substantially affect fishing patterns or practices. In addition, vessels would be unlikely to change fishing routes or locations due to reduced observer coverage. Vessel operators currently coordinate observer deployments with FFA to accommodate their planned trip departure locations and port calls. However, it may be necessary initially to modify planned trip routes to return observers that are already on board the vessel to specific ports.[40]

[40] Vessel owners would likely be responsible for the costs of repatriation or return to port of any observer on the vessel. While these costs are difficult to predict, they could be substantial and would counteract any cost savings from the temporary suspension of the observer coverage requirements. However, NMFS has information to indicate that repatriation has been completed for the U.S. purse seine vessels operating in the Convention Area, so such a cost is unlikely to be incurred in the reasonably foreseeable future.

The effects on fishing patterns and practices of the fleet from the remaining elements of Alternative L would be identical to those under Alternative I.

2.1.13 Alternative Multiyear Limits

This alternative would be the same as Alternative B for the purse seine fleet, except that the purse seine fishing effort limit would be applied on a multiyear basis. Rather than being calendar year annual limits, the limit would be applied to three-year periods. This alternative would allow for more operational flexibility for the fleet. As indicated in Table 5 and Table 6, the fishing effort of the fleet as well as the catch of the fleet varies considerably from year to year and is largely dependent on oceanographic and economic factors. With a multiyear effort limit, the fleet could take advantage of this variability and fish more in one year and less in another year without exceeding a specific calendar year limit. Thus, it is less likely that the limit would be reached under this alternative than under Alternative B.

If a limit is reached in a given calendar year, the fishery would be closed in the area where the limit is reached (high seas, U.S. EEZ, or ELAPS for a combined limit) for the remainder of the calendar year, which would likely reduce the overall fishing effort of the fleet. Although the length of any such closure cannot be predicted with any degree of certainty, due to the large variation in the number of days fished in the U.S. EEZ and on the high seas from year to year, the fishery was closed in recent years as follows: (1) in 2015, the ELAPS was closed to purse seine fishing from June 15, 2015 to the end of the calendar year; (2) in 2016, the ELAPS was closed to purse seine fishing from September 2, 2016 to the end of the calendar year; (3) in 2018, the high seas was closed from September 18, 2018 to the end of the calendar year; and (4) in 2019, the ELAPS was closed October 9 through November 29, 2019 and then again from December 10, 2019 through the end of the calendar year.

The consequences of any fishery closure and the factors influencing the likelihood of a closure would be the same as discussed above, under Alternative B. The effects on fishing patterns and practices of the fleet from the remaining elements of Alternative N would be identical to those under Alternative B.

2.2. The Hawaii-Based Deep-Set and Shallow-Set Longline Fisheries

The direct and indirect effects to the Hawaii-based deep-set and shallow-set longline fisheries from implementation of each of the alternatives would fall into two categories: (1) economic; and (2) changes to fishing patterns and practices. General information

regarding economic impacts is provided in the discussion below to help compare the alternatives assessed and to determine whether the economic impacts are interrelated with environmental impacts. More specific information regarding economic impacts would be provided for each regulatory action undertaken by NMFS to implement the elements of the proposed action through preparation of a Regulatory Impact Review (RIR), prepared under Executive Order 12866. The RIR for the rulemaking to establish the framework process to implement short-notice WCPFC decisions includes analysis of the temporary specifications that would be implemented under the framework. The potential impacts from implementation of each of the alternatives to each of the potentially affected resources are analyzed in Sections 2.5 to 2.10.

2.2.1 Alternative A, the No-Action Alternative

Under Alternative A, the No-Action Alternative, the Hawaii-based deep-set and shallow-set longline fisheries would continue to be managed under existing regulatory requirements. Thus, under this alternative there would be no direct changes to the fishing patterns and practices of the fleet.

As described in Section 1.1 of this SEA, the purpose of NMFS' domestic implementation of WCPFC decisions on tropical tunas through 2025, is to contribute to the underlying objectives of the Commission's management of tropical tuna stocks in the WCPO, which, as stated in CMM 2018-01, are, pending the establishment of harvest strategies, and any implementing CMM, to provide for a robust transitional management regime that ensures the sustainability of bigeye, skipjack, and yellowfin tuna stocks. The purpose of NMFS' domestic process to implement short-notice WCPFC decisions is to respond to urgent situations in a timely manner. The need for the domestic implementation of WCPFC decisions on tropical tunas and WCPFC decisions that require immediate action is to satisfy the obligations of the United States as a Contracting Party to the Convention, pursuant to the authority of the WCPFCIA.

There are unlikely to be indirect effects to the fleet under the No-Action Alternative. As stated in Section 1.3.6 of this SEA, the stocks of bigeye tuna, yellowfin tuna, and skipjack tuna in the WCPO are not subject to overfishing nor are they overfished. The management measures for the Hawaii-based deep-set and shallow-set longline fisheries would implement catch limits for bigeye tuna and yellowfin tuna for the years 2021-2025. Thus, it is conceivable that under this alternative the indirect effects (or long-term effects) would be that the objectives of the proposed action would be less likely to be reached, for the sustainability of tropical tuna stocks would be less likely to be reached, because the specific management measures would not be in effect. This could be expected to adversely affect the catch rates of the Hawaii-based deep-set and shallow-set longline fisheries to maintain catch levels and the profitability of fishing businesses. However, many other factors affect the stock status of bigeye tuna, yellowfin tuna, and skipjack tuna in the WCPO (such as oceanographic conditions and fishing by non-U.S.

fleets). Thus, there could be no indirect effects to the fleets under the No-Action Alternative.

2.2.2 Alternative B, Least Restrictive Action Alternative

Under this alternative, the management measures that would affect the Hawaii-based deep-set and shallow-set longline fisheries are a longline bigeye tuna catch limit of 5,000 mt in each of the calendar years 2021-2025 in the Convention Area and a longline yellowfin tuna catch limit of 1,142 mt in each of the calendar years 2021-2025 in the Convention Area. This alternative would also include the temporary suspension of the following regulations that currently apply to longline vessels for a period of time no longer than one year: at-sea transshipment observers; MCS measures.

NMFS could implement the catch limits in one of the following ways: (1) closing the deep-set fishery once one of the catch limits is reached; (2) closing both the deep-set and shallow-set fisheries once one of the catch limits is reached; or (3) prohibiting the retention, landing, or transshipping of bigeye tuna and yellowfin tuna, respectively, when each of the catch limits are reached. Each of these options is discussed in the sections that follow.

2.2.2.1 Alternative B, Option 1: Closure of the Deep-Set Fishery

If the deep-set fishery is closed once one of the catch limits is reached in a given calendar year, it would be prohibited to use a U.S. fishing vessel to deploy longline gear in the Convention Area, to retain on board bigeye tuna or yellowfin tuna captured by longline gear in the Convention Area, or to land or transship bigeye tuna or yellowfin tuna captured by longline gear in the Convention Area. Exempt from the prohibitions would be the use of a vessel to deploy longline gear in a shallow-set manner to target swordfish. Also, any bigeye tuna or yellowfin tuna on board at the time of the closure may be retained on board and landed. If a vessel's catch is attributed to the longline fishery of one of the U.S. territories participating in the WCPFC (American Samoa, Guam, or the CNMI, collectively U.S. Participating Territories), the vessel could continue to fish using deep-set longline gear and land bigeye tuna and yellowfin tuna. The criteria for catch attribution to one of the Participating Territories includes: (1) the fish is landed in one of the U.S. Participating Territories, provided that it was not caught in the portion of the U.S. EEZ other than the portion of the U.S. EEZ surrounding the territory in which it was landed and is landed by a U.S. fishing vessel operated in compliance with a valid permit issued under the Pelagics FEP or Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (West Coast FMP); (2) the fish is caught by a vessel registered for use under a valid American Samoa Longline Limit Access Permit, not caught in the portion of the U.S. EEZ other than the portion of the U.S. EEZ surrounding American Samoa, and is landed by a U.S. fishing vessel operated in

compliance with a valid permit issued under the Pelagics FEP or West Coast HMS FMP; or (3) the fish is caught by a vessel that is included in a specified fishing agreement under 50 CFR 665.819(c) and can be attributed in accordance with the specified fishing agreement to one of the Participating Territories, subject to applicable regulations for such specified fishing agreements.

The closure of the deep-set fishery could cause changes to the fishing patterns and practices of the vessels in the Hawaii longline fisheries. If and when the maximum allowable amount of bigeye tuna or yellowfin tuna retained catch is reached in a given year, affected fishing businesses would be expected to cease fishing for the remainder of the calendar year or to shift from deep-setting in the WCPO to the next best opportunity. Although those opportunities cannot be predicted with certainty, two opportunities that would appear to be attractive to vessels in the fisheries include shallow-setting (i.e., for swordfish) and deep-setting for bigeye tuna or yellowfin tuna in other areas, specifically the EPO. Making such shifts would bring opportunity costs to the affected fishing operations, but the magnitude of those costs cannot be projected. NMFS has implemented the longline bigeye tuna catch limit in IATTC Resolution C-20-05 ("Resolution on Conservation and Management Measures for Tropical Tunas in 2021") (86 FR 5033; January 19, 2021) for 2021. This catch limit is set at 750 mt for U.S. longline vessels over 24 meters in overall length operating in the EPO (i.e., the IATTC's area of competence). If the IATTC adopts similar limits that NMFS implements in 2022-2025, U.S. longline vessels fishing in the EPO during the period of time the prohibitions are in effect would be subject to such limits.

Because the limits would be set on a calendar year basis, the "race to fish" effect would be expected at the beginning of the calendar year, and the closure of the deep-set sector of the fishery would be expected toward the end of the calendar year, based on catch levels in recent years, as set forth in Table 10 and Table 11. A race to fish could cause vessel operators to forego vessel maintenance or to fish in weather or ocean conditions than they otherwise would not, which could affect human safety and the performance of the vessel and the fishing gear and its crew. This race to fish effect could also be expected in the time period between when closure of deep-setting is announced and when the closure takes place. The degree of the race to fish effect cannot be predicted with certainty. However, given that fishing effort and catch is dependent on many other factors (e.g., ocean conditions and market conditions), it is unlikely that any adverse effects would be substantial.

Vessels operating as part of the fisheries of the U.S. Participating Territories under the criteria specified above after the catch limits are reached, would be unaffected by the catch limits. Depending on the number of vessels that operate as part of the fisheries of the U.S. Participating Territories after the catch limits are reached, the effects on fishing

patterns and practices from this option could be similar, if not identical to, the No-Action Alternative (e.g., if all vessels operate as part of the fisheries of the U.S. Participating Territories after the catch limits are reached).

2.2.2.2 Alternative B, Option 2: Closure of Both the Deep-Set and Shallow-Set Fisheries

If both the deep-set and shallow-set fisheries are closed once a catch limit is reached in a given calendar year, no U.S. vessels would be allowed to conduct longline fishing operations in the Convention Area, except that any bigeye tuna or yellowfin tuna already on board a vessel at the time of the closure may be retained on board and landed. If a vessel's catch is attributed to the longline fishery of one of the U.S. Participating Territories, using the criteria specified above, the vessel could continue to fish using longline gear and land bigeye and yellowfin tuna.

The closure of the fisheries could cause changes to the fishing patterns and practices of the vessels in the Hawaii longline fisheries. If and when the maximum allowable amount of bigeye tuna or yellowfin tuna retained catch is reached in a given year, affected fishing businesses would be expected to cease fishing for the remainder of the calendar year or to shift to the next best opportunity. Although those opportunities cannot be predicted with certainty, one opportunity that would appear to be attractive to vessels in the fisheries is deep-setting for bigeye tuna or yellowfin tuna in other areas, specifically the EPO. Making such a shift would bring opportunity costs to the affected fishing operations, but the magnitude of those costs cannot be projected. NMFS has implemented the longline bigeye tuna catch limit in IATTC Resolution C-20-05 ("Resolution on Conservation and Management Measures for Tropical Tunas in 2021") (86 FR 5033; January 19, 2021) for 2021. This catch limit is set at 750 mt for U.S. longline vessels over 24 meters in overall length operating in the EPO (i.e., the IATTC's area of competence). If the IATTC adopts similar limits that NMFS implements in 2022-2025, U.S. longline vessels fishing in the EPO during the period of time the prohibitions are in effect would be subject to such limits.

Because the limits would be set on a calendar year basis, the "race to fish" effect would be expected at the beginning of the calendar year, and the closure of the fisheries would be expected toward the end of the calendar year. A race to fish could cause vessel operators to forego vessel maintenance or to fish in weather or ocean conditions than they otherwise would not, which could affect human safety and the performance of the vessel and the fishing gear and its crew. This race to fish effect could also be expected in the time period between when closure of the fisheries is announced and when the closure takes place. The degree of the race to fish effect cannot be predicted with certainty. However, given that fishing effort and catch is dependent on many other factors (e.g., ocean conditions and market conditions), it is unlikely that any adverse effects would be substantial.

Vessels operating as part of the fisheries of the U.S. Participating Territories under the criteria specified above after the catch limits are reached, would be unaffected by the catch limits. Depending on the number of vessels that operate as part of the fisheries of the Participating Territories after the catch limits are reached, the effects on fishing patterns and practices from this option could be similar, if not identical to, the No-Action Alternative (e.g., if all vessels operate as part of the fisheries of the U.S. Participating Territories after the catch limits are reached).

2.2.2.3 Alternative B, Option 3: Prohibition on Retention, Landing, or Transshipping of Bigeye Tuna or Yellowfin Tuna

If NMFS prohibits the retention on board, landing, or transshipment of bigeye tuna when the bigeye tuna catch limit is reached and the retention on board, landing, or transshipment of yellowfin tuna when the yellowfin tuna catch limit is reached, the fisheries would not be closed. However, no bigeye tuna could be retained on board once the bigeye tuna catch limit is reached and no yellowfin tuna could be retained on board once the yellowfin tuna catch limit is reached, except that any bigeye tuna or yellowfin tuna already on board a vessel at the time of the closure may be retained on board and landed. If a vessel's catch is attributed to the longline fishery of one of the U.S. Participating Territories, using the criteria specified above, the vessel could continue to fish for and land bigeye and yellowfin tuna.

This option would be expected to cause changes to the fishing patterns and practices of the Hawaii-based longline fisheries. If and when the maximum allowable amount of bigeye tuna or yellowfin tuna retained catch is reached in a given year, affected fishing businesses would be expected to cease fishing for the remainder of the calendar year or shift from deep-setting for bigeye tuna and yellowfin tuna in the WCPO to the next best opportunity. Although those opportunities cannot be predicted with certainty, three opportunities that would appear to be attractive to vessels in the fishery include shallow-setting (i.e., for swordfish), deep-setting for bigeye tuna and yellowfin tuna in other areas, specifically the EPO, and deep-set longline fishing in the Convention Area for species other than bigeye tuna and yellowfin tuna. Making such shifts would bring opportunity costs to the affected fishing operations, but the magnitude of those costs cannot be projected. It is not known whether deep-setting for species other than bigeye tuna and yellowfin tuna in the Convention Area would be economically viable. Given the lack of this kind of fishing activity historically, it would appear to be more costly than shallow-setting or deep-setting for bigeye tuna and yellowfin tuna in the EPO. NMFS has implemented the longline bigeye tuna catch limit in IATTC Resolution C-20-05 ("Resolution on Conservation and Management Measures for Tropical Tunas in 2021") (86 FR 5033; January 19, 2021) for 2021. This catch limit is set at 750 mt for U.S. longline vessels over 24 meters in overall length operating in the EPO (i.e., the IATTC's area of competence). If the IATTC adopts similar limits that NMFS implements in 2021-

2025, U.S. longline vessels fishing in the EPO during the period of time the prohibitions are in effect would be subject to such limits.

Because the limit would be set on a calendar year basis, the "race to fish" effect would be expected at the beginning of the calendar year, and the prohibitions would be expected to go into effect at the end of the calendar year. This race to fish effect could also be expected in the time period between when announcement of the prohibition is made and when the prohibition takes place. The degree of the race to fish effect cannot be predicted with certainty. However, given that fishing effort and catch is dependent on many other factors (e.g., ocean conditions and market conditions), it is unlikely that any adverse effects would be substantial.

Vessels operating as part of the fisheries of the U.S. Participating Territories under the criteria specified above after the catch limits are reached, would be unaffected by the catch limits. Depending on the number of vessels that operate as part of the fisheries of the Participating Territories after the catch limits are reached, the effects on fishing patterns and practices from this option could be similar, if not identical to, the No-Action Alternative (e.g., if all vessels operate as part of the fisheries of the U.S. Participating Territories after the catch limits are reached).

2.2.2.4 Temporary Measures

The temporary suspension of at-sea transshipment observers would not be expected to substantially affect the fishing patterns and practices of longline vessels in the Hawaii-based longline fisheries. These vessels have conducted limited transshipments in the Convention Area in recent years. Thus, the requirement to carry an observer during at-sea transshipment or the suspension of the requirement is not expected to affect vessel operations.

2.2.3 Alternative C, Most Restrictive Action Alternative

Under this alternative, the management measures that would affect the Hawaii-based deep-set and shallow-set longline fisheries are a longline bigeye tuna catch limit of 2,090 mt in each of the calendar years 2021-2025 in the Convention Area and a longline yellowfin tuna catch limit of 421 mt in each of the calendar years 2021-2025 in the Convention Area. NMFS could implement the catch limits in one of the following ways: (1) closing the deep-set fishery once one of the catch limits is reached; (2) closing both the deep-set and shallow-set fisheries once one of the catch limits is reached; or (3) prohibiting the retention, landing, or transshipping of bigeye tuna and yellowfin tuna, respectively, when each of the catch limits are reached. Each option would have the same effects on the fisheries as those discussed for Alternative B, above. However, given that the amount of the catch limits would be substantially less than catch levels in recent years

(see Table 10 and Table 11), it is likely that the limits would be reached much earlier in the year, though difficult to predict exactly when the limits would be reached, given variability of catch from year to year.

2.2.4 Alternative I, Variation of Status Quo 1 (Meaning Variation of Regulations in Effect in 2021)

Under Alternative I, the management measure that would affect the Hawaii-based deep-set and shallow-set longline fisheries is a longline bigeye tuna catch limit of 3,554 mt in each of the calendar years 2021-2025 in the Convention Area. This alternative would also include the temporary suspension of the following regulations that currently apply to longline vessels for a period of time no longer than one year: at-sea transshipment observers.

NMFS could implement the catch limit in one of the following ways: (1) closing the deep-set fishery once one of the catch limits is reached; (2) closing both the deep-set and shallow-set fisheries once one of the catch limits is reached; or (3) prohibiting the retention, landing, or transshipping of bigeye tuna and yellowfin tuna, respectively, when each of the catch limits are reached. Each option would have the same effects on the fisheries as those discussed for Alternative B, above. This is the limit that was in place in 2016, 2018, 2019, and 2020, and is currently in place for 2021. Based on data for those years, it is likely that the limit would be reached sometime in the second half of the year.

Under this alternative, the effects on fishing patterns and practices of vessels in the Hawaii-based longline fisheries from the temporary suspension of the regulations regarding at-sea transshipment observers would be identical to the effects under Alternative B.

2.2.5 Alternatives D, E, F, G, H, J, K, and L

Alternatives D, E F, G, H, J, K, and L are variations to elements of the proposed action that are applicable to the U.S. WCPO purse seine fleet. Alternatives D and H would be identical to Alternative C in terms of effects on the fishing patterns and practices of the Hawaii-based deep-set and shallow-set longline fisheries. Alternatives E, F, and G would be identical to Alternative B in terms of effect on the fishing patterns and practices of the Hawaii-based deep-set and shallow-set longline fisheries. Alternatives J, K, and L would be identical to Alternative I in terms of effects on the fishing patterns and practices of the Hawaii-based deep-set and shallow-set longline fisheries.

Multiyear Limits

This alternative would be the same as Alternative B for the Hawaii-based longline fisheries, except the longline bigeye tuna catch limit and the longline yellowfin tuna catch limit would be applied on a multiyear basis. Rather than being calendar year annual limits, all of these limits would be applied to three-year periods. This alternative would allow for more operational flexibility for the fisheries. As indicated in Table 10 and Table 11, the catch in the fisheries varies from year to year and is dependent on oceanographic and economic factors. With multiyear catch limits, the vessels in the fisheries could take advantage of this variability and fish more in one year and less in another year without exceeding a specific calendar year limit. Thus, it is less likely that the catch limits would be reached under this alternative than under Alternative B.

2.3 Longline fisheries of the U.S. Participating Territories

As described in Chapter 3 of the 2015 PEA, the U.S. longline fisheries in the Convention Area include an American-Samoa based fishery that targets primarily albacore.[41] As explained above, because vessels operating as part of the longline fisheries of the U.S. Participating Territories would not be subject to the longline bigeye tuna catch limits or prohibitions that go into effect when the catch limits are reached, the fishing patterns and practices in the longline fisheries of the U.S. Participating Territories would not be expected to be affected by the catch limits under any of the action alternatives.

Under Alternatives B, E, F, G, I, J, K, and L, the temporary suspension of at-sea transshipment observers would not be expected to substantially affect the fishing patterns and practices of vessels in longline fisheries of U.S. Participating Territories. These vessels have not conducted transshipments in the Convention Area in recent years. Thus, the requirement to carry an observer during at-sea transshipment or the suspension of the requirement is not expected to affect vessel operations.

2.4 U.S. Albacore Troll Fisheries in the Convention Area

As described above, vessels in the U.S. South Pacific albacore troll fishery fish in the Convention Area and could be affected by implementation of the short-notice WCPFC decisions.

Under Alternatives B, E, F, G, I, J, K, and L, the temporary suspension of at-sea transshipment observers would not be expected to substantially affect the fishing patterns

[41] The Mariana Islands longline fishery mentioned in the 2015 PEA has not been active in recent years and is not discussed in this document.

and practices of vessels in the U.S. South Pacific albacore troll fishery. These vessels have conducted limited transshipments in the Convention Area in recent years. Thus, the requirement to carry an observer during at-sea transshipment or the suspension of the requirement is not expected to affect vessel operations.

2.5 Physical Environment and Climate Change

None of the alternatives (No-Action Alternative or any of the action alternatives) would be expected to cause direct or indirect effects to the physical environment of the WCPO. In addition, none of the alternatives would be expected to contribute to climate change. Under the action alternatives, implementation of the purse seine fishing effort limits, FAD setting restrictions and limits, purse seine closed periods, longline bigeye and yellowfin tuna catch limits, and temporary time or area closures, could marginally increase fuel use, if vessels in the fleet steam to locations farther than they otherwise would, due to any fishery closure or restriction that leads vessels to seek opportunities in locations than they otherwise would. However, the purse seine fishing effort limits, purse seine closed periods, longline bigeye and yellowfin tuna catch limits, and temporary time and area closures could also cause an overall decrease in fuel use if there is an overall decrease in fishing effort by the fleets. Moreover, given that the catch and effort of the fleets vary substantially from year to year, as shown in Table 5, Table 6, Table 10, Table 11, Table 12, and Table 13 of this SEA, the overall fuel use of the fleet would be expected to depend more on other factors (fuel price, market conditions, oceanographic changes affecting the location of the target tunas, etc.), and the action alternatives would not be expected to lead to increased emissions of greenhouse gases affecting climate change.

2.6 Bigeye Tuna, Skipjack Tuna, and Yellowfin Tuna

This section presents the analysis of the potential impacts that could be caused by the No-Action Alternative and each of the action alternatives analyzed in depth in this SEA to bigeye tuna, skipjack tuna, and yellowfin tuna in the WCPO – the three tropical tuna stocks managed by the Commission and the focus of CMM 2020-01.

2.6.1 Alternative A, the No-Action Alternative

Under Alternative A, the management measures in the action alternatives for the U.S. purse seine and longline fisheries in the Convention Area would not be implemented. Thus, there would be no direct changes to the fishing patterns of the fleet and no resulting direct effects to bigeye tuna, yellowfin tuna, or skipjack tuna.

As shown in Table 14 of this SEA, the stock of yellowfin tuna in the EPO is experiencing overfishing, but the stocks of bigeye tuna and skipjack tuna in the WCPO and EPO are not experiencing overfishing nor are they overfished. CMM 2020-01, the most recent WCPFC decision on tropical tunas, states that pending the establishment of harvest strategies, and any implementing CMM, the purpose of the measure is to provide for a robust transitional management regime that ensures the sustainability of bigeye, skipjack, and yellowfin tuna stocks. Because Alternative A would not implement the management measures for purse seine and longline fisheries, the objectives of the Commission for management of tropical tunas in 2021-2025 would be less likely to be met under this alternative than under any of the action alternatives. It is conceivable that the indirect effects (or long-term effects) of this alternative on bigeye tuna, yellowfin tuna, and skipjack tuna would be increased fishing pressure on stocks relative to the action alternatives, leading to a decline to sizes smaller than that which is capable of producing maximum sustainable yield.

On the other hand, many other factors (e.g., ocean conditions and market conditions) affect the status of these stocks. Thus, it is likely that the status of the stocks under the No-Action Alternative would not differ substantially from the status of the stocks under any of the action alternatives. Under this alternative, however, any minor beneficial effects that the stocks could experience from implementation of the action alternatives would not occur. Thus, there could be some marginal increased potential for long-term negative effects to the stocks over the action alternatives, although such effects cannot be predicted or estimated with certainty at this time.

2.6.2 Alternative B, Least Restrictive Action Alternative

As stated in Section 2.1.2 above, overall, Alternative B would be unlikely to substantially affect the fishing patterns and practices of the U.S. purse seine fleet fishing in the WCPO. Should the fishing effort limit in the ELAPS be reached in any of the years 2021-2025, the fleet could fish more in the EEZs of PIPs to the SPTT or in the EPO and could cause a reduction in the total fishing effort of the fleet, but it is unlikely that the limit would be reached under this alternative. The three month FAD setting prohibition period for each calendar year would likely lead to the transfer of some fishing effort from FAD sets to unassociated sets, with consequent impacts in terms of species composition of the catch. The temporary suspension of observer coverage requirements, the at-sea transshipment prohibition, the at-sea transshipment observer requirements, and the identified MCS measures are unlikely to affect the fishing patterns and practices of the fleet in any meaningful way.

As stated in Section 2.2.2 above, under Alternative B, the Hawaii-based longline fisheries could be affected when the longline bigeye tuna or yellowfin tuna catch limit is reached

in a given year. The degree of the effects would depend on which option NMFS uses to implement the catch limit (closure of deep-set fishery, closure of both deep-set and shallow-set fishery, or prohibition on retention, transshipment, and landing) and how many vessels operate as part of the fisheries of one of the U.S. Participating Territories after the limit is reached.

Alternative B would not be expected to substantially affect the fishing patterns and practices of the other affected fleets (longline vessels based in the U.S. Participating Territories or albacore troll vessels).

Should there be a reduction in overall fishing effort by the U.S. WCPO purse seine fleet and the vessels in the Hawaii-based longline fisheries under this alternative, there could be resulting effects on the stocks of bigeye tuna, yellowfin tuna, and skipjack tuna, which include direct beneficial impacts by reducing fishing mortality on the stocks over the No-Action Alternative, and indirect beneficial effects if the decreased fishing mortality leads to long-term positive effects on the stocks. The FAD setting prohibition period for the purse seine fleet could also lead to some beneficial direct and indirect effects on the stocks by reducing fishing mortality on bigeye tuna and also perhaps smaller yellowfin and skipjack tuna during the prohibition period. Although the fleet could target large unassociated yellowfin tunas during the prohibition period, any potential increased catch of larger yellowfin tuna would be ameliorated by reduced catches of smaller yellowfin tuna during the prohibition period, which may have a chance to move or recruit to a to a deeper, non-predominantly FAD associated life cycle that would provide benefits in terms of additional larger yellowfin tuna available to unassociated fishing. The effects of the FAD setting prohibition period on skipjack tuna are unknown.

Overall, because the fishing patterns and practices of fleets would not change substantially under Alternative B from the No-Action Alternative, and because many other factors contribute to the status of the stocks (fishing activities by non-U.S. fleets, oceanographic conditions, etc.), the direct and indirect effects to bigeye, yellowfin, and skipjack tuna from implementation of Alternative B would be expected to be small.

As discussed in Chapter 3 of the 2015 PEA, adult bigeye tuna, skipjack tuna, and yellowfin tuna are considered among the top predators of the tropical or warm pool marine ecosystem. Changes to the stocks of these species could lead to trophic interactive effects, including increased competition for prey species with other top predators. Larval and juvenile tunas are also a significant source of food for other marine species, such as fish, seabirds, porpoises, marine mammals, and sharks. Thus, increases in larval and juvenile tuna could increase the food available for these other species. It is unlikely that the effects of Alternative B to the stocks of bigeye, skipjack and yellowfin tuna would be large enough to impact the marine ecosystem. Overall, Alternative B would not be expected to cause substantial effects on biodiversity and ecosystem function.

2.6.3 Alternative C, Most Restrictive Action Alternative

As stated above, under Alternative C, the purse seine effort limit of 432 fishing days on the high seas and 25 fishing days in the U.S. EEZ would be likely to be reached in each of the calendar years 2021-2025, which could either reduce overall purse seine fishing effort or shift effort to PIPs EEZs or the EPO. The six-month total fishery closure could substantially reduce purse seine fishing effort in the Convention Area, which could lead to vessel owners and operators leaving the fishery and seeking other opportunities. If the FAD set limit is reached in any of the calendar years, fishing effort could be transferred to unassociated sets, with resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin and skipjack tuna and likely less bigeye tuna. As shown in Table 6, bigeye tuna account for a small percentage of the catch of the U.S. purse seine fleet operating in the WCPO. However, with respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known. The high seas FAD setting prohibition period in each of the calendar years 2021-2025 could also transfer effort to unassociated sets on the high seas or to FAD sets in the U.S. EEZ or in PIPs EEZs. The active FAD limit could also transfer effort from FAD sets to unassociated sets with the effects described above. The catch retention requirements may affect the amount and type of catch that would be unloaded by certain vessels in the fleet (i.e., the vessels that land in port rather than transship in port). The FAD design requirements are not expected to substantially affect the fishing patterns and practices of the fleet.

For the Hawaii-based longline fisheries, it is likely that the bigeye and yellowfin tuna catch limits would be reached much earlier in the year than under Alternative B. The degree of the effects on the fishing patterns and practices of the vessels in the fisheries would depend on which option NMFS uses to implement the catch limit (closure of deep-set fishery, closure of both deep-set and shallow-set fishery, or prohibition on retention, transshipment, and landing) and how many vessels operate as part of the fisheries of one of the U.S. Participating Territories after the limit is reached.

Alternative C would not be expected to substantially affect the fishing patterns and practices of the other affected fleets (longline vessels based in the U.S. Participating Territories or albacore troll vessels).

Fishing effort would likely be substantially reduced for the U.S. WCPO purse seine fleet and likely at least somewhat reduced for the Hawaii-based longline fisheries under this alternative. Thus, there could be resulting effects on the stocks of bigeye tuna, yellowfin

tuna, and skipjack tuna, which include direct beneficial impacts by reducing fishing mortality on the stocks over the No-Action Alternative, and indirect beneficial effects if the decreased fishing mortality leads to long-term positive effects on the stocks. The FAD set limit and high seas FAD setting prohibition period for the purse seine fleet could also lead to some beneficial direct and indirect effects on the stocks by reducing fishing mortality on bigeye tuna and perhaps also smaller yellowfin tuna and skipjack tuna during any period prohibitions on FAD fishing would be in effect. Although the fleet could target more large unassociated yellowfin tunas during the prohibition periods, any potential increased catch of larger yellowfin tuna would be ameliorated by reduced catches of smaller yellowfin tuna during the prohibition period, which may have a chance to move or recruit to a deeper, non-predominantly FAD associated life cycle that would provide benefits in terms of additional adult yellowfin tuna available to unassociated fishing. The effects of the FAD setting prohibition periods on skipjack tuna are unknown. The active FAD limit could lead to similar effects. The catch retention requirement could also reduce the amount of the catch and change the composition of that catch.

However, although the fishing patterns and practices of the U.S. WCPO purse seine fleet would be expected to change substantially under Alternative C from the No-Action Alternative and the fishing patterns and practices of the Hawaii-based fleet would be expected to change somewhat as well, because many other factors contribute to the status of the stocks (fishing activities by non-U.S. fleets, oceanographic conditions, etc.), the direct and indirect effects to bigeye, yellowfin, and skipjack tuna from implementation of Alternative C would not be expected to be substantial. The effects would be expected to be greater than under Alternative B, but unlikely to lead to substantial effects on the stocks of bigeye, yellowfin, and skipjack tuna in the WCPO. Moreover, should vessel owners and operators leave the U.S. WCPO purse seine fishery and reflag to another country with a purse seine fleet operating in the WCPO, the beneficial effects caused by the reduction in fishing effort could be counteracted.

As discussed in Chapter 3 of the 2015 PEA, adult bigeye tuna, skipjack tuna, and yellowfin tuna are considered among the top predators of the tropical or warm pool marine ecosystem. Changes to the stocks of these species could lead to trophic interactive effects, including increased competition for prey species with other top predators. Larval and juvenile tunas are also a significant source of food for other marine species, such as fish, seabirds, porpoises, marine mammals, and sharks. Thus, increases in larval and juvenile tuna could increase the food available for these other species. Although the effects to the stocks would be greater under Alternative C than under Alternative B, it is unlikely that the effects of Alternative C to the stocks of bigeye, skipjack and yellowfin tuna would be large enough to impact the marine ecosystem. Overall, Alternative C would not be expected to cause substantial effects on biodiversity and ecosystem function.

2.6.4 Alternative D, Most Restrictive FAD Setting Prohibition Period Variation

This alternative would be the same as Alternative C, except that instead of a total prohibition on U.S. purse seine fishing for six months and a FAD set limit, there would be a purse seine FAD setting prohibition period for the full year each year. Thus, the effects to bigeye, yellowfin, and skipjack tuna under this alternative would be very similar to the effects described above under Alternative C. Alternative D would have less potential for beneficial effects to the stocks of bigeye, yellowfin, and skipjack tuna over Alternative C, since the U.S. WCPO purse seine fishery would remain open for the full year, so fishing effort in the Convention Area would not be expected to be reduced as much as it would be under Alternative C.

For the reasons discussed above for Alternative C, Alternative D would not be expected to cause substantial effects on biodiversity and ecosystem function.

2.6.5 Alternative E, Additional FAD Setting Prohibition Period, Including Active FAD Restrictions, Catch Retention Requirements, and FAD Design Requirements

This alternative would be the same as Alternative B, except that instead of a three month FAD setting prohibition period, there would be a four-month FAD setting prohibition period each year, a limit of 350 active FADs per purse seine vessel, purse seine catch retention requirements, and FAD design requirements. So, there would be an additional month during which there would be transfer of purse seine fishing from FAD sets to unassociated sets, with resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin and skipjack tuna and likely less bigeye tuna. Thus, Alternative E could lead to the potential for slightly more beneficial effects on bigeye, yellowfin, and skipjack tuna than under Alternative B, by reducing fishing mortality on bigeye tuna and perhaps smaller skipjack and yellowfin tuna during the prohibition period. As for Alternative B, although the fleet could target more large unassociated yellowfin tunas during the prohibition period, any potential increased catch of larger yellowfin tuna would be ameliorated by reduced catches of smaller yellowfin tuna during the prohibition period, which may have a chance to move or recruit to a to a deeper, non-predominantly FAD associated life cycle that would provide benefits in terms of additional adult yellowfin tuna available to unassociated fishing. The effects of the FAD prohibition period on skipjack tuna are unknown. The active FAD limit could lead to similar effects. The catch retention requirement could also reduce the amount of the catch and change the composition of that catch.

Overall, similar to Alternative B, because the fishing patterns and practices of fleets would not change substantially under Alternative E from the No-Action Alternative, and,

as described in Chapter 3 of the 2015 PEA, because many other factors contribute to the status of the stocks (fishing activities by non-U.S. fleets, oceanographic conditions, etc.), the direct and indirect effects to bigeye, yellowfin, and skipjack tuna from implementation of Alternative E would be expected to be small.

For the reasons discussed above in for Alternative B, Alternative E would not be expected to cause substantial effects on biodiversity and ecosystem function.

2.6.6 Alternative F, FAD Set Limit Variation

This alternative would be the same as Alternative E, except that there would be a limit of 2,522 FAD sets per year and a three month FAD setting prohibition period. Based on fishing patterns and practices of the U.S. WCPO purse seine fleet in recent years and the current fleet size, the FAD set limit will likely not be reached in a given calendar year. If the FAD set limit is not reached under Alternative F, the effects of this alternative to bigeye, yellowfin, and skipjack tuna would be identical to those under Alternative E. Should the FAD set limit be reached, Alternative F could lead to lead to the potential for slightly more beneficial effects on bigeye, yellowfin, and skipjack tuna than under Alternative E, by reducing fishing mortality on bigeye tuna and perhaps smaller skipjack and yellowfin tuna during a longer FAD setting prohibition period. As for Alternative E, although the fleet could target more large unassociated yellowfin tunas during the prohibition period, any potential increased catch of larger yellowfin tuna would be ameliorated by reduced catches of smaller yellowfin tuna during the prohibition period, which may have a chance to move or recruit to a to a deeper, non-predominantly FAD associated life cycle that would provide benefits in terms of additional larger yellowfin tuna available to unassociated fishing. The effects of the FAD prohibition period on skipjack tuna are unknown. The active FAD limit could lead to similar effects. The catch retention requirement could also reduce the amount of the catch and change the composition of that catch.

Overall, similar to Alternative E, because the fishing patterns and practices of fleets would not change substantially under Alternative E from the No-Action Alternative, and, as described in Chapter 3 of the 2105 PEA, because many other factors contribute to the status of the stocks (fishing activities by non-U.S. fleets, oceanographic conditions, etc.), the direct and indirect effects to bigeye, yellowfin, and skipjack tuna from implementation of Alternative F would be expected to be small.

For the reasons discussed above for Alternative E, Alternative F would not be expected to cause substantial effects on biodiversity and ecosystem function.

2.6.7 Alternative G, Total Purse Seine Closure Variation

This alternative would be the same as Alternative E, except that instead of a four month FAD setting prohibition period, there would be a total prohibition on U.S. purse seine fishing for three months each year. Thus, Alternative G would lead to a greater potential reduction in fishing effort than Alternative E and could even lead vessel owners and operators to leave the fishery and seek other opportunities. The greater potential reduction in fishing effort could lead to the potential for increased beneficial effects to bigeye, yellowfin, and skipjack tuna. However, should vessel owners and operators leave the U.S. WCPO purse seine fishery and reflag to another country with a purse seine fleet operating in the WCPO, the beneficial effects caused by the reduction in fishing effort could be counteracted.

The effects to bigeye tuna, yellowfin tuna, and skipjack tuna from the other elements of Alternative G would be identical to those under Alternative E. However, should the three-month closure period overlap with the three-month FAD setting prohibition period, then the transfer of fishing effort to unassociated sets during the FAD setting prohibition period would not be expected to occur, and the potential beneficial effects to the stocks during the FAD setting prohibition period that could take place under Alternative E would not occur.

Although the fishing patterns and practices of the U.S. WCPO purse seine fleet would be expected to change substantially under Alternative G from the No-Action Alternative, because many other factors contribute to the status of the stocks (fishing activities by non-U.S. fleets, oceanographic conditions, etc.), the direct and indirect effects to bigeye, yellowfin, and skipjack tuna from implementation of Alternative G would not be expected to be substantial. Moreover, should vessel owners and operators leave the U.S. WCPO purse seine fishery and reflag to another country with a purse seine fleet operating in the WCPO, the beneficial effects caused by the reduction in fishing effort could be counteracted.

2.6.8 Alternative H, Most Restrictive Without High Seas FAD Closure

This alternative would be the same as Alternative C, except that there would be no prohibition on fishing on FADs on the high seas for U.S. purse seine vessels in 2021 through 2025. Thus the potential effects to bigeye, yellowfin, and skipjack tuna would be the same as under Alternative C, but there would be a slightly reduced potential for beneficial effects on the stocks, since there could be more fishing on FADs than under Alternative C.

2.6.9 Alternative I, Variation of Status Quo 1 (Meaning Variation of Regulations in Effect in 2021)

Under Alternative I, the purse seine effort limit of 1,828 fishing days in the ELAPS may be reached in each of the calendar years 2021-2025, which could either reduce overall purse seine fishing effort or shift effort to PIPs EEZs or the EPO. Should an ELAPS closure lead to a reduction in overall fishing effort by the purse seine fleet, there could be a potential for beneficial effects to the stocks of bigeye tuna, yellowfin tuna and skipjack tuna.

During the three month FAD setting prohibition period, fishing effort could be transferred to unassociated sets, with resulting consequences on the composition of the catch – perhaps more larger-sized yellowfin and skipjack tuna and likely less bigeye tuna. With respect to yellowfin tuna and skipjack tuna, which are caught in substantial amounts in both FAD sets and unassociated sets, the effects of the FAD restrictions are less straightforward. The WCPO stock of yellowfin tuna is expected to be relatively insensitive to a shift to unassociated sets, but some studies indicate that the stock would be more likely to increase in size than decrease. The effects of the FAD restrictions for WCPO skipjack tuna are not known. The two month high seas FAD setting prohibition period in each of the calendar years 2021-2025 could also transfer effort to unassociated sets on the high seas or to FAD sets in the U.S. EEZ or in PIPs EEZs. The active FAD limit could also transfer effort from FAD sets to unassociated sets with the effects described above. The catch retention requirements may affect the amount and type of catch that would be unloaded by certain vessels in the fleet (i.e., the vessels that land in port rather than transship in port).

As stated in Section 2.2.4 above, under Alternative I, the Hawaii-based longline fisheries could be affected when the longline bigeye tuna or yellowfin tuna catch limit is reached in a given year. The degree of the effects would depend on which option NMFS uses to implement the catch limit (closure of deep-set fishery, closure of both deep-set and shallow-set fishery, or prohibition on retention, transshipment, and landing) and how many vessels operate as part of the fisheries of one of the U.S. Participating Territories after the limit is reached.

Overall, because the fishing patterns and practices of fleets would not be expected to change substantially under Alternative I from the No-Action Alternative, and, as described in Chapter 3 of the 2015 PEA, because many other factors contribute to the status of the stocks (fishing activities by non-U.S. fleets, oceanographic conditions, etc.), the direct and indirect effects to bigeye, yellowfin, and skipjack tuna from implementation of Alternative I would be expected to be small.

For the reasons discussed above in for Alternative B, Alternative I also would not be expected to cause substantial effects on biodiversity and ecosystem function.

2.6.10 Alternative J, Variation of Status Quo 2 (Meaning Variation of Regulations in Effect in 2021)

Alternative J would be the same as Alternative I, but there would be separate fishing effort limits for the U.S. EEZ and for the high seas for the U.S. WCPO purse seine fleet. The sum total of the available fishing days in these areas would be equal to the ELAPS limit under Alternative I. Under this alternative, it is likely that limits in the U.S. EEZ and on the high seas would be reached at different times. Based on available data, it is likely that the high seas would be closed for a longer period of time in a calendar year than would the U.S. EEZ, and likely that the limit in the U.S. EEZ would not be reached in a calendar year. Thus, Alternative J could lead to the slightly more beneficial effects on the stocks of bigeye, yellowfin, and skipjack tuna than Alternative I, if fishing effort is more constrained under this alternative.

Overall, similar to the other action alternatives described above, because the fishing patterns and practices of fleets would not be expected to change substantially under Alternative J from the No-Action Alternative, and, as described in Chapter 3 of the 2015 PEA, because many other factors contribute to the status of the stocks (fishing activities by non-U.S. fleets, oceanographic conditions, etc.), the direct and indirect effects to bigeye, yellowfin, and skipjack tuna from implementation of Alternative J would be expected to be small.

For the reasons discussed above for Alternative B, Alternative J would not be expected to cause substantial effects on biodiversity and ecosystem function.

2.6.11 Alternatives K and L Variation of Temporary Specifications

Alternative K and L each contain slight variations in the temporary measures that would be put into place to implement temporary measures adopted by the Commission. As those temporary specifications would not be expected to substantially affect the fishing patterns and practices of the fleets, the effects to bigeye tuna, yellowfin tuna, and skipjack tuna under these alternatives would be expected to be the same as under Alternative I.

2.6.12 Alternative M, Multiyear Limits

Alternative M would be the same as Alternative B, except that the purse seine fishing effort limit in the ELAPS, and the bigeye and yellowfin tuna catch limits the Hawaii-based longline fleet would be implemented for three-year periods rather than for calendar year periods. This alternative would provide some operational flexibility for the fleets, and would take into consideration annual variations in fishing catch and effort by the fleets, due to variations in oceanographic and economic conditions. Thus, it is less likely

that the effort and catch limits would be reached under this alternative than under Alternative B. Accordingly, there would be a reduced potential for beneficial effects to the stocks of bigeye, yellowfin, and skipjack tuna than under Alternative B.

Overall, similar to Alternative B, because the fishing patterns and practices of fleets would not be expected to change substantially under Alternative M from the No-Action Alternative, and, as described in Chapter 3 of the 2015 PEA, because many other factors contribute to the status of the stocks (fishing activities by non-U.S. fleets, oceanographic conditions, etc.), the direct and indirect effects to bigeye, yellowfin, and skipjack tuna from implementation of Alternative N would be expected to be small.

For the reasons discussed above for Alternative B, Alternative M would not be expected to cause substantial effects on biodiversity and ecosystem function.

2.7 Other Target Fish Species

This section presents the analysis of the potential impacts that could be caused by the No-Action Alternative and each of the action alternatives analyzed in depth in this SEA to other target fish species by U.S. purse seine, longline, or albacore troll vessels fishing in the Convention Area. These species include albacore and swordfish.

2.7.1 Alternative A, No-Action Alternative

Under Alternative A, the No-Action Alternative, the management measures in the action alternatives would not be implemented. Thus, there would be no direct changes to the fishing patterns of the fleets and no resulting direct effects to albacore and swordfish. As discussed above in Section 2.6.1, it is conceivable that the indirect, or long-term, effects of the No-Action Alternative on bigeye tuna, skipjack tuna, and yellowfin tuna would be negative, should this alternative lead to increased fishing pressure on the stocks, relative to the action alternatives. Any such increased fishing pressure could conceivably also lead to long-term negative effects on swordfish, as it is targeted in the Hawaii-based shallow-set fishery. However, implementation of the longline bigeye or yellowfin catch limits under the action alternatives could also lead to increased fishing pressure on swordfish, if the Hawaii-based longline fleet is allowed to continue fishing for swordfish in the Convention Area after the catch limits are reached. So, the No-Action Alternative would not be expected to have increased potential for negative effects on swordfish over the action alternatives. Albacore is targeted by the American Samoa-based longline fishery and the South Pacific albacore troll fleet, which would not experience substantial changes to fishing patterns and practices under the action alternatives, so albacore is not expected to experience any indirect effects under the No-Action Alternative. Overall,

given that many other factors influence the status of non-target fish species (e.g., other fisheries that target those species, oceanic conditions), it is unlikely that there would be any indirect effects to non-target species under the No-Action Alternative, stemming from lack of implementation of any of the action alternatives.

2.7.2 Action Alternatives

Under Alternatives B, C, D, E, F, G, H, I, J, K, L, and M, no substantial effects would be expected on albacore, as it is targeted by the American Samoa-based longline fleet and South Pacific albacore troll fleet, which would not be expected to experience substantial effects from the action alternatives. Albacore is only retained in relatively small proportions to total retained catch by the Hawaii-based longline fleet (see Table 10 and Table 11, and generally not caught by the U.S. WCPO purse seine fleet (see Table 6). So the changes in fishing patterns and practices under the action alternatives would not be expected to lead to substantial direct or indirect effects on albacore.

Similarly, under Alternatives B, C, D, E, F, G, H, I, J, K, L, and M, the changes in fishing patterns and practices to the Hawaii-based longline fleet if the longline bigeye tuna and yellowfin tuna catch limits are reached in any calendar year under the action alternatives would not be expected to lead to substantial direct or indirect effects on swordfish (the other fleets do not generally catch swordfish). If both the shallow-set and deep-set longline fisheries are closed when a catch limit is reached in a calendar year, then similar to the effects on bigeye, yellowfin, and skipjack tuna, there could be a potential for direct and indirect beneficial impacts to swordfish, since there would be reduced fishing pressure on the stock, which is targeted in the Hawaii-based shallow-set fishery. If only the deep-set fishery is closed or if there is a prohibition on retention, transshipment and landing of bigeye and yellowfin tuna, then there could be some increased fishing pressure on swordfish with resulting adverse direct and indirect effects over the No-Action Alternative, if vessels switch to shallow-setting. However, as vessels tend to retain swordfish earlier in the year (see Figure 6), and it is likely that the bigeye and yellowfin catch limits would be reached later in the year, any increased fishing pressure on swordfish from implementation of the action alternatives is not expected to be substantial.

2.8 Non-Target Fish Species

This section presents the analysis of the potential impacts that could be caused by the No-Action Alternative and each of the action alternatives analyzed in depth in this SEA to non-target fish species caught by U.S. purse seine, longline, and albacore troll vessels fishing in the Convention Area.

2.8.1 Alternative A, No-Action Alternative

Under Alternative A, the No-Action Alternative, the management measures in the action alternatives would not be implemented. Thus, there would be no direct changes to the fishing patterns of the fleet and no resulting direct effects to non-target fish species. As discussed above in Section 2.6.1, it is conceivable that the indirect, or long-term, effects of the No-Action Alternative on bigeye tuna, skipjack tuna, and yellowfin tuna would be negative, should this alternative lead to increased fishing pressure on the stocks, relative to the action alternatives. Any such increased fishing pressure could also lead to long-term negative effects on non-target fish species that are caught by the U.S. WCPO purse seine fleet or in the Hawaii-based longline fisheries. However, as discussed in section 1.3.7 of this document, the U.S. WCPO purse seine fleet and the Hawaii-based longline fleet do not generally catch a substantial amount of other fish species. Also, given that many other factors influence the status of non-target fish species (e.g., fisheries that target those species, oceanic conditions), it is unlikely that there would be any indirect effects to non-target species under the No-Action Alternative, stemming from lack of implementation of any of the action alternatives.

2.8.2 Action Alternatives

Under Alternatives B, C, D, E, F, G, H, I, J, K, L, and M, there could be some change in the amount and type of non-target fish species caught by the U.S. WCPO purse seine fleet and the Hawaii-based longline fleet. Direct impacts to non-target fish species would include a potential increase in the catch of some species and a decrease in the catch of other species, due to the changes in fishing patterns and practices of the fleets and the potential for an overall decrease in fishing effort due to implementation of the fishery closures for the U.S. WCPO purse seine fleet under some of the alternatives, the fishing catch and effort limits and any associated fishery closures, and the shift in fishing to unassociated sets during the implementation of any purse seine FAD setting restrictions as well as shifts of fishing effort to the EPO or to the EEZs of PIPs. Indirect or long-term effects would include the greater potential for adverse effects to the stocks of non-target fish species that experience increased fishing mortality and reduced potential for adverse effects to the stocks of non-target fish species that experience decreased fishing mortality. Because the U.S. WCPO purse seine fleet and the Hawaii-based longline fleet do not generally catch large amounts of other non-target fish species, as discussed in Section 1.3.7 of this document, the overall direct and indirect effect on non-target fish species under any of the action alternatives would be expected to be minor or negligible. The action alternatives with a greater potential for beneficial effects to the stocks of bigeye, yellowfin, and skipjack tuna would likewise have a greater potential for effects to non-target fish species. Such effects on non-target fish species would either be beneficial or adverse, depending on whether the non-target fish species experiences increased or decreased fishing mortality.

Vessels in the longline fisheries of the U.S. Participating Territories and in the South Pacific albacore troll fishery would not be expected to experience substantial effects under any of the action alternatives, and thus, substantial effects to non-target species of these vessels would not be expected.

2.9 Protected Resources

This section presents the analysis of the potential impacts that could be caused by the No-Action Alternative and each of the action alternatives analyzed in depth in this SEA to protected resources in the Convention Area.

2.9.1 Alternative A, No-Action Alternative

Under Alternative A, the No-Action Alternative, the management measures in the action alternatives would not be implemented. Thus, there would be no direct changes to the fishing patterns of the fleets and no resulting direct effects to protected resources. As discussed above, in Section 2.6.1, it is conceivable that the indirect, or long-term, effects of the No-Action Alternative on bigeye tuna, skipjack tuna, and yellowfin tuna would be negative, should this alternative lead to increased fishing pressure on the stocks from the U.S. WCPO purse seine and Hawaii-based longline fleets, relative to the action alternatives. Any such increased fishing pressure could also lead to long-term negative effects on protected resources with which the U.S. WCPO purse seine fleet and the Hawaii-based longline fleet interacts. However, given that many other factors influence the status of those species (e.g., other fisheries, oceanic conditions), it is unlikely that there would be any substantive indirect effects to protected resources stemming from lack of implementation of the action alternatives under the No-Action Alternative.

2.9.2 Action Alternatives, the U.S. WCPO Purse Seine Fishery

Section 4.8 of the 2015 PEA and Section 1.7 of the 2019 SEA discuss the potential impacts to protected resources from the operation of the U.S. WCPO purse seine fishery. This section provides updated information as well as analysis of impacts to protected species from the U.S. WCPO purse seine fishery under the action alternatives analyzed in this document.

Section 1.3.9 above, provides information on the ESA consultation history for the fishery. As stated above, in memoranda dated December 5, 2017, May 17, 2018, and December 6, 2018, June 28, 2019, January 15, 2020, July 14, 2020, and February 23, 2021, NMFS determined that continuation of the fishery during the period of consultation is not likely

to jeopardize the continued existence of ESA-listed species that may be adversely affected by the U.S. WCPO purse seine fishery and would not constitute an irreversible or irretrievable commitment of resources under ESA Section 7(d).

The direct and indirect effects to protected species from the U.S. WCPO purse seine fishery under the implementation of any of the action alternatives would likely be negligible, although it is possible there would be a reduction in interactions with protected species from a reduction in fishing effort under the alternatives. To the extent that there is a shift in fishing patterns and practices, from FAD sets to unassociated sets or to fishing in the EPO or the EEZs of PIPs, any effects in terms of interactions with protected resources would be expected to be small compared to typical year-to-year variations in interactions with species driven by changing oceanic and economic conditions. Action Alternatives C, D, and H would be expected to have more potential for reduction in interactions with listed species over the No-Action Alternative, since there is more potential for reduced fishing effort under these alternatives. However, should implementation of any of these alternatives cause vessels to be reflagged to other fleets operating in the WCPO that have less stringent measures for protected species, such reductions in interactions from reduced fishing effort could be counteracted. In addition, under the Action Alternatives B, E, F, G, I, J, K, L, and M, there would be reduction in observer coverage that would lead to less data being collected on interactions of vessels in the fishery with ESA-listed species than under the No-Action Alternative. Under Alternative K, electronic monitoring, photographic information, additional reporting, or observers trained to collect data on fisheries of other gear types would collect additional data; under Alternative L, 20% observer coverage would still be required. The lack of observer data or reduced observer data may affect the quality and quantity of information collected on interactions with ESA-listed species in the fishery, as well as limit NMFS' ability to monitor the impacts on protected species through the incidental take statement specified in the 2006 BiOp. However, the temporary specification regarding purse seine observer coverage would be in effect for a limited period of time, which would mitigate these effects. In addition, other sources of data on the fishery would still be collected (e.g., from logbook information and vessel monitoring systems). Thus, although the collected data under these alternatives could be of lesser quality than under the No-Action Alternative, these alternatives would not be expected to substantially affect the overall information collected or to substantially modify the effects of the fishery on ESA-listed species.

As stated in Section 1.3.9 above, the U.S. WCPO purse seine fishery corresponds to the following fisheries on the 2021 List of Fisheries (LOF): South Pacific Tuna Fisheries – purse seine gear and Western Pacific Pelagic Fisheries – purse seine gear. Both of these fisheries are listed as Category II fisheries under the regulations implementing the MMPA, meaning that it is a commercial fishery determined to have occasional incidental mortality and serious injury of marine mammals. MMPA 101(a)(5)(E) authorizations are required for commercial fisheries with frequent or occasional incidental mortality or

serious injury (M&SI) of ESA-listed marine mammals, as documented on the List of Fisheries (LOF). Authorizations are not required for commercial fisheries involving a remote likelihood of or no known incidental taking of marine mammals. Because these fisheries have no documented incidental M&SI of ESA-listed marine mammals on the 2021 LOF, a 101(a)(5)(E) authorization under the MMPA is not required at this time. To the extent that any of the action alternative causes a decrease in fishing effort, there could be a reduced risk of interactions with marine mammals. However, any effects in terms of interaction rates with marine mammals would likely be small compared to typical year-to-year variations in such interactions driven by changing oceanic and economic conditions.

The changes in fishing patterns and practices of the fleet would not affect the following areas designated as EFH or HAPC: ocean or coastal habitats; historic properties listed in or eligible for listing in the National Register of Historic Places; or NWRs or National Monuments. Such resources would not be affected because the potential changes in fishing patterns and practices of the fleet would take place in areas of the ocean far from shorelines and would not affect the seafloor or benthic habitats since purse seine fishing does not involve contact with the seafloor (see Chapter 3 of the 2015 PEA for a description of purse seine fishing). Also, because any effects to fish stocks would be minor or negligible, as discussed above, any pelagic fish habitat designated as EFH, including the water column, or HAPC, would not be expected to experience any substantial effects – either beneficial or adverse – from implementation of any of the action alternatives, as the small effects on the stocks would be unlikely to lead to any indirect effects to fish habitat (e.g., an increase in predator or prey leading to trophic interactive effects leading to effects on habitat). In addition, as discussed above, commercial fishing is already prohibited in the Monuments. Shipwrecks would be the only known cultural objects potentially within the affected environment. However, as stated above, purse seine fishing operations do not come into contact with the seafloor, so the operations of the U.S. WCPO purse seine fleet would not be expected to affect any material from shipwrecks, which typically rests on ocean bottoms.

2.9.3 Action Alternatives, the Hawaii-Based Longline Fisheries

Section 4.8 of the 2015 PEA discuss the potential impacts to protected resources from the operation the Hawaii-based longline fisheries. This section provides updated information as well as analysis of impacts to protected species from the Hawaii-based longline fisheries under the action alternatives analyzed in this document.

Section 1.3.8 above, provides information on the ESA consultation history for the fisheries. The 2019 BiOp for the Hawaii-based shallow-set longline fishery concluded that the continued operation of the fishery is not likely to jeopardize the continued existence of those species. By memorandum dated December 18, 2020, NMFS concluded

that the determinations in the 2014 BiOp for the Hawaii-based deep-set fishery, as supplemented, remained valid, and the continued authorization of the fishery during the period of reinitiated consultation would not violate ESA Section 7(a)(2) and 7(d). The memorandum also concluded that the continued authorization of the fishery during the period of consultation would not jeopardize the recently listed oceanic whitetip shark and giant manta ray.

Overall, the direct and indirect effects to protected species from the implementation of the action alternatives would likely be negligible, although it is possible there would be reduction in interactions with protected species from a reduction in fishing effort under the alternatives. However, should implementation of the action alternatives cause an increase in fishing effort in foreign fisheries that have less stringent measures for protected species, in order to meet market demands for bigeye tuna, such reductions in interactions from reduced fishing effort could be counteracted. To the extent that there is a shift in fishing patterns and practices during any fishery closure, to the EPO or to shallow-set fishing, any effects in terms of interactions with protected resources would be expected to be small compared to typical year-to-year variations in interactions with species driven by changing oceanic and economic conditions. Action Alternatives C, D, and H would be expected to have more potential for reduction in interactions with listed species over the No-Action Alternative, since there is more potential for reduced fishing effort under these alternatives.

The Hawaii deep-set longline fishery is a Category I fishery under the regulations implementing the MMPA, meaning that it is a commercial fishery with frequent serious injuries and mortalities of marine mammals. As stated above, humpback whales, sperm whales, and MHI insular false killer whales are the ESA-listed marine mammals that may be adversely affected by the fishery. By memorandum dated December 18, 2020, NMFS concluded that continued authorization of the fishery during the period of reinitiated consultation would not violate ESA Section 7(a)(2) and 7(d) for these species.

The Hawaii shallow-set longline fishery is a Category II fishery under the regulations implementing the MMPA, meaning that it is a commercial fishery determined to have occasional incidental mortality and serious injury of marine mammals. The 2019 BiOp stated that the Guadalupe fur seal could be adversely affected by the Hawaii shallow-set longline fishery. The 2019 BiOp concluded that the continued operation of the Hawaii shallow-set longline fishery is not likely to jeopardize the continued existence of this species.

On October 16, 2014, NMFS authorized a permit under the MMPA section 101(a)(5)(E), addressing the Hawaii longline 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, 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. NMFS has prepared a draft negligible impact determination to update the 2014 MMPA permit, but the permit under MMPA Section 101(a)(5)(E) remains valid and effective until replaced in accordance with 5 U.S.C. § 558(c). Since the issuance of this permit, the Central North Pacific humpback whale was designated a DPS and is not a listed species under the ESA (81 FR 62259, September 8, 2016).

To the extent that any of the action alternative causes a decrease in fishing effort, there could be a reduced risk of interactions with marine mammals. However, any effects in terms of interaction rates with marine mammals would likely be small compared to typical year-to-year variations in such interactions driven by changing oceanic and economic conditions.

The changes in fishing patterns and practices of the vessels in the Hawaii-based longline fisheries would not affect the following areas designated as EFH or HAPC: ocean or coastal habitats; historic properties listed in or eligible for listing in the National Register of Historic Places; or NWRs or National Monuments. Such resources would not be affected because the potential changes in fishing patterns and practices would take place in areas of the ocean far from shorelines and would not affect the seafloor or benthic habitats since longline fishing does not involve contact with the seafloor (see Chapter 3 of the 2015 PEA for a description of longline fishing). Also, because any effects to fish stocks would be minor or negligible, as discussed above, any pelagic fish habitat designated as EFH, including the water column, or HAPC, would not be expected to experience any substantial effects – either beneficial or adverse – from implementation of any of the action alternatives, as the small effects on the stocks would be unlikely to lead to any indirect effects to fish habitat (e.g., an increase in predator or prey leading to trophic interactive effects leading to effects on habitat). In addition, as discussed above, commercial fishing is already prohibited in the Monuments. Shipwrecks would be the only known cultural objects potentially within the affected environment. However, as stated above, longline fishing operations do not come into contact with the seafloor, so the operations of the Hawaii-based longline fleet would not be expected to affect any material from shipwrecks, which typically rests on ocean bottoms.

2.9.4 Action Alternative, Other Fisheries

Vessels in the longline fisheries of the U.S. Participating Territories and in the South Pacific albacore troll fishery would not be expected to experience substantial effects under any of the action alternatives, and thus, substantial effects to protected resources from these vessels would not be expected. Information regarding ESA consultations and effects to marine mammals from these fisheries is provided in Section 1.3.9, above.

2.10 Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," states 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." As discussed throughout this chapter, the overall environmental effects from any of the action alternatives would not be expected to be substantial and generally would be distributed evenly among the affected vessels in the fleets. Implementation of any of the action alternatives would not be expected to result in disproportionately high and adverse human health or environmental effects on vessel owners or operators in the affected fleets. Thus, none of the alternatives considered would result in significant and adverse environmental effects on minority or low-income populations.

2.11 Comparison of Alternatives

Table 17 below summarizes and compares the impacts of the No-Action Alternative and the 12 action alternatives analyzed in depth in this SEA.

Table 17. Comparison of Alternatives

Alternative	Fisheries (effects)	Bigeye, Yellowfin, Skipjack (effects)	Albacore and Swordfish (effects)	Non-target Fish Species (effects)	Protected Resources (effects)	Environmental Justice (effects)
A, No Action	None	No direct effects; potential minor and negative indirect effects	None	None	None	None
B, Least Restrictive	Possible reduction in purse seine fishing effort, small shift to unassociated purse seine sets; possible closure of	Small and beneficial potential direct and indirect effects	Likely none on albacore; minor effects on swordfish	Minor or negligible	Small or negligible	None

	Hawaii-based longline fisheries					
Alternative C, Most Restrictive	Largest reduction in purse seine fishing effort, small shift to unassociated purse seine sets; possible closure of Hawaii-based longline fisheries – longer than Alternative B	Small and beneficial potential direct and indirect effects; More than Alternative B, but not substantial	Likely none on albacore; minor effects on swordfish; More than Alternative B	Minor or neglible	Small or negligible	None
Alternative D, Most Restrictive FAD Setting Prohibition Variation	Larger potential shift to unassociated purse seine sets than other alternatives, possible closure of Hawaii-based longline fisheries – longer than Alternative B	Small and beneficial potential direct and indirect effects; Likely less than Alternative C, but not substantial	Same as Alternative C	Minor or neglible	Small or negligible	None
Alternative E, Additional FAD setting Prohibition Period, Active FAD	Same as Alternative B, except slightly larger shift to unassociated	Small and beneficial potential direct and indirect effects; More than	Same as Alternative B	Minor or neglible	Small or negligible	None

Limit, Catch Retention, and FAD Design Elements	purse seine sets, possible closure of Hawaii-based longline fisheries – same Alternative B	Alternative B				
Alternative F, FAD Set Limit Variation	Same as Alternative E, except slightly larger shift to unassociated purse seine sets, possible closure of Hawaii-based longline fisheries – same Alternative E	Small and beneficial potential direct and indirect effects, More than Alternative E	Same as Alternative E	Minor or neglible	Small or negligible	None
Alternative G, Total Purse Seine Closure Variation	Definite reduction in purse seine fishing effort, small potential shift to unassociated purse seine sets, possible closure of Hawaii-based longline fisheries – same	Small and beneficial potential direct and indirect effects, More than Alternative E	Same as Alternative E	Minor or neglible	Small or negligible	None

	Alternative E					
Alternative H, Most Restrictive Without High Seas FAD Closure	Same as Alternative C for purse seine fleet but no transfer to unassociated purse seine sets, possible closure of Hawaii-based longline fisheries – same Alternative C	Small and beneficial potential direct and indirect effects, Slightly less than Alternative C	Same as Alternative C	Minor or neglible	Small or negligible	None
Alternative I, Status Quo 1	More potential for reduction in purse seine fishing effort than Alternative B but less than Alternative C, possible closure of Hawaii-based longline fisheries – more than Alternative B, but less than Alternative C	Small and beneficial potential direct and indirect effects, More than Alternative B but less than Alternative C	More than Alternative B, but less than Alternative C	Minor or negligible	Small or negligible	None

Alternative J, Status Quo 2	Same as Alternative I, but more potential for reduction in purse seine fishing effort, possible closure of Hawaii-based longline fisheries – same as Alternative I	Small and beneficial potential direct and indirect effects, More than I	Same as Alternative I	Minor or neglible	Small or negligible	None
Alternative K, Temporary Specifications 1	Same as Alternative I	Same as Alternative I	Same as Alternative I	Minor or negligible	Small or negligible	None
Alternative L, Temporary Specifications 2	Same as Alternative I	Same as Alternative I	Same as Alternative I	Minor or negligible	Small or negligible	None
Alternative M, Multiyear Limits	Less restrictive than Alternative B	Small and beneficial potential direct and indirect effects; Least of all the action alternatives	Slightly more than Alternative B	Minor or neglible	Small or negligible	None

2.12 Cumulative Impacts

This section supplements the cumulative impacts analysis in Chapter 5 of the 2015 PEA and Section 1.9 of the 2019 SEA.

Past actions and other present actions are included in the baseline for the affected environment. Past actions completed since publication of the 2015 PEA and 2019 SEA are described in the Executive Summary and Chapter 1 of this document.

Future actions may include:

- Actions by the United States and other nations to implement any additional management measures adopted by the Commission for resources in the affected environment, details of which are unknown at this time;
- Actions by the United States and other nations to implement IATTC management measures for tropical tunas for 2022 and beyond, the details of which are unknown at this time;
- Actions by the United States to implement a renegotiated SPTT, the specific details of which are unknown at this time; and
- Actions by the United States for domestic management of the fisheries that operate in the Pacific Ocean, the specific details of which are unknown at this time.[42]

The following sections provide the cumulative impacts analysis for resources in the affected environment.

2.12.1 Cumulative Impacts to Physical Resources and Climate Change

As discussed above, implementation of any of the action alternatives or the No-Action Alternative would not be expected to have substantial impacts on physical resources in the WCPO or contribute to climate change. The actions identified in this chapter would similarly not be expected to substantially impact physical resources in the WCPO, since they are fishery management actions that would not be expected to impact physical resources. Based on all information to date, the other actions are also not expected to lead to a large increase in greenhouse gas emissions that would affect climate change. Thus, the cumulative impacts to physical resources and climate change from implementation of

[42] See Section 4.5 of *Amendment 10 to the Fishery Ecosystem Plan for the Pelagic Fisheries of the Western Pacific Region --- Managing Loggerhead and Leatherback Sea Turtle Interactions in the Hawaii Shallow-set Longline Fishery --- Including a Final Environmental Assessment and Regulatory Impact Review (RIN 0648-BJ27)* (NMFS 2020b).

the action alternatives or the No-Action Alternative would not be expected to be substantial.

2.12.2 Cumulative Impacts to Bigeye, Skipjack, and Yellowfin Tuna in the WCPO

As discussed above, the direct and indirect effects from any of the action alternatives to bigeye, skipjack, and yellowfin tuna stocks in the WCPO could perhaps be somewhat beneficial when compared to the No-Action Alternative, but would not be expected to be substantial. Please see Table 17 for a summary of potential impacts from each of the action alternatives.

The details of the other future actions are unknown, and thus, specific assessment of each of their potential contributions to cumulative impacts on the stocks of bigeye tuna, skipjack tuna, and yellowfin tuna is not possible at this time. However, given the Commission's articulated objectives in CMM 2020-01 and the current status of the stocks, it is likely that future actions will be consistent with the objectives of CMM 2020-01.

Thus, the cumulative impacts from the identified past, present, and future actions on the stocks of bigeye tuna, yellowfin tuna, and skipjack tuna in the WCPO would likely be beneficial in comparison to operation of the fishery absent the management measures that are being or would be implemented under the identified actions. However, it is unknown whether the current status of the stocks will change as a collective result of all of these actions – though this is difficult to predict without knowing the details of the future actions or the results of the implementation of the present actions. Based on all information to date, the cumulative impacts from implementation of any of the action alternatives or lack of implementation under the No-Action Alternative would not be expected to lead to substantial cumulative impacts on the status of the stocks of bigeye tuna, skipjack tuna, and yellowfin tuna in the WCPO.

2.12.3 Cumulative Impacts to Other Target or Non-target Fish Species in the WCPO

As stated above, the action alternative or the No-Action Alternative would not be expected to have substantial effects on other target or non-target fish species. Given that the other actions are fishery management actions, they would similarly be expected to have minor effects on other target or non-target species if focused on management of the fisheries that target the same stocks, or effects that would decrease fishing pressure on the other non-target fish species if focused on management of those species, and thus, the

cumulative effects on other target or non-target fish species would not be expected to be adverse or substantial.

2.12.4 Cumulative Impacts to Protected Resources in the WCPO

As discussed above, the action alternatives or No-Action Alternative would not be expected to increase or decrease interactions with protected resources, although it is possible there would be slight reduction in interactions with protected species under some of the action alternatives due the potential reduction in overall fishing effort compared to the No-Action Alternative. Based on all information to date, the other actions are not expected to have substantial effects on protected resources. Thus, the cumulative effects on protected resources would not be expected to be substantial.

2.12.5 Cumulative Impacts to Environmental Justice

As stated above, the action alternative or the No-Action Alternative would not substantially affect minority or low-income populations. Based on all information to date, the other actions identified in this chapter are not expected to affect minority of low-income populations. Thus, the cumulative effects on minority or low-income populations would not be expected to be substantial.

Consultation

Table 18 lists the agencies, NOAA units, and entities that were contacted for information.

Table 18: List of agencies and offices contacted

NMFS – Headquarters – Office of International Affairs
NMFS – Pacific Islands Regional Office – Sustainable Fisheries Division
NMFS – Pacific Islands Fisheries Science Center
NMFS – West Coast Regional Office – Sustainable Fisheries Division
NMFS – Southwest Science Center
NOAA Office of Law Enforcement
North Pacific Fishery Management Council
Pacific Fishery Management Council
Department of State – Office of Marine Conservation
U.S. Coast Guard – 14th Coast Guard District
Western Pacific Fishery Management Council

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