WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Options Paper
2023 U.S. Participating Territory Longline Bigeye Tuna Catch and Allocation Limits
United States of America, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands

191st Council Meeting
June 21-23, 2022
Honolulu

1. Summary

This paper presents options for consideration by the Western Pacific Regional Fishery Management Council (Council) for the 2023 specification of the annual longline bigeye tuna (hereafter, bigeye) limits for the US Pacific Island Territories of American Samoa, Guam, and the Commonwealth of Northern Mariana Islands (CNMI).

In 2014, Amendment 7 to the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region ('Pelagic FEP' or PFEP) established the framework to specify catch and/or effort limits for pelagic fisheries in American Samoa, Guam and the CNMI, collectively termed the U.S. Participating Territories. The process involves the Council annually recommending catch or fishing effort limits that may also include authorization for the governments of each U.S. Participating Territory to allocate a portion of its catch or fishing effort limits to a U.S. fishing vessel permitted under the PFEP. Specified Fishing Agreements are signed by territory government and fishing vessel parties and specify funding support for fisheries development in the U.S. Participating Territories. The National Marine Fisheries Service must approve the annual limits and Specified Fishing Agreements in order for them to be implemented.

For fishing year 2019, the Council took final action in 2018 to set 2,000 mt longline bigeye longline limits for the U.S. Participating Territories and specified up to 1,000 mt transfer limits per territory to U.S. vessels. In 2019, only two specified agreements with U.S. Participating Territories were able to be made with US fishing vessels. Thus the U.S. longline fishery was closed to bigeye harvest before the end of the fishing year on December 28, 2019.

At its 178th Meeting in June 2019, the Council voted, under Amendment 9 to the PFEP, to set multi-year catch and/or effort limits for pelagic fisheries in the U.S. Participating Territories, remove catch limits for the U.S. Participating Territories, and made specifications of catch allocation limits (1500 mt) from territories to U.S. fishing vessels through 2023. Amendment 11, which has since been enumerated, has yet to go through the rule-making processes due to administrative timing.

The Council took final action at its 181st Meeting in March 2020 to set 2,000 mt longline bigeye

longline limits for the U.S. Participating Territories, specified up to 1,500 mt transfer limits per territory to U.S. vessels, and limited total transfers to not exceed 3,000 mt. This specification was made to allow vessels flexibility in attaining allocation transfers with US Participating Territories while limiting expected environmental impacts to those consistent with previous specifications. The Council also took final action at its 182nd Meeting June 2020 to set 2,000 mt longline bigeye longline limits for the U.S. Participating Territories for fishing year 2021, and specified up to 1,500 mt transfer limits per territory to US vessels, and limited total transfers to not exceed 3,000 mt. The Council again took final action at its 186th Meeting June 2021 to set 2,000 mt longline bigeye longline limits for the U.S. Participating Territories for fishing year 2022, and specified up to 1,500 mt transfer limits per territory to U.S. vessels, and limited total transfers to not exceed 3,000 mt. That specification went to final rule in December 2021 (86 FR 73990).

At its 191st Meeting, the Council should again take final action under the Amendment 7 framework to set catch and/or effort limits for longline fisheries targeting bigeye tuna in U.S. Participating Territories in 2023 and allocation limits from US Participating Territories to U.S. fishing vessels permitted under the PFEP in 2023.

The following options are for Council consideration for the specification of 2023 annual bigeye longline limits for the US Participating Territories and allocation limits:

Table 1: Preliminary 2023 US Participating Territory Catch and Transfer Limit Options

	Option 1	**Option 2**	**Option 3**
Description	No action	"Status Quo and Consistency": 2,000 mt longline bigeye longline limits for the US PTs; specify *up to* 1,500 mt transfer limits per territory with total allocation of 3,000 mt	"Flexibility": 2,000 mt longline bigeye longline limits for the US PTs; specify *up to* 2,000 mt transfer limits per territory, no specified total transfer limits.

Council action on 2023 bigeye catch and allocation limits for US Participating Territories is covered under National Environmental Protection Act (NEPA) analyses from an Environmental Assessment (EA) conducted in 2019 (NMFS, 2019). A supplementary EA (SEA) was prepared for the 2020 specification, which included new scientific information and a preferred alternative with an allocation limit of 1500t for individual territories, not to exceed a total allocation limit of 3,000t, which is consistent with the preferred alternative in the 2020 EA For 2021, 2022, and potentially 2023 – a supplementary information report (SIR) adequately updates information made available since the EA. All three options are included in existing analyses and sufficiently covered under best scientific information available and NEPA analyses. A Biological Opinion (BiOp) pursuant to Section 7 of the Endangered Species Act (ESA) has been pending since 2018 for the deep-set longline fishery. A BiOp was made available for the shallow-set fishery in 2019, which had information included in the 2020 SEA documentation. The BiOp will determine if reasonable and prudent measures (RPMs) or Reasonable and Prudent Alternatives (RPAs) are needed to satisfy provisions of the ESA, which may render a need for further analyses under NEPA and other applicable laws.

2. Background Information

The Western and Central Pacific Fisheries Commission (WCPFC) is a regional fisheries management organization (RFMO) that internationally manages highly migratory fish stocks (HMS) in the Western and Central Pacific Ocean (WCPO). The WCPFC was established by the adoption of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Honolulu Convention), which occurred in Honolulu in 2000. The WCPFC is comprised of 26 members, 7 participating territories, and 6 cooperating non-members.[1] Conservation and management measures (CMM) for HMS are agreed to by the WCPFC and then implemented under domestic law by members and cooperating non-members. The current CMM for tropical tunas, CMM 2021-01, assigns catch limits for bigeye tuna in longline fisheries and effort limit regimes for purse seine fisheries.

Under Article 43 of the Honolulu Convention, American Samoa, Guam, and CNMI are provided the status of Participating Territories of the Western and Central Pacific Fisheries Commission (WCFPC). The US Participating Territories also grouped among Small Island Developing States and Territories within WCPFC conservation and management measures, and as such, may receive different catch and effort allocations than the US, which is a contracting party (member) of the WCPFC.

In November 2011, the U.S. Congress passed the Consolidated and Further Continuing Appropriations Act of 2012 or CFCAA (Pub. Law 112-55, 125 Stat. 552 *et seq*.). Section 113 of the CFCAA (hereafter Section 113) authorized American Samoa, Guam and the Northern Mariana Islands to use, assign, allocate and manage their catch and effort for HMS, including Pelagic MUS, through fishing arrangement with U.S. vessels permitted under the PFEP to support fisheries development in the U.S. territories. Section
113 also directed the Council to recommend an amendment to the PFEP and associated regulations to implement Section 113 under the authority of the Magnuson-Stevens Act.

Consistent with Section 113, the Council in 2014, developed and NMFS approved Amendment 7 to the PFEP. Regulations implementing Amendment 7 became effective on October 24,
2014.

From 2014 to 2019, the Council had recommended, and NMFS has approved, a limit of 2,000 metric tons (mt) of longline-caught bigeye tuna for pelagic fisheries of each U.S. participating territory, and authorized each U.S. territory to allocate up to 1,000 mt of its 2,000-mt bigeye tuna limit to a U.S. longline fishing vessel or vessels identified in a Specified Fishing Agreement.

[1] **Members**: Australia, China, Canada, Cook Islands, European Union, Federated States of Micronesia, Fiji, France, Indonesia, Japan, Kiribati, Republic of Korea, Republic of Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Chinese Taipei, Tonga, Tuvalu, United States of America, Vanuatu.
Participating Territories: American Samoa, Commonwealth of the Northern Mariana Islands, French Polynesia, Guam, New Caledonia, Tokelau, Wallis and Futuna
Cooperating Non-member(s): Ecuador, El Salvador, Liberia, Mexico, Panama, Thailand, Vietnam.

Since 2020 the Council had recommended, and NMFS has approved and authorized each U.S. territory to allocate up to 1,500 mt of its 2,000-mt bigeye tuna limit to a U.S. longline fishing vessel or vessels identified in a Specified Fishing Agreement – but total allocations not to exceed 3,000 mt.

Amendment 7 also established criteria that a specified fishing agreement must satisfy, which include among other requirements, that agreements identify those vessels subject to the agreement, and that such vessels land fish in the territory, or deposit funds into the Western Pacific Sustainable Fisheries Fund (WP SFF). Pursuant to Section 204(e)(4) of the Magnuson- Stevens Act, funds deposited into the WP SFF may be used for the implementation of a marine conservation plan (MCP) . See 50 CFR 665.819 for regulations implementing Amendment 7.

2.1 WCPO Bigeye Tuna Stock Status

The Secretariat of the Pacific Community (SPC) prepared the most recent stock assessment for WCPO bigeye tuna August 2020, which covers bigeye tuna from Indonesia in the far western Pacific, to the 150° W. meridian in the central Pacific Ocean (Ducharme-Barth et al, 2020). The WCPFC Scientific Committee (SC) reviewed and endorsed the 2020 bigeye stock assessment at its Sixteenth Regular Session (SC16) as the most advanced and comprehensive assessment yet conducted for this species. SC16 also endorsed the use of the assessment model uncertainty grid, an ensemble of model runs under varying plausible configurations, as best available scientific information to characterize stock status and management advice. SC16 recommended to retain only model runs with newest growth information, comprising 36 model configurations and noted variance in the assessment results with respect to regional stock structure. The resulting uncertainty grid was used to characterize stock status, to summarize reference points and to calculate the probability of breaching the Commission-adopted spawning biomass limit reference point (LRP) of 20% unfished biomass, whereas $0.2*SB_{F=0}$ and F_{recent} being greater than F_{MSY} (Table 2).

Table 2. Stock assessment reference points and outputs from Ducharme-Barth et al, 2020.

	Mean	Median	Minimum	10^{th} percentile	90^{th} percentile	Maximum
C_{latest}	159,738	159,288	157,297	157,722	162,033	162,271
$Y_{Frecent}$	136,568	134,940	117,800	124,668	149,424	161,520
f_{mult}	1.45	1.38	0.83	0.98	2.03	2.33
F_{MSY}	0.05	0.05	0.04	0.04	0.07	0.07
MSY	146,715	140,720	117,920	125,628	179,164	187,520
F_{recent}/F_{MSY}	0.74	0.72	0.43	0.49	1.02	1.21
$SB_{F=0}$	1,395,173	1,353,367	903,708	982,103	1,780,138	1,908,636
SB_{MSY}	320,162	321,550	192,500	219,810	443,730	482,700
$SB_{MSY}/SB_{F=0}$	0.23	0.23	0.19	0.2	0.26	0.26
$SB_{latest}/SB_{F=0}$	0.38	0.38	0.23	0.3	0.47	0.51
SB_{latest}/SB_{MSY}	1.7	1.67	0.95	1.23	2.15	2.6
$SB_{recent}/SB_{F=0}$	0.4	0.41	0.21	0.27	0.52	0.55
SB_{recent}/SB_{MSY}	1.78	1.83	0.87	1.18	2.32	2.84

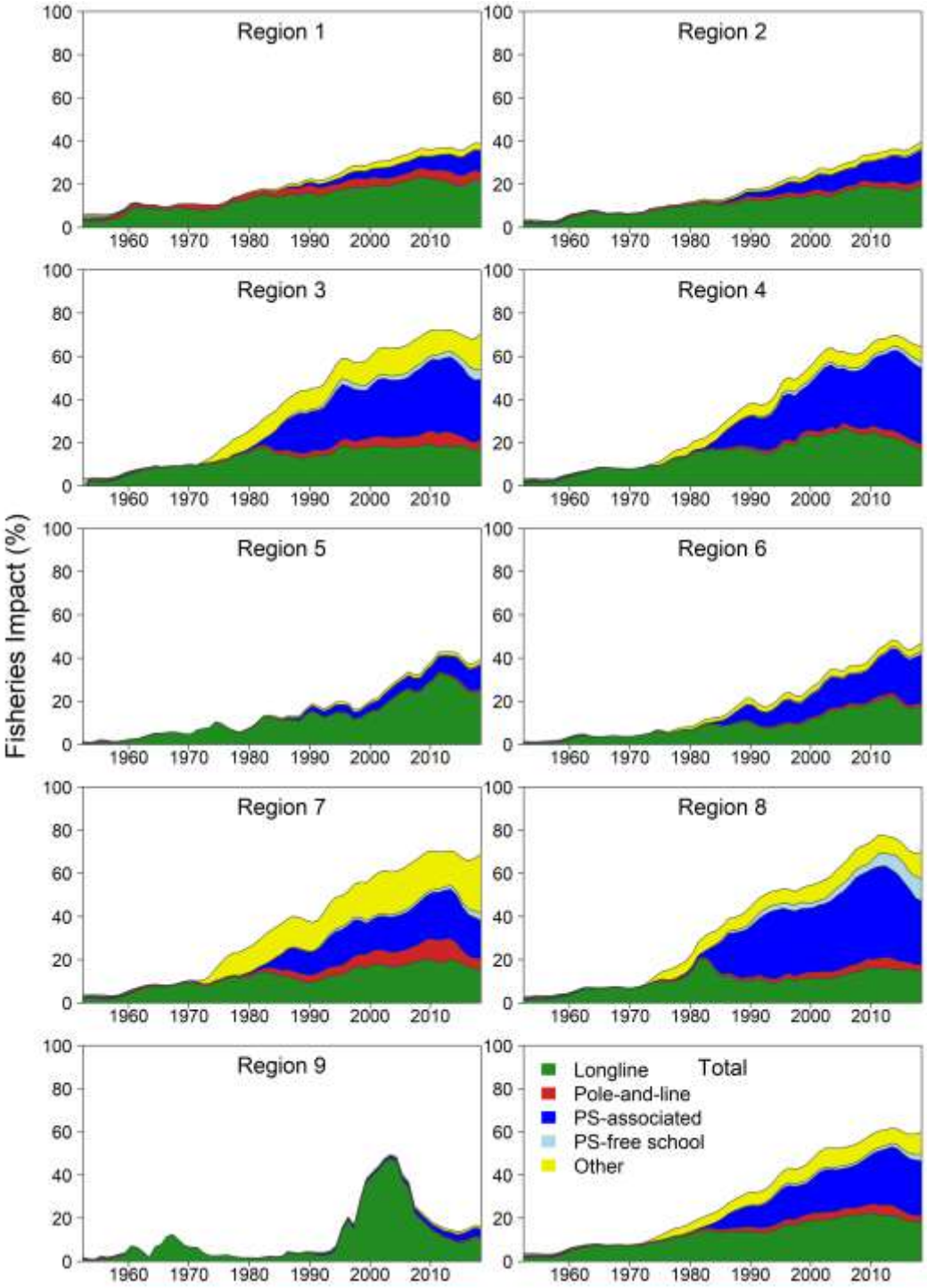

Figure 1. Estimates of reduction in spawning potential due to fishing (fishery impact = (1-$SB_t/SB_{t;F=0}$) * 100%) by region, and over all regions (lower right panel), attributed to various fishery groups for the diagnostic model from Ducharme-Barth et al (2020). Region 2 includes operation of Hawaii-based longline fishery.

Based on the uncertainty grid adopted by SC16, the WCPO bigeye tuna spawning biomass is likely above the MSST of the Pelagics FEP and the WCPFC's biomass LRP. Additionally, recent F is likely below F_{MSY} (MFMT). Therefore noting the level of uncertainties in the current assessment it appears that the stock is not experiencing overfishing or is in an overfished state. Based on the WCPFC LRP, the SC16 noted that there was 0% probability (0 out of 24 models) that the recent (2015-2018) spawning biomass had breached the adopted LRP and there was 12.5% probability (3 out of 24 models) that the recent (2014-2017) fishing mortality was above F_{MSY}.

The majority of fishing effort by the U.S. longline fishery operating out of Hawaii occurs north of 20° N in Region 2 (Figure 1), where stock depletion is among the lowest in regional estimates (Ducharme-Barth, 2020). Moreover, 98% of bigeye tuna caught by this fishery occurs north of 10° N, which is above the core equatorial zone of the heaviest purse seine and longline fishing (NMFS unpublished data). SC16 noted that the region where the US fishery operates has some of the lowest relative regional depletion and serves as a 'buffer' for the stock. According to the PFEP status determination criteria, the WCPO bigeye tuna stock is not overfished or experiencing overfishing.

2.2 Fishery Performance of the Hawaii Deep-set Longline Fishery 2018-2019

Fishing Year 2018

The 2018 fishing year for the Hawaii deep-set longline fishery began on January 1, 2018. As shown in Table 2, the US WCPO bigeye limit was set by the WCPFC at 3,554 mt, although the fishery reported an underage of US catch with 3,392 mt harvested.

In a final rule published on, October 23, 2018, NMFS specified a 2018 limit of 2,000 metric tons (mt) of longline-caught bigeye tuna for the Northern Mariana Islands, and allowed the territory to allocate up to 1,000 mt to U.S. longline fishing vessels identified in a specified fishing agreement that meets established criteria. As a result, the Governor of the CNMI entered into a specified fishing agreement with vessels in the Hawaii longline fishery and allocated 1,000 mt of CNMI's 2,000 mt bigeye tuna limit to vessels listed in the agreement. NMFS determined that the specified fishing agreement was consistent with the criteria set forth in NMFS' regulation (50 CFR 665.819) and Hawaii based longline vessels again began fishing for bigeye tuna in the WCPO under the fishing agreement. NMFS forecasted vessels listed in the specified fishing agreement would reach the 1,000 mt allocation limit on December 10, 2018, and issued a notice that it would restrict retention of bigeye tuna by vessels identified in the CNMI agreement on that date

In a final rule published on December 7, 2018, NMFS specified a 2018 limit of 2,000 mt of longline-caught bigeye tuna for American Samoa and allowed the territory to allocate up to 1,000 mt to U.S. longline fishing vessels identified in a specified fishing agreement that meets established criteria. As a result, the Governor of American Samoa entered into a specified fishing agreement with vessels in the Hawaii longline fishery and allocated 1,000 mt of American Samoa's 2,000 mt bigeye tuna limit to vessels listed in the agreement. NMFS determined that the specified fishing agreement was consistent with the criteria set forth in NMFS' regulation (50 CFR 665.819) and Hawaii based longline vessels began fishing for bigeye tuna in the WCPO under the American Samoa fishing agreement on December 10, 2018. NMFS did not implement catch and allocation limits for Guam in 2018.

Data compiled by the Pacific Islands Fisheries Science Center (PIFSC) indicate that Hawaii longline vessels caught the entire 2015 U.S. longline bigeye tuna quota of 3,554 mt, plus an additional 1,000 mt bigeye tuna provided by the CNMI specified fishing agreement, but did not reach the 1,000 mt allocation limit provided by the American Samoa specified fishing agreement before the end of the 2018 fishing year on December 31, 2018. Preliminary data from PIFSC also indicate that the American Samoa longline fishery caught less than 1,000 mt of bigeye tuna in 2018, and no bigeye tuna was harvested by longline vessels in Guam or the CNMI in 2018

Fishing Year 2019

The 2019 fishing year for the Hawaii deep-set longline fishery began on January 1, 2019. In a final rule published on, July 18, 2019, NMFS specified a 2019 limit of 2,000 mt of longline-caught bigeye tuna for each of the U.S. Territories, and allowed each territory to allocate up to 1,000 mt to U.S. longline fishing vessels identified in a specified fishing agreement that meets established criteria (84 FR 34321).

On July 24, 2019, NMFS determined that the 3,554 mt WCPO catch limit for 2019 would be reached by July 27, 2019. In accordance with 50 CFR 300.224(e), NMFS closed the U.S. longline fishery for bigeye tuna in the Western and Central Pacific Fisheries Convention Area through a temporary rule effective on July 27, 2019 through December 31, 2019 (84 FR 35568).

On August 1, 2019, NMFS announced a valid specified fishing agreement between the CNMI and the Hawaii Longline Association (HLA)(84 FR 37592). In accordance with procedures in 50 CFR 300.224(d) and 50 CFR 665.819(c)(9), NMFS began attributing bigeye tuna caught by vessels identified in the CNMI/HLA agreement to the CNMI beginning on July 20, 2019. NMFS forecasted that the fishery would reach the CNMI allocation limit by November 4, 2019, and closed the fishery on that date (84 FR 57827, October 29, 2019).

On October 28, 2019, NMFS announced a valid specified fishing agreement between American Samoa and HLA, and began attributing bigeye tuna caught by vessels identified in the agreement to American Samoa starting on that date (84 FR 57652). NMFS forecasted that the fishery would reach the American Samoa allocation limit by December 22, 2019, and closed the fishery on that date.

Since NMFS closed the U.S. longline fishery in July 2019, NMFS has subsequently determined that the fishery caught and retained only 3,456 t of the 3,554 t limit while it was open from January through July 26, leaving 98 t available for catch and retention. Based on average bigeye tuna catch rates by the U.S. longline fishery in the month of December in calendar years 2012 to 2018, NMFS estimated that the fishery could catch 98 t in five calendar days. Accordingly, NMFS reopened the fishery in the WCPO for five days (from December 23, 2019 to December 27, 2019), after which, the closure published on July 24, 2019 (84 FR 35568), again took effect through December 31, 2019.

On December 28, 2019, the US deep-set longline fishery closed before the end of the fishing year.

At the 181st Council Meeting, the Council recommended a catch limit of 2,000 mt for each US Participating Territory and specify that each US Participating Territory can allocate up to 1,500 mt of their bigeye tuna catch limit through specified fishing agreements with eligible US longline vessels permitted under the Pelagic FEP. The Council further recommended NMFS not authorize more than 3,000 mt in total allocations in 2020. This was to ensure that environmental impacts were to remain consistent with potential total catches attributed to US and US Participating Territories in previous years.

In 2018 and 2019, fishing effort for the deep-set fishery continued to increase to over 62 million hooks in 2019 (Figure 2;, WPRFMC, 2022) while the catch (mt kept) per unit effort (CPUE, hooks) for bigeye tuna by the Hawaii longline fleet exhibited higher than the preceding 2007-14 average, based on nominal (not standardized) CPUE (Figure 4; WPRFMC, 2022). Furthermore, since 2014, the average size of bigeye tuna may have increased, thus rendering high tonnage of bigeye tuna per deep-set effort. Both of these factors, combined with phased catch limit reductions, have contributed to the Hawaii longline fishery reaching the US WCPO longline bigeye limit sooner than in previous years.

2.4 Fishery Performance of the Hawaii Deep-set Longline Fishery since 2020

Beginning March 2020 through June 2022, the Hawaii longline fishery experienced hardships brought on by the novel COVID-19 pandemic, supply chain interruptions, reduced tourism into Hawaii, and low fishery production. In addition to the COVID-19 pandemic, Pacific tropical tuna fisheries experienced environmental drivers, likely associated with the La Niña oceanographic cycle, which altered distributions of tunas away from 'normal' or 'traditional' fishing areas.

Starting in 2020, in order to further reduce the possibility the Hawaii longline fishery closing its deep-set operations before the end of the fishing year, the Council and NMFS approved alternative allocation limits while keeping environmental impacts consistent since 2014. In 2020, fishing effort declined from 2019 effort levels, particularly fishing effort outside the US EEZ around Hawaii (Figure 2; WPRFMC, 2022). In 2021, effort levels exceeded those seen in the last decade, but with bigeye tuna catches declining (Figure 3; WPRFMC, 2022) and CPUE for bigeye tuna declining (Figure 4; WPRFMC, 2022). Despite these declines, the deep-set longline fishery experienced its highest revenue to date ($117.1 million), comprising 88% of a total revenue of $132.9 million for Hawaii-caught pelagic fisheries (WPRFMC, 2022).

<u>Fishing Year 2020</u>

The 2020 fishing year for the Hawaii deep-set longline fishery began on January 1, 2020. In a final rule published on, August 19, 2020, NMFS specified a 2020 limit of 2,000 metric tons (mt) of longline-caught bigeye tuna for each of the U.S. Territories, and allowed each territory to allocate up to 1,500 mt to U.S. longline fishing vessels identified in a specified fishing agreement that meets established criteria, with total allocations among all U.S. Territories to not exceed 3,000 mt (85 FR 50961).

On October 7, 2020, NMFS announced a valid specified fishing agreement between American Samoa and the Hawaii Longline Association (HLA)(85 FR 63216). In accordance with procedures in 50 CFR 300.224(d) and 50 CFR 665.819(c)(9), NMFS began attributing bigeye tuna caught by

vessels identified in the American Samoa/HLA agreement to the American Samoa beginning on September 6, 2020.

On November 2020, NMFS announced a valid specified fishing agreement between CNMI and HLA, and began attributing bigeye tuna caught by vessels identified in the agreement to CNMI starting on November 15, 2020 (85 FR 77406). NMFS forecasted that the fishery would reach the CNMI beyond the end of the fishing year, and thus the fishery did not close before December 31, 2020.

Fishing Year 2021

At the 182nd Council Meeting, the Council recommended a catch limit of 2,000 mt for each US Participating Territory and specify that each US Participating Territory can allocate up to 1,500 mt of their bigeye tuna catch limit through specified fishing agreements with eligible US longline vessels permitted under the PFEP for 2021. The Council further recommended NMFS not authorize more than 3,000 mt in total allocations in 2021. This was to ensure that environmental impacts were to remain consistent with potential total catches attributed to US and US Participating Territories in previous years. NMFS published this as final rule on January 12, 2021 (86 FR 2297), establishing a deadline for 2021 specified fishing agreements by July 12, 2021. On July 15 and 16, 2021, NMFS approved separate specified fishing agreements between HLA and the governments of CNMI and American Samoa, respectively. Each of the agreements allocated 1,500 t of bigeye tuna to U.S. fishing vessels identified in the agreements. NMFS forecasted that the fishery would reach the U.S. bigeye tuna limit of 3,554 t by September 6, 2021, and began attributing catch to the CNMI-HLA agreement on August 30, 2021 (86 FR 47596). The allocation under that agreement was sufficient for the remainder of 2021, so NMFS did not activate the American Samoa-HLA agreement.

On March 30, 2022 the Council was notified that 2021 USA longline bigeye catch in WCPFC was 3,750 mt or 196 mt over the 3,554 mt catch limit. This overage will be deducted from the WCPFC longline bigeye tuna catch limit for fishing year 2022.

Since 2015, the total catch of bigeye tunas (in numbers) by Hawaii longline fleet has stabilized and been higher than the previous decades, but with 2020 and 2021 showing declines (Figure 3). These declines are likely associated with COVID-19 inhibiting fishing operations and La Nina oceanographic conditions altering tuna distributions. Associated catches of yellowfin tuna have increase over two-fold since 2015, though slightly declining since 2019 from an all-time high in 2017. Since the 2015 peak in CPUE for bigeye in the Hawaii deep-set longline fishery has experienced a gradual decline, with 2021 being the worst year on record since 2012 (Figure 4; WPRFMC, 2022). CPUE for yellowfin increased in 2021.

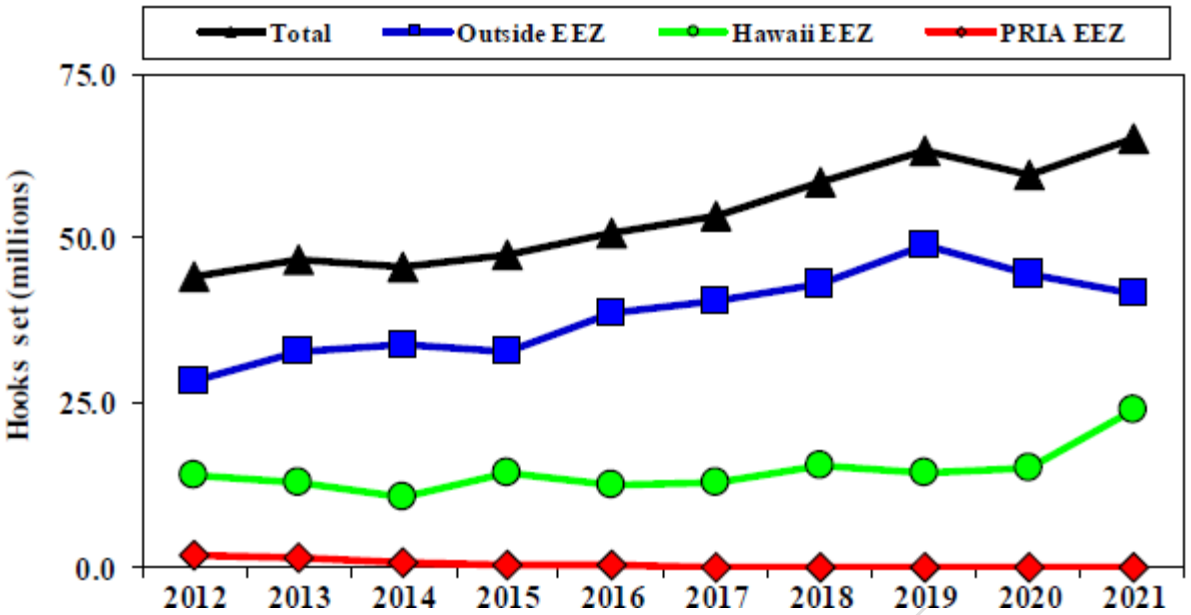

Figure 2: Number of hooks set by the Hawai`i-permitted deep-set longline fishery, 2012-2021.

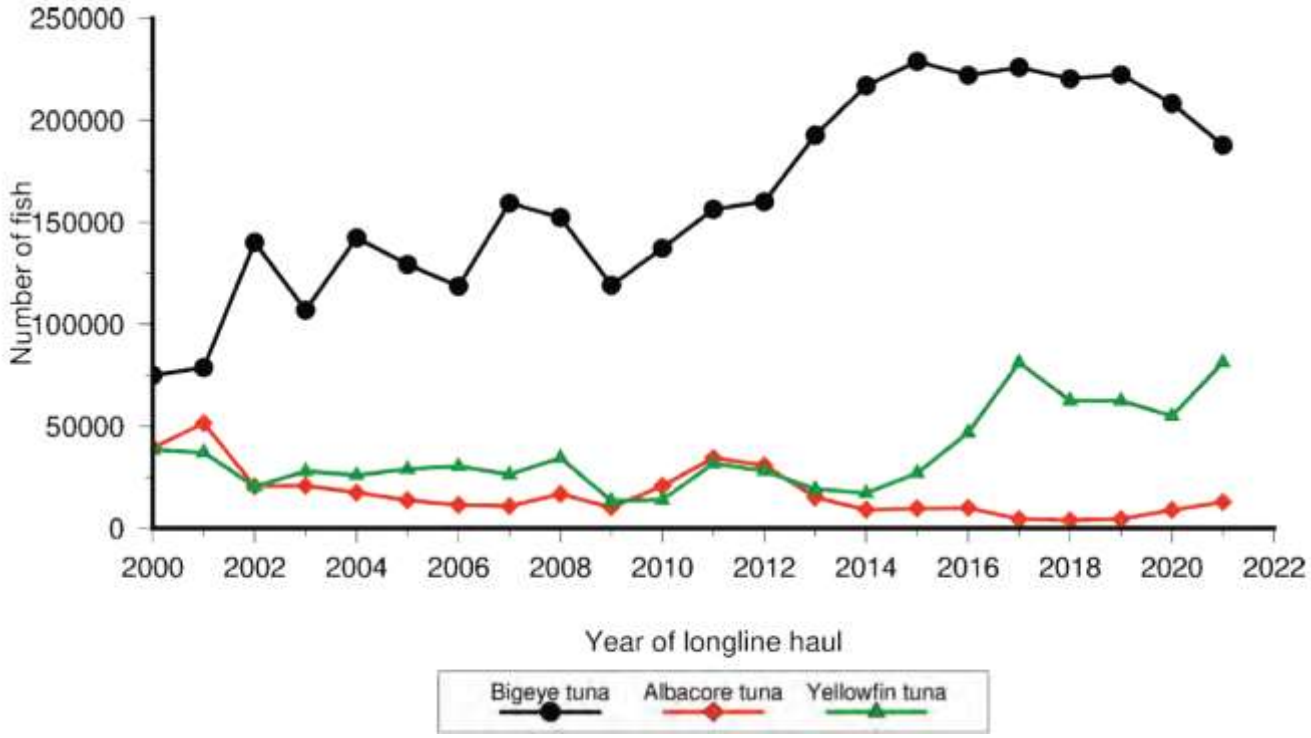

Figure 3: Total catch of tunas in the Hawaii longline fishery (in numbers caught) 2000-2021.

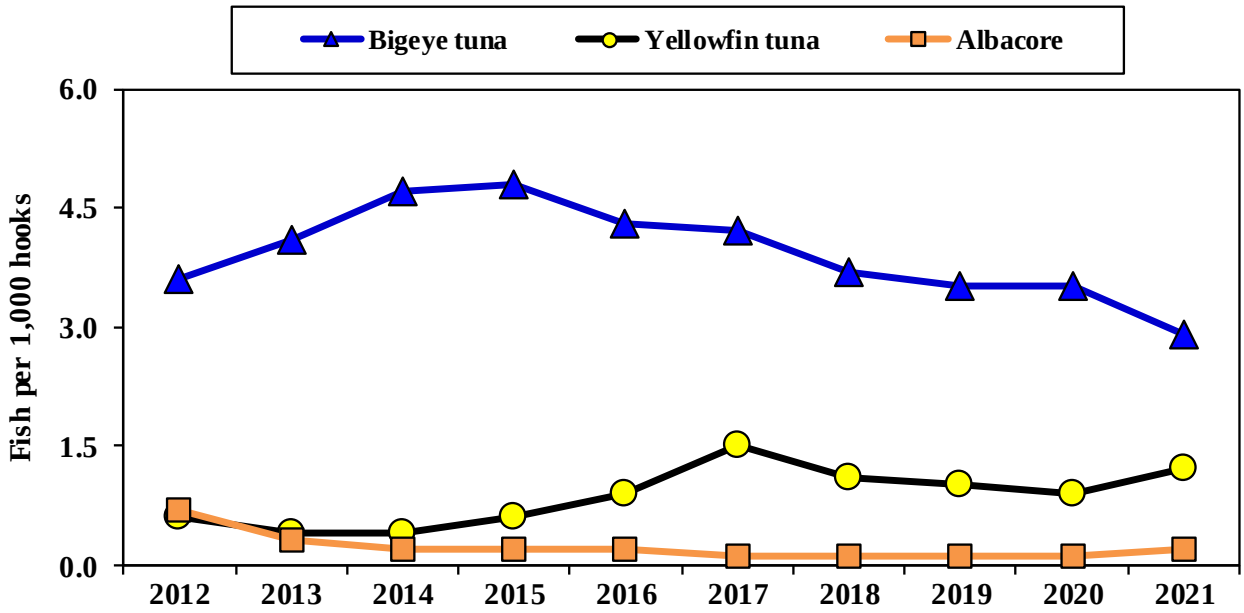

Figure 4: Catch per unit effort (CPUE) of tunas in the Hawaii deep-set longline fishery, in fish per 1,000 hooks, 2012-2021.

2.5 WCPO Bigeye WCPFC Management Measures

Bigeye tuna is considered a Pacific-wide stock that is managed and assessed separately by the WCPFC and Inter-American Tropical Tuna Commission (IATTC). In the WCPO bigeye tuna is not considered overfished or experiencing overfishing, according to stock status determination criteria described in the PFEP and limit reference points for the stock under the WCPFC. Declining trends in CPUE (in longline and purse seine fisheries) and continual annual increases in the number of purse seine sets on floating objects is of concern in the EPO. In the WCPO where the Hawaii deep-set fishery primarily operates, bigeye tuna is not overfished according to stock status determination criteria described in the PFEP. According to the 2020 stock assessment for bigeye in the WCPO, the spawning biomass of bigeye is above the WCPFC adopted limit reference of $SB/SB_{F=0} = 0.20$. In the WCPO, bigeye tuna is harvested across a range of fishing gears, with primary impacts from longline and purse seine fisheries.

In previous decades, the WCPO longline fishery (collectively includes all fleets such as Japan, Korea, China, US, etc.,) for adult bigeye for sashimi markets contributed to the greatest impacts to the bigeye stock. In recent years, the purse seine fishery for skipjack and yellowfin for canned tuna markets has increased its incidental catch of bigeye resulting in the purse seine fishery having a greater impact on the bigeye stock as the longline fishery. This is due to fishing mortality on juveniles being disproportionately higher than adult bigeye. The purse seine fishery incidentally catches juvenile bigeye while fishing on drifting fish aggregation devices (FADs). The WCPFC manages impacts to bigeye from the purse seine fishery through a seasonal FAD closure and vessel day limits, and impacts from the longline fishery, through annual catch limits.

Under WCPFC conservation and management measure 2008-01, the US Participating Territories were each provided with annual 2,000 mt longline bigeye limits or no catch limits if undertaking responsible fisheries development. These limits were extended by the WCPFC in 2011 (CMM 2011-01). WCPFC CMM 2012-01 (2012-01) which replaced 2011-01, exempted PTs and SIDS from annual longline bigeye catch limits.

The annual US WCPO longline bigeye limits are principally applicable to the Hawaii longline deep-set fishery, which historically has landed over 5,000 mt of bigeye in Honolulu. There are about around 10 to 15 longline vessels based in southern California, which occasionally fish in the WCPO for bigeye tuna. Under CMM 2008-01, the US WCPO longline bigeye limit was 3,763 mt from years 2009-2014. Since 2015 and under the current CMM 2020-01, the US WCPO longline bigeye limit was reduced to 3,554 mt. CMM 2021-01 is expires at the end of 2023 with catch limits specified by Table 3.

Table 3: Annual WCPO Bigeye Longline Catch limits (mt) Adopted by the WCPFC (CMM 2020-01)

CCM	Recent 2020 Catch (mt)*	2022 Catch limit (mt)	2023 Catch limit (mt)
Japan	12,791	17,765	17,765
Korea	13,011	13,942	13,942
Chinese Taipei	7,519	10,481	10,481
China	7,416	8,724	8,724
Indonesia	638	5,889	5,889
USA	3,548	3,358	3,554
Australia	290	2000	2000
New Zealand	67	2000	2000
Philippines	0	2000	2000
EU	40	2000	2000
SIDS & PTs	12,455	N/A	N/A

3. Purpose of Options Paper

Consistent with Amendment 7 to the Pelagics FEP, the purpose of this options paper is for the Council's consideration of recommending the specification 2022 bigeye tuna catch and an allocation limits for longline fisheries of each of the US Participating Territories.

4. Catch Limit Options

The following table provides a summary of bigeye catch limit specification options considered in this paper. The Council may identify other options for consideration. For recent analyses on a similar range of catch limit options see Kingma and Bigelow (2019).

Table 4: Catch Limit Options

	Option 1	**Option 2**	**Option 3**
Description	No action	"Status Quo/Impact Consistency": 2,000 mt longline bigeye longline limits for the US PTs; specify *up to* 1,500 mt transfer limits per territory; total allocations not to exceed 3,000 mt	2,000 mt longline bigeye longline limits for the US PTs; specify *up to* 2,000 mt transfer limits per territory

1) No catch limits for the US PTs; no transfer limits

Under this option, there is no catch limit for any of the US Participating Territories and no transfer limits of bigeye tuna from US Participating Territories to U.S. vessels permitted under the FEP through specified fishing agreements.

2) 2,000 mt longline bigeye limits for the US PTs; *up to* 1,500 mt transfer limit; total transfers not to exceed 3000 (consistency)

Under this option, an annual longline bigeye limit of 2,000 mt would be established for each Territory. This limit is more restrictive than what is provided under the existing WCPFC tropical tuna measure CMM 2020-01, whereby no limits are provided to SIDS and Participating Territories. Also under this option, the Territories could assign up to 1,500 mt per year of their annual longline bigeye tuna catch limits through specified fishing agreements with U.S. vessels permitted under the FEP. Total allocations may not exceed 3,000 mt, such that environmental impacts remain commensurate to expected impacts under past specifications.

3) 2,000 mt longline bigeye limits for the US PTs; *up to* 2,000 mt transfer limit (flexibility)

Under this option, an annual longline bigeye limit of 2,000 mt would be established for each Territory. This limit is more restrictive than what is provided under the existing WCPFC tropical tuna measure CMM 2018-01, whereby no limits are provided to SIDS and Participating Territories.

Also under this option, the Territories could assign up to 2,000 mt per year of their annual longline bigeye tuna catch limits through specified fishing agreements with U.S. vessels permitted under the FEP.

5. Pros and Cons of Catch Limit Options

Option 1: No action - No catch limits for the US PTs; no transfer limits

Pros	Cons
• Demonstrates the US is taking stronger conservation measures than what are provided • May lead to some marginal conservation benefits, although not significant relative to foreign fisheries	• Removes fishing development funding opportunities for the Territories • Reduces food security for the United States and the US Participating Territories. • Diminishes US and territorial catch precedence in the WCPFC and may have negative political consequences • Will have negative consequences to the US seafood market, particular US Pacific Islands, which will not have fresh US-caught tuna throughout the calendar year and through a culturally-important season. • Will increase reliance on foreign seafood in US markets (seafood deficit)

Option 2: Status Quo and Consistency in Impacts- Specify 2,000 mt longline bigeye limits for the US PTs; up to 1,500 mt transfer limits per US PT; total transfers do not exceed 3,000 mt

Pros	Cons
• Demonstrates the US is taking stronger conservation measures than what are provided the Territories under WCPFC 2018-01 • Consistent with previously provided longline limits provided to the Territories and same as for members that have not harvested 2,000 metric tons annually, including New Zealand, Australia, Philippines, and European Union. • Addresses bigeye overfishing by establishing overall total Territory limits and limits on the amount that is potentially transferred under specified fishing agreements. • Supports fisheries development funding opportunities for the US Territories. • Does not unduly constrain existing Territory longline fisheries that land bigeye locally. • Would establish an overall longline bigeye limit applicable to US vessels in the WCPO of 6,345 mt (3,000 mt total for Territories + US limit of 3,345); this level of catch, if utilized, has been evaluated to not impede the international objective of eliminating overfishing of bigeye while *consistent* to impacts of specification in prior years • Supports fisheries development funding opportunities for the US Territories.	• May be reducing fishing development funding opportunities for one Territory by unnecessarily restricting the amount of catch that could be transferred under specified fishing agreements, while still achieving conservation objectives.

Option 3: 2,000 mt longline bigeye longline limits for the US PTs; specify *up to* 2,000 mt transfer limits per territory

Pros	Cons
• Allows flexibility for territories and US fishing vessels permitted under the Pelagic FEP to make arrangements that can keep the fishery operating through the fishing year without reliance on three specified agreements. • Demonstrates the US is taking stronger conservation measures than what are provided the Territories under WCPFC CMM-2020-01 • Addresses bigeye overfishing by establishing overall total Territory limits and limits on the amount that is potentially transferred under specified fishing agreements. • Consistent with previously provided longline limits provided to the Territories and same as for members that have not harvested 2,000 metric tons annually, including New Zealand, Australia, Philippines, and European Union. • Would establish an overall longline bigeye limit applicable to US vessels in the WCPO of 9,345 mt (6,000 mt total for Territories + US limit of 3,345); this level of catch, if utilized, has been evaluated to not impede the international objective of eliminating overfishing of bigeye. • Supports fisheries development opportunities in the US Participating Territories. • Not anticipated to change fishing effort levels and evaluated impacts to non-target species, habitat and protected species would be maintained..	• May lead to a situation in which US Participating Territories are excluded from agreements due to timing, prior agreements, and/or fishery performance • Need to take into account American Samoa longline bigeye catches (approx. 500 mt) in regards to total 2,000 mt limit and the amount that could be transferred. • The longline fishery in CNMI and Guam has been inactive since 2011. CNMI and Guam would need to monitor longline development and the amount transfer that would be available under multiyear specified fishing arrangements.

The following tables (Table 5 and 6) is for informational purposes and relates to the NMFS Environmental Assessment associated with the 2018 and 2019 Territory specification rule makings. The table presents the impact (in percent change to stock status reference points) of the potential utilization of Territory longline catch and transfer bigeye limits. The table was generated from an analysis that used the US WCPO longline limit of 3,554 mt.

Table 5: Option 1, No catch or allocation limit and Option 2, including F/F_{MSY}, $SB/SB_{F=0}$ values in 2045 based on SPC projections from Kingma and Bigelow (2019)

	Sub-Alternative 1: No catch or allocation limit		**Option 2: 2,000 t Catch Limit and 3,000 t total Allocation Limits for U.S. Participating Territory**					
No. of Specified Fishing Agreements	No Fishing Agreements and No BET Transfers		1 Fishing Agreement and 1,000 t of BET Transfers		2 Fishing Agreements and 2,000 t of BET Transfers		3 Fishing Agreements Or 2 agreements of 1,500 mt; 3,000 t of BET Transfers	
Total assumed BET Catch by U.S. and U.S. Participating Territory Longline Vessels	4,095 t		5,095 t		6,095 t		7,095 t	
Scaled U.S. Longline BET Catch (Regions 2 and 4)	3,998 t HI: 3,554 HI/AS Dual: 444 Transfers: 0		4,998 t HI: 3,554 HI/AS Dual: 444 Transfers: 1,000		5,998 t HI: 3,554 HI/AS Dual: 444 Transfers: 2,000		6,998 t HI: 3,554 HI/AS Dual: 444 Transfers: 3,000	
		Percent Change		Percent Change		Percent Change		Percent Change
F_{2045}/F_{MSY}	0.82	0.0	0.83	1.2	0.84	2.4	0.85	3.6
$SB_{2045}/SB_{F=0}$	0.38	0.0	0.37	-2.6	0.37	-2.6	0.37	-2.6

Table 6: Option 1, No catch or allocation limit and Option 3, including F/F_{MSY}, $SB/SB_{F=0}$ values in 2045 based on SPC projections from Kingma and Bigelow (2019)

	Sub-Alternative 1: No catch or allocation limit		**Option 3: 2000 mt Catch Limits and up to 2,000 t Allocation Limit for each U.S. Participating Territory**					
No. of Specified Fishing Agreements	No Fishing Agreements and No BET Transfers		1 Fishing Agreement and 2,000 t of BET Transfers		2 Fishing Agreements and 4,000 t of BET Transfers		3 Fishing Agreements and 6,000 t of BET Transfers	
Total assumed BET Catch by U.S. and U.S. Participating Territory Longline Vessels	4,095 t		6,095 t		8,095 t		10,095 t	
Scaled U.S. Longline BET Catch (Regions 2 and 4)	3,998 t HI: 3,554 HI/AS Dual: 444 Transfers: 0		5,998 t HI: 3,554 HI/AS Dual: 444 Transfers: 2,000		7,998 t HI: 3,554 HI/AS Dual: 444 Transfers: 4,000		9,998 t HI: 3,554 HI/AS Dual: 444 Transfers: 6,000	
		Percent Change		Percent Change		Percent Change		Percent Change
F_{2045}/F_{MSY}	0.82	0.0	0.84	2.4	0.85	3.6	0.87	6.0
$SB_{2045}/SB_{F=0}$	0.38	0.0	0.37	-2.6	0.37	-2.6	0.36	-5.5

Note: Under the Pelagics FEP, a stock is experiencing overfishing when $F/F_{MSY} > 1.0$. Because Kingma and Bigelow (2019) could not generate an MSY-based biomass reference point, we use the WCPFC's adopted limit reference point to evaluate impacts to the bigeye tuna stock. WCPFC considers bigeye tuna overfished when $SB/SB_{F=0} < 0.20$.

6. Descriptions of Possible Alternative Outcomes

Under Option 3, NMFS would specify a catch limit of 2,000 t of bigeye tuna for each U.S. participating territory and authorize the three U.S. territories to each allocate up to their entire 2,000 t bigeye limit to FEP-permitted longline vessels identified in a specified fishing agreement with a U.S. territory. As an accountability measure, NMFS would prohibit the retention of longline-caught bigeye tuna by vessels in the applicable U.S. territory (if NMFS projects the territorial limit will be reached), and/or by vessels operating under the applicable specified fishing agreement (if NMFS projects the allocation limit will be reached). Pursuant to federal regulations at 50 CFR 665.819, if NMFS determines catch made by vessel(s) identified in a specified fishing agreement exceeds the allocated limit, NMFS will attribute any overage of the limit back to the U.S. or U.S. participating territory to which the vessel(s) is(are) registered and permitted.

Expected Fishery Outcomes

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

American Samoa would have the ability allocate away all 2,000 t of its limit to vessels identified in a specified fishing agreement, or allocate only a portion of its bigeye tuna limit while retaining a portion for its local fleet. The American Samoa longline fleet landed an average of approximately 541 t annually from 2012-2017, with 97 t from vessels operating in the South Pacific Ocean and 444 t from dual permitted vessels operating in the North Pacific Ocean.

Based on recent levels of bigeye tuna catch by longline vessels to which the U.S. bigeye tuna limit applies, the U.S. longline fleet could reach the assumed U.S. bigeye tuna limit of 3,554 t by November or earlier. Before the limit is reached, NMFS expects that territorial governments and/or vessels in the Hawaii longline fishery will seek to negotiate a specified fishing agreement to allocate a portion of a territory's allocation limit. Because federal regulations prohibit a vessel from participating in more than one specified fishing agreement at a time, U.S. longline permitted vessels from Hawaii would enter into specified fishing agreements sequentially, with one or more U.S. territories.

Under the potential outcomes in this section, the expected interaction rate of the Hawaii deep-set longline fishery with protected species is not expected to yield a significant increase commensurate with practical levels of fishing effort needed to reach the potential bigeye catch levels within the current fleet capacity.. Best scientific information available does not demonstrate a linear relationship between effort deployment or bigeye tuna catch with interaction rates with protected species.

Potential Outcome 2B: Three Specified Fishing Agreements and Maximum Allocation of Territorial Limits up to 1,000 mt (Consistent Impacts with Status Quo since 2020)

If each U.S. participating territory is provided an annual 1,000 t allocation limit, NMFS could authorize up to three specified fishing agreements. The assumed amount of catch would be the U.S. limit of 3,554 mt, plus a possible American Samoa catch of 541 t, plus the 1,000 t to 3,000 t of bigeye subject to 1 to 3 specified fishing agreements. The assumed amount of bigeye catch would be: 5,095 t, 6,095 t, and 7,095 t. These outcomes are identical to the assumptions for status quo under Option 2 (1,500 t allocation limits, limiting total transfers to 3,000 t), keeping environmental impacts consistent with previous years. But these arrangements may have slightly different effects when implemented for multiple years instead of annually. These arrangements were made from 2014 to 2019. However, the inability of one territory to reach a specified fishing agreement may keep the Hawaii-based fishery from fishing at its capacity and operate throughout the fishing year. Such was the case in 2019.

Potential Outcome 3A: Three Specified Fishing Agreements and Maximum Allocation of Territorial Limits up to 2,000 mt

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

Potential Outcome 3B: Three Specified Fishing Agreements and Maximum Allocation of Territorial Limit for Guam and the CNMI and 1,500 t Allocation for American Samoa

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

Potential Outcome 3C: Up to three Specified Fishing Agreements with up to 1,500 t Allocation for Guam, the CNMI, and American Samoa

There are several distinct possible fishery outcomes for total catch of bigeye tuna under allocations up to 1,500 t per territorial agreement. These outcomes from one specified fishing agreement (3,554 t from the U.S. limit, plus 1,500 t catch and allocation limit = 5,054 t) to all

three specified fishing agreements (3,554 t from the U.S. limit, plus 4,500 t catch and allocation limit = 8,054 t). Under three specified fishing agreements, the maximum allowable catch would be 3,554 t plus 4,500 t in allocations, or 8,054 t. This Option includes the possibility of two territorial agreements of 1,500 t to be allocated to the U.S fishery, which is commensurate to recent historical allocations of 1,000 t under three agreements (total allocations of 3,000 t) from 2017 and 2018. In 2019, there was the availability of only two territorial agreements of 1,000 t, which led to premature closure of the fishery prior to December 31, 2019. Option G allows for up to three allocations under specified agreements of up to 1,500 t per territory, such that a significant possibility two specified agreements may fulfill fishing capacity needs of the U.S. fishery throughout the entire fishing year. This EA analyzes 8,054 t as the maximum possible expected fishery Outcome 3C under Alternative 3. Under Outcome 3C, all three territories would each allocate all 1,500 t of their catch limit, and American Samoa would not retain any bigeye tuna for its local fleet if it exceeds 500 t. American Samoa has historically attributed in excess of 500 t per year from dual-permitted vessels and its local fleet, thus there is possibility of American Samoa not retaining its catch of bigeye tuna before the end of the fishing year.

Potential Outcome 3D: Three Specified Fishing Agreements and Maximum Allocation of 1,500 t Allocation for Guam and the CNMI and 1,000 t for American Samoa

Because if American Samoa allocates 1,500 t catch limit to U.S. longline vessels, there is a possibility of dual-permitted and its local fleet exceeding its territorial catch limit of 2,000 t based on previous catch precedence and not having the ability to retain its bigeye catch during the fishing year. We also analyze an outcome to ameliorate this risk (Outcome 3D), where NMFS would authorize all three specified fishing agreements, with Guam and the CNMI each allocating the maximum of 1,500 t, while American Samoa allocates 1,000 t of its 2,000 t limit for a total of 4,000 t in allocations. Under this scenario (Outcome 3D), American Samoa would be able retain an excess of its historical 514 t catch for its local fleet and dual permitted vessels (up to 1,000 t total). Thus, the maximum allowable catch of bigeye tuna under Outcome 3B would be 8,054 t, with 3,554 t from the U.S. limit, 1,500 t of allocation each from the Guam and the CNMI, plus 1,000 t from the American Samoa allocation, and up to 1000 t from American Samoa catch. While total bigeye mortality would be the same as in Outcome 3C (i.e., 8,054 t) under this outcome, there are slightly different socioeconomic effects for American Samoa. American Samoa has not exceeded 700 t catch of bigeye for its dual-permitted vessels and its local fleet in recent years. Fishery participation in American Samoa has declined substantially since 2012, so the probability of catch for American Samoa exceeding its average 2012-2017 catch of 514 t of bigeye tuna (as referenced in the 2019 EA) is negligible and highly unlikely.

Discussion

Under Outcomes under Option 2 and Option 3 outcomes described by 2B, 3A, 3B, 3C, and 3D: we do not expect that the longline fisheries based in Hawaii and the U.S. participating territories would change the manner in which they fish, including gear types used, species targeted, area fished, seasons fished, or intensity of fishing. Under higher allocation limits in Option 3, catch of target and non-target stocks and interactions with protected species could increase in the Hawaii deep-set longline fleet if fishing activity increases, as the catch of bigeye tuna drives fleet dynamics in the longline fishery as a whole. Under Option 3, the catch of bigeye tuna drives fleet dynamics in the longline fishery as a whole. Even under higher allocation limits, we expect that

protected species interactions would remain within the conservative levels analyzed in Section 3.3 of the 2019 EA and the proportion of harvested target and non-target stocks compared to the its maximum sustainable yield (MSY) or overall catch to remain low. For these reasons, we do not expect that the impacts would be substantial. NMFS and the Council would continue to develop mitigation measures as fishery management issues are identified.

8. References

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