

WHY is my poke bowl \$20? Is this the A-poke-lypse?

The answer to this question is not so simple—but, don't be alarmed! The situation is certainly not permanent and tuna stocks around Hawai'i are doing just fine. Bigeye and yellowfin tuna ('ahi), like any commodity, are very dynamic when it comes to supply, demand and pricing. Lately, the price of bigeye ahi exceeded \$20 per pound at the market—several times more than what buyers usually pay. Prices then teetered around \$11-12 per pound and cooled off to \$7-8 per pound during the second week in August. The amount of U.S.-caught ahi coming into Pier 38 in Honolulu Harbor is normally between 60,000-80,000 pounds per day. Levels this summer have been a steady 30,000-40,000 pounds per day. However, more boats have been showing up, thus the supply is only slightly increasing, but it is having a profound impact on the price point.

In 2020, COVID-19 restrictions slashed consumer demand when restaurants and hotels shuttered through the pandemic and the Hawai'i's tourism industry came to a halt. Supply in 2020 was slightly lower than today, yet the price of 'ahi that year was exceptionally low and fresh fish were regularly donated to Hawai'i families. Some fishers sold their catch directly from their



Poke trio. Photo: Dean Sensui.

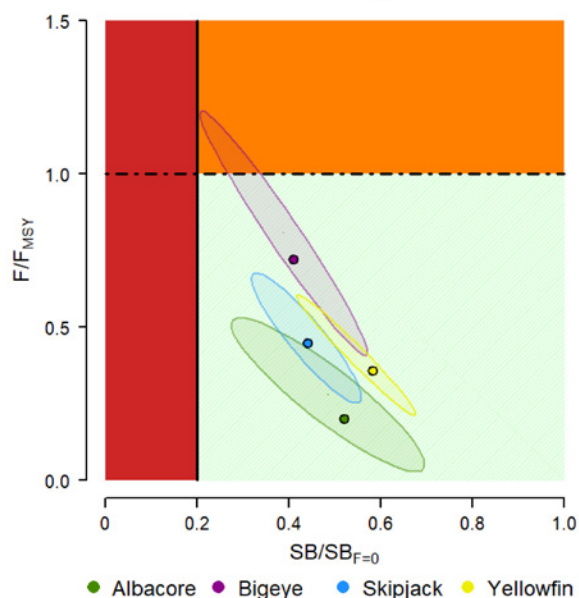


Figure 1. Majuro plot stock status summary for the four Western and Central Pacific Ocean target tuna stocks. Stocks in the green section of the plot are likely not overfished, nor experiencing overfishing. Source: SPC (2020).

boats. A year later, Hawai'i Tourism Authority reported more than 30,000 visitors daily were coming to the Hawaiian Islands. This has greatly impacted the demand for Hawai'i's famed 'ahi poke. With a shortage of 'ahi and demand skyrocketing with the explosion in tourism—plus demand from the continental United States—it created a "perfect storm" for the consumer.

Supply this year has been limited by several factors; it is linked to the local Hawaiian fisheries (including longline, shortline and troll/handline) and to the supply of foreign-sourced tuna. During summer 2021, supply from local fisheries has only been slightly higher than it was in 2020. Supply from foreign sources that often floods into the Hawai'i market this time of year has been minimal, virtually non-existent, most likely due to supply chain disruptions from COVID-19. Foreign-sourced tuna, often previously frozen, has always been a cheaper alternative for consumers looking for poke or 'ahi katsu without paying a premium for locally-sourced product. With cheaper alternatives limited, and a shortage of locally-sourced 'ahi, supply cannot keep up with demand.

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Catch and stock status by Tuna RFMO

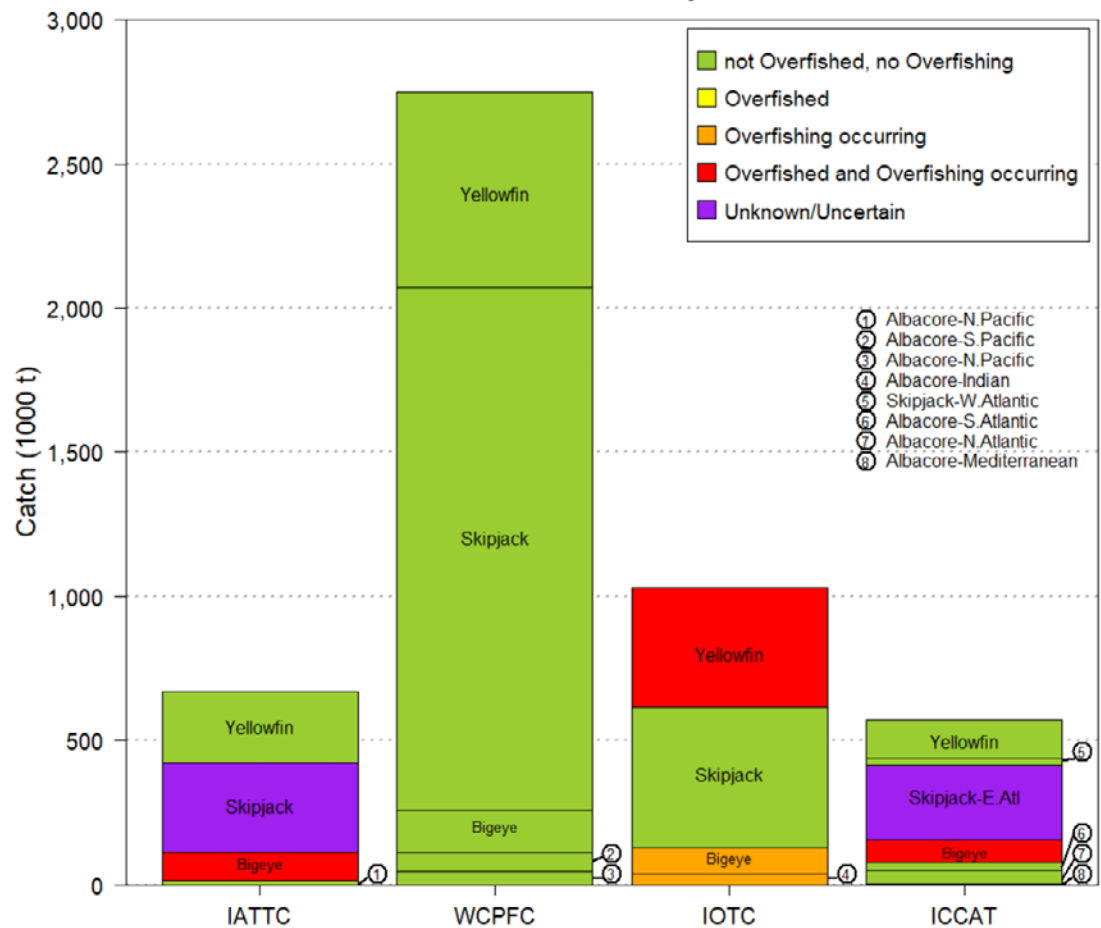


Figure 2. Summary of tuna stocks, annual catches and their stock status within major tuna regional fishery management organizations. *Source: SPC (2020).*

The lack of supply from both foreign and domestic sources may be alarming and lead to the rash conclusion that the situation is due to depleted fish stocks. However, 2020 stock assessments for both bigeye and yellowfin 'ahi in the Western and Central Pacific Ocean (including Hawai'i) indicate that the stocks are two and three times above the levels considered sustainable (**Figure 1**). In fact, stocks internationally managed under the Western and Central Pacific Fisheries Commission (WCPFC) supply 60% of the world's tuna and its four principle tuna stocks (bigeye, yellowfin, skipjack and albacore tunas) are not overfished and not experiencing overfishing (**Figure 2**).

Reported catch rates so far in 2021 have been low—not just in Hawai'i, but also in the Marshall Islands and elsewhere in the Western and Central Pacific. Longline fisheries that typically target both bigeye and yellowfin

have been known to have higher catch rates in years when oceanographic conditions have a "shallower" thermal structure in the western and central areas of the Pacific (Lehodey, 1997). This means that tuna's preferred habitat with enough oxygen is compressed in the water column and draw fish into more aggregated zones, thus increasing the likelihood of catching fish. This coincides with the oceanographic condition associated with an El Niño event. The opposite condition occurs in years or seasons associated with a La Niña. The World Meteorological Organization recently indicated that a La Niña event occurred through most of 2020 and concluded in May 2021, which may explain lower catch rates. Scientists have not determined the definite cause for poor fishery performance, but the situation is not new and is usually linked to a scattering of fishery resources due to environmental variability. 🐟

Source: Lehodey, P. 1997. Impacts of the El Niño Southern Oscillation on tuna populations and fisheries in the tropical Pacific Ocean. 13th Meeting of the Standing Committee on Tuna and Billfish, Working Paper RG-1. Oceanic Fisheries Programme, Secretariat of the Pacific Community.

COVID-19 Impacts Illustrated in 2020 US Pacific Island Fisheries Reports

The Western Pacific Regional Fishery Management Council released the 2020 Annual Stock Assessment and Fishery Evaluation (SAFE) Reports June 30, 2021, for the Hawai'i, American Samoa and Mariana Archipelagos, and Pacific Pelagic and Pacific Remote Island Areas. Each year, the Council, National Marine Fisheries Service (NMFS), Hawai'i Division of Aquatic Resources, American Samoa Department of Marine and Wildlife Resources, Guam Division of Aquatic and Wildlife Resources and the Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife collaborate to assemble the reports. They summarize annual fishery performance, including trends in catch, effort and catch rates, and describe various ecosystem considerations, such as changes in climate, socioeconomic trends and protected species interactions. The information is utilized by fisheries managers to ensure fisheries remain sustainable so they can provide a consistent supply of fish to meet demand and mitigate potential issues in the function of fisheries.

In 2020, the COVID-19 pandemic posed a serious threat to Pacific Island fishery operations, markets, access and data collection. The NMFS Pacific Islands Fisheries Science Center (PIFSC) developed a new section in the SAFE reports to describe the various impacts of the pandemic on fisheries and communities reliant on fishing socially, culturally and for sustenance. While there were relatively few cases of COVID-19 in the Pacific Islands, restrictions on travel, gathering and commerce had substantial impacts on local economies, livelihoods and human welfare across the region. Local restrictions included curfews, social distancing, limitations or cancellations of gatherings, stay-at-home/work-from-home orders, and flight suspensions, among others. The changes created substantial decreases or a complete

shutdown in tourism, leading to business closures and decreased employment rates. Fishing shifted from commerce to subsistence practices and most fishing tournaments were cancelled.

With respect to fisheries impacts, the pandemic impacted data collection efforts by fisheries managers throughout the region. In Hawai'i, though commercial fisheries data collection was not affected because most data are self-reported by fishers and vendors online, the Hawai'i Marine Recreational Fishing Survey, which attempts to capture marine, noncommercial fishing data, was discontinued from March 20 through July 1, 2020, in response to state-mandated restrictions. Additionally, the pandemic hindered the collection of federal logbook data from Hawai'i pelagic fisheries due to limitations on interactions between

fisheries managers and the fishing industry, but it prompted PIFSC to adapt this data collection process to align with safety guidelines from the State of Hawai'i and NMFS. To help ensure the safety of fishermen and observers, NMFS also waived observer coverage in regional longline fisheries on a case-by-case basis.

In American Samoa, the pandemic caused time spent on fisheries data collection to decrease, and creel survey coverage was halved from March through July. In the CNMI, data collection efforts were hampered from March through May due to the closure of all government offices.

All fishery data collection activities in Guam were ceased from mid-March through July and August through December due to government restrictions associated with the pandemic.

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Table 1. 2020 catch and revenue for Western Pacific pelagic fisheries.

Island Area	Fishery	2020		Change from 2019 (%)	
		Catch (lbs)	Revenue (\$)	Catch	Revenue
Hawai'i	Deep-set longline	27,061,090	71,502,650	-15.1	-24.2
	Shallow-set longline	838,023	1,292,861	+1.1	-34.5
	Main Hawaiian Islands (MHI) trolling	1,485,687	4,245,403	-40.1	-42.1
	MHI handline	578,773	1,881,551	-15.8	-14.3
	Offshore handline	326,625	959,858	-31.7	-7.6
	Other gears	109,959	120,536	-16.6	-65.7
American Samoa	Longline	1,879,264	2,120,262	-36.9	-49.2
	Trolling	11,877	7,211	-62.1	-85.4
CNMI	Trolling	689,139	349,096	+47.8	-24.8
Guam	Trolling	614,633	164,441	-26.9	-49.0

Note: Data for 2020 landings and revenues are based on commercial reports and/or creel survey expansions. Landings and revenues generated from creel survey data are estimates. Not all catch shown was sold. "n.d." indicates that data were not disclosed due to rules regarding data confidentiality. Data obtained from fewer than three sources are considered confidential and are not able to be reported.



Table 2. 2020 catch and revenue for Western Pacific bottomfish fisheries.

Island Area	Fishery	2020		Change from 2019 (%)	
		Catch (lbs)	Revenue (\$)	Catch	Revenue
Hawai'i	Deep-7 bottomfish stock complex	161,437	1,030,834	-10.7	-23.0
	Uku (grey snapper)	47,912	180,966	-46.8	-57.4
American Samoa	Boat-based bottomfish	8,040	1,067	-31.1	-85.6
CNMI	Boat-based bottomfish	103,239	10,719	+391.3	-88.8
Guam	Boat-based bottomfish	17,119	n.d.	-42.6	—

Note: Data for 2020 landings and revenues are based on commercial reports and/or creel survey expansions. Landings and revenues generated from creel survey data are estimates. Not all catch shown was sold. "n.d." indicates that data were not disclosed due to rules regarding data confidentiality. Data obtained from fewer than three sources are considered confidential and are not able to be reported.

The government shutdown in Guam effectively reduced the amount of scheduled boat-based creel surveys by about 60%. These pauses may have caused data collection efforts to be unable to capture seasonal changes in key pelagic and bottomfish fisheries, and reduced the effectiveness of the creel survey expansion process.

The Council manages many pelagic fisheries in the Western Pacific Region, including large pelagic species such as tunas and billfishes harvested by longlining, trolling, handlining and other gear types. Catch, revenue and percent change for each of the pelagic fisheries from 2019 to 2020 are presented in **Table 1**. Pelagic fisheries in Hawai'i mostly had reduced catch in 2020 except for the shallow-set longline fishery, which was able to operate throughout the fishing year, unlike recent years where the fishery was closed early due to interactions with protected sea turtles. Revenue, however, still declined for all pelagic gear types due to a drastic decrease in fish price, reduced demand, industry-imposed landing limits and the loss of income from vessels spending more days tied up in port.

American Samoa's pelagic fisheries have been on a downward trend over the past decade and had an all-time low total harvest and revenue in 2020. Regional longline fisheries, which primarily target albacore tuna, struggled to recruit fishing crews in the face of travel restrictions.

Pelagic fisheries in the CNMI had an increase in estimated total catch, but a decreased revenue in 2020, which may indicate that fishing occurred over the

course of the pandemic at an increased rate (possibly for subsistence purposes and because many residents were told to not come into work or were laid off), but commerce suffered. Reporting on the CNMI commercial pelagic fisheries is usually impacted by the lack of vendor participation, but the Council expects commercial reporting to improve due to mandatory commercial licensing and reporting regulations that were recently implemented.

Though pelagic fishery statistics for the CNMI and Guam are usually comparable, the annual catch estimate for Guam's pelagic fisheries declined nearly 27% from the previous year. This may be due to the underestimation of seasonal pelagic fishes, such as blue marlin, wahoo and yellowfin tuna, since their peak harvests usually occur during the time that the boat-based creel surveys were not conducted.

Though pelagic fisheries in the Western Pacific Region tend to land a higher volume of fish and generate more ex-vessel revenue, bottomfish fisheries are still important both culturally and economically. Catch, revenue, and percent change for each of the bottomfish fisheries from 2019 to 2020 are presented in **Table 2**. Hawai'i small-boat fisheries experienced significant impacts from the COVID-19 pandemic due to the decreased demand from the complete shutdown of the hotel and restaurant industries following the initial lockdown. However, many bottomfish fishers also attribute the declines in catch for the Deep-7 bottomfish and uku to high shark depredation, challenging environmental conditions and atypical fish behavior.

In 2020, American Samoa small-boat fisheries continued throughout 2020, but opportunities to fish were impacted by curfews and school closures that increased the need for childcare. Curfews shut down local harbors in the CNMI from sunset to sunrise that, in addition to social distancing guidelines, reduced consumer traffic and access to fish. Despite this, the CNMI had a substantial increase in bottomfish harvest from previous years, with the majority of fish available to the population coming directly from fishers who fish for themselves, family and friends.

In Guam, charter fishing mostly shut down and logistical and health considerations for fishing activity impacted the frequency and social aspects of fishing across age groups, as many fishing access points were closed. While the data show that bottomfish harvest in Guam notably declined, fishers reported an overall increase in fishing activity, which supports the assumption that missed creel surveys affected the total annual catch estimates. Fishers focused more of their time on offloading fish directly to consumers via existing relationships and social media given the closure and reduced operations of typical venues like restaurants and hotels.

Annual catch limits (ACLs), the primary tool to manage nonpelagic management unit species (MUS) fisheries in the Western Pacific Region, were used normally despite the pandemic. Catches are tracked against the ACLs, which the Council presents in the annual SAFE reports. In Hawai'i, there are ACLs for bottomfish, crustaceans

and precious corals, while the American Samoa and Mariana Archipelagos have ACLs for bottomfish only. In the past, ACLs were implemented for many more species, including coral reef fish. However, these species were reclassified from MUS to ecosystem component species in 2019, and are now simply monitored to achieve ecosystem management objectives. Based on the 2020 catch data for MUS fisheries in the Western Pacific Region, none of the implemented ACLs were exceeded (see **Table 3**). For Hawai'i precious corals, annual catch values are not disclosed due to data confidentiality rules prohibiting data from less than three sources being reported. The information

highlighted in this article represents just a small portion of the available data and topics reviewed in the annual SAFE reports. Several other sections are included in the reports each year, such as indicators of current and changing climate and oceanic conditions in the Pacific Ocean, which provide fishing communities, resource managers and businesses with climate-related situational awareness. Changes in the state of the climate and ocean itself may impact marine ecosystems in a manner that could affect the productivity or catchability of managed fish stocks. Determining how changes in the ocean environment can impact fisheries is an area of active research.

Newly added in the reports for 2020 were sections on COVID-19 impacts to fisheries and fishing communities, fishermen observations as reported to the Council and data from federal logbooks for nearshore species (including bottomfish, coral reef fish and crustaceans). Full reports are available on the Council's website at www.wpcouncil.org/annual-reports. The reports will soon be available through the Council's online portal for the annual SAFE reports (www.wpcouncildata.org) that makes navigation easier and allows readers to directly download the reported data. 🐟

Table 3. Annual catch limits (ACLs) for Western Pacific management unit species (MUS) compared to average catch from 2018–2020. Catch for Hawai'i Deep-7 bottomfish is only shown for the 2020 fishing year.

Island Area	Fishery	MUS	ACL (lbs)	Catch (lbs)	Portion of ACL caught (%)
Hawai'i	Bottomfish	Deep-7 bottomfish stock complex	492,000	161,437	32.8
		Uku (grey snapper)	127,205	71,059	77.6
	Crustacean	Deep-water shrimp	250,773	n.d.	—
		Kona crab	30,802	4,219	13.7
American Samoa	Boat-based bottomfish	Bottomfish	13,000	10,638	81.8
CNMI	Boat-based bottomfish	Bottomfish	84,000	41,635	49.6
Guam	Boat-based bottomfish	Bottomfish	27,000	25,555	96.5

Note: “n.d.” indicates that data were not disclosed due to rules regarding data confidentiality. Data obtained from fewer than three sources are considered confidential and are not able to be reported. The ACL for American Samoa bottomfish was an interim catch limit implemented by NMFS as a temporary measure while the Council prepares a rebuilding plan for the fishery. The most recent benchmark stock assessment determined the fishery to be overfished and experiencing overfishing.



M&M Fish Market Owner, Manny Corpuz (R), entering catch data into the Catchit Logit app. Photo: Floyd Masga.

Management Unit Species (MUS) —
Stocks considered to be part of a federal fishery that require conservation and management and are predominantly caught in federal waters. These stocks are managed collaboratively by the Council and NMFS.

Ecosystem Component Species (ECS) —
Stocks included in a fishery ecosystem plan that are monitored to achieve ecosystem management objectives but do not require conservation and management. In early 2019, NMFS issued a rule that reclassified certain MUS as ECS.



What is this Latest Sanctuary Designation Process for Hawai'i's Leeward Islands all About?

In fall 2020, a senate committee requested that the National Oceanic and Atmospheric Administration (NOAA) re-initiate the process to designate a national marine sanctuary in Hawai'i. Senator Brian Schatz (D-HI) says on his website that the act directs NOAA,

"...to commence the process to designate Papahānaumokuākea Marine National Monument as a National Marine Sanctuary. Following this initiation, NOAA can begin public meetings and the formal legal process to complete the requirements to finalize an official designation. Sanctuary status for the Monument would make it more difficult to weaken the protections in the Executive Orders signed by Presidents Obama and Bush."



Source: www.papahanaumokuakea.gov.

There was a clue that a national marine sanctuary process for Hawai'i has been under consideration. In 2016, President Obama through the authority of the Antiquities Act created the monument expansion area. The presidential proclamation included language directing the secretary of commerce to "...consider initiating the process under the National Marine Sanctuaries Act (16 U.S.C. 1431 *et seq.*) to designate the Monument Expansion area and the Monument seaward of the Hawaiian Islands National Wildlife Refuge and Midway Atoll National Wildlife Refuge and Battle of Midway National Memorial as a National Marine Sanctuary to supplement and complement existing authorities."

Since this presidential directive, the United States elected a new president who formally reviewed the monuments created during President Obama's tenure. In the end, the Trump Administration did not make any changes to the former Obama-related designations in the Pacific. However, changes were effected to other national sites. Schatz's statement indirectly alludes to these changes and the senator speaks to an underlying fear that a future U.S. president has the power to modify the existing marine national monuments in the region. Previously, presidential norms restrained such acts.

The Schatz provision focuses federal resources on designating a national marine sanctuary in the Northwestern Hawaiian Islands (NWHI). Most recall a similar public proposal that was seemingly laid to rest back in the 2000s. The Office of National Marine Sanctuaries (ONMS) engaged in another

high profile public process more recently and in the main Hawaiian Islands. In the mid-2010s, federal officials looked at expanding the purpose, scope and boundaries of the Humpback Whale National Marine Sanctuary. Lack of support from the public and State of Hawai'i ended that effort. For the third time in a row, with each new decade, Congress brings forth another sanctuary designation process for Hawai'i.

The First NWHI National Marine Sanctuary Designation Process

Let's turn our attention back to the NWHI and the sanctuary designation process from the early 2000s. That process began with the designation of the Coral Reef Ecosystem Reserve (NWHICRER). President Clinton unilaterally designated from state waters to 50 nautical miles around these islands as a marine protected area in 2000 with Executive Order 13178. The NWHICRER overlaid the Western Pacific Regional Fishery Management Council's protected species zone, supporting monk seals, turtles, birds and other vulnerable species, which was implemented nearly 10 years earlier in 1991. President Clinton's order also directed the commerce secretary to initiate a process to designate the reserve as a national marine sanctuary.

The sanctuary designation public process moved forward with federal staff presenting a draft management plan and draft environmental impact statement to the public in spring 2002. The public provided more than 14,000 comments in

response. In the end, the public process ended abruptly in 2006 when President Bush designated the region as a national marine monument (Presidential Proclamations 8031 and 8112).

A twenty-year anniversary statement from the NWHICRER managers points us back to that time period: "The NWHICRER, which continues to exist as a political entity was overlaid by the creation of Papahānaumokuākea Marine National Monument, by President George W. Bush in 2006." The region was already heavily layered with resource protections on the national, local and international level for the

terrestrial and marine ecoregions. See the Council's timeline for a comprehensive depiction of place-based actions since 1983.

Now What? What's the Council's Role and What Does this Mean for our Fisheries?

NOAA's ONMS is in the initial stages of responding to Schatz and President Biden's requests to initiate a new designation process for a NWHI National Marine Sanctuary. As part of this process, the Council is afforded the opportunity to provide input and was briefed by ONMS staff at its June

2021 meeting. If fishing regulations are required by the proposed sanctuary goals and objectives, federal legislation says the Council gets the first crack at developing those regulations.

The Council's standard bottom-up process for fishery management provides the opportunity to discuss and suggest ways to improve our fisheries public policy in the proposed designation area. Get involved! Attend a Council and/or advisory body meeting and share your comments! Check our website for meeting announcements and links: www.wpcouncil.org. 🐟

The Western Pacific Regional Fishery Management Council has been at the forefront of conservation and management in the Northwestern Hawaiian Islands (NWHI)



1983 Precious Corals Fishery Management Plan (FMP) implemented and prohibited bottom trawling and other potentially destructive and non-selective gear, defines management unit species and area, and classifies known beds.

Crustaceans FMP implemented and established a minimum size limit and ban on the harvest of egg-bearing female spiny lobsters, a mandatory logbook program, and a requirement to carry a fishery observer. The plan had gear restrictions, such as trap design specifications and prohibition to certain gear

to minimize risk to Hawaiian monk seals. The FMP also established management measures for the NWHI, including federal permit requirements area closures of waters within 20 nautical miles of Laysan Island and all waters shallower than 10 fathoms.

1991 Pelagic FMP Amendment 2 implemented requirements for domestic pelagic longline fishing vessel operators to have federal permits to maintain fishing logbooks,

and, if wishing to fish within 50 nm of the NWHI, to have observers placed on board if directed by the National Marine Fisheries Service.

October 1, 1991 Pelagic FMP Amendment 2: Due to Hawai'i longline fishermen's concerns about possible interactions with monk seals in the NWHI, WPRFMC recommended a longline fishing exclusion zone within 50 nm of the NWHI to protect monk seals, turtles, birds and other vulnerable species.



1992 Bottomfish FMP moratorium on harvesting seamouth groundfish from the Hancock Seamount was extended by six years.

Crustaceans FMP Amendment 7 establishes a NWHI limited access program, adjustable fleet-wide annual harvest guideline, and a closed season (January through June), limited entry to 15 permits (and vessels),

maximum trap limit per vessel (1,100), revisions to reporting requirements, and other provisions.

1994 Crustaceans FMP Amendment 8 eliminates the NWHI minimum landings requirements for permit renewal, allowed the catch per unit effort target that is used to set the harvest guideline to be changed through the framework process, and modified reporting requirements.

1999 Bottomfish FMP Amendment 5 established a limited entry program for the Mau Zone in the NWHI with non-transferable permits and landing requirements for permit



renewal. Included in requirements for permit issuance was attendance by the primary vessel operator at a protected species workshop. Amendment 5 also established a Community Development

Program under which 20% of Mau Zone permits are reserved for program participants, as well as instituting a maximum vessel length of 60' for replacement vessels in the Ho'omaluu or Mau Zones.



2000 President Clinton issued EOs No. 13178 and No. 13196 in December 2000 and January 2001, creating the NWHI Coral Reef Ecosystem Reserve. The reserve was created over the pre-existing longline exclusion zone out to 50 nm from the NWHI.



WPRFMC closes the NWHI lobster fishery as a precautionary measure to prevent overfishing. The closure continued through 2002 with a 2003 announcement that no harvest guideline would be published.

2005 Hawai'i State Governor Linda Lingle signs regulations establishing the NWHI Marine Refuge, including all state waters extending 3 nm seaward from any coastline.

2006 President Bush created the NWHI Marine National Monument (Presidential Proclamation 8031) on top of the footprint of President Clinton's NWHI Coral Reef Ecosystem Reserve using the Antiquities Act. Under the act, public process, Congressional action and scientific justification are explicitly not required. The proclamation prohibited commercial fishing for bottomfish and pelagic species after five years.



2007 President Bush issues Presidential Proclamation 8112, amending Proclamation 8031 to read, "establishment of the Papahānaumokuākea Marine National Monument." It also amends a section under Native Hawaiian Practice Permits to read, "Any living monument resource harvested from the monument will be consumed or utilized in the monument."

2016 President Obama issues Presidential Proclamation 9478 entitled, Papahānaumokuākea Marine National Monument Expansion, creating a second marine national monument in the region, adjacent to the PMNM and out to the full 200 nm exclusive economic zone westward from 163° West.

October 1, 1991

Pelagic FMP Amendment 2: Due to Hawai'i longline fishermen's concerns about possible interactions with monk seals in the NWHI, WPRFMC recommended a longline fishing exclusion zone within 50 nm of the NWHI to protect monk seals, turtles, birds and other vulnerable species.





Fishery Management Should Remain Flexible in the Face of Climate Change

As the world continues plans to address the effects of climate change, fisheries need to start planning as well. Everyone should contribute to ensuring that fishing can remain sustainable and continue to feed the community. However, some plans for combating climate change, including spatial management, need to recognize that drawing lines on a map to combat a global change may not be an appropriate tool for fisheries management, particularly for tropical tunas.

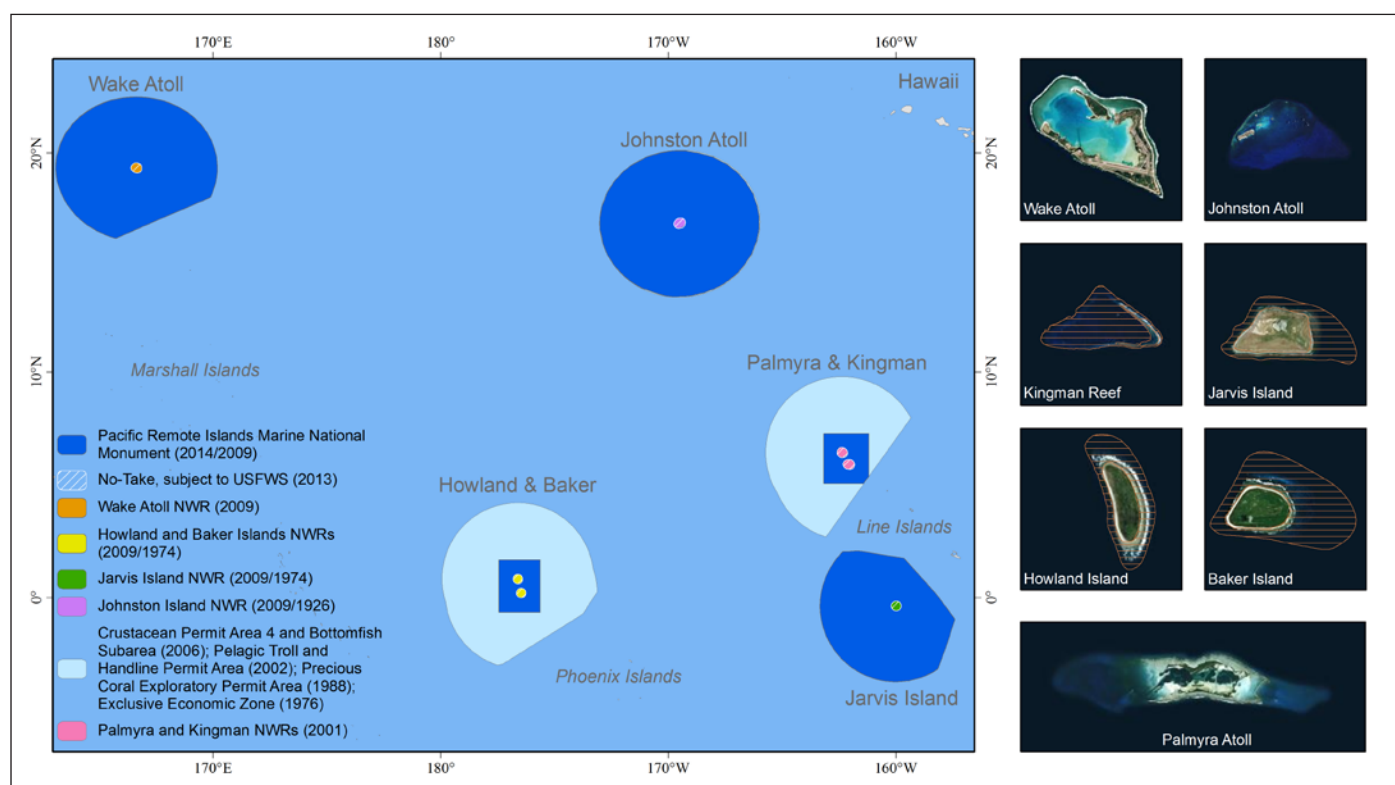
An important area for the U.S. tuna fishery to access lies south of Hawai'i within the Pacific Remote Island Areas (PRIA). Originally open fishing grounds, the U.S. exclusive economic zone (EEZ) from 0-50 nautical miles around the PRIA was designated a marine national monument (MNM) in 2009 by Presidential Proclamation 8336 for the care and management of the historic and scientific objects located there. In 2014, Presidential Proclamation 9173 expanded the Pacific Remote Islands MNM out to 200 nm to protect seamounts, protected species and habitat and monitor climate change. This expansion closed fishing to 12% of the Hawai'i longline fishery landings, 10% of the U.S. purse-seine fishing effort and displaced the fleets into the high seas, where they compete with foreign fleets that are not as highly regulated and may engage in illegal, unreported and unregulated fishing.

The Western Pacific Regional Fishery Management Council has asked the Biden Administration to consider a request to allow commercial fishing in the 50 to 200-nautical-mile portion of the U.S. EEZ around Johnston and Wake Atoll, and Jarvis Island. This area would still be subject to Council and National Marine Fisheries Service management under the Magnuson-

Stevens Act (MSA). Utilizing sound management principles, along with sustainable uses of this area, would ensure long-term productivity of fish and the conservation of protected resources and habitats. It would also benefit the island economies and help U.S. fisheries remain resilient in the face of climate change.

Scientists predict that tuna stock distributions will shift in the future, with bigeye tuna expected to move closer to the poles and yellowfin and skipjack tunas toward the Eastern Pacific. In order to continue to provide fresh bigeye for consumers, U.S. fleets will have to move with the fish. What happens when the fish move into areas closed to fishing? It is important for fishery managers to have the flexibility to quickly adapt to these changes and other impacts from climate change, which can be done through the authority of the MSA. The MSA provides a transparent process and regulatory framework that allows for flexibility in management that could address unforeseen circumstances.

Using the wrong tool for the job can result in the island state and territories that depend on their ocean resources for food and commerce to be limited in their ability to improve and sustain themselves. The MSA is the primary law governing marine fisheries management in U.S. federal waters. Its objective is to prevent overfishing while ensuring a sustainable supply of seafood for the benefit of local island communities and the nation. The Council's fishery ecosystem plans already have regulatory measures for fisheries in the PRIA and could implement additional measures to help mitigate impacts due to climate change, if given the chance. 🐟



Evolution of spatial management in the Pacific Remote Island Areas. Source: WPRFMC.



Mapping Traditional Fishing Ko'a in Hawai'i

If first-hand experience was the primary source for understanding the ocean, then local fishing communities would be the original marine biologists. These communities have relied on the sea for generations as part of their well-being and identity. Unfortunately, this knowledge has not always been captured or considered in Western science and management. In 2009, the Western Pacific Regional Fishery Management Council shifted toward place-based fishery ecosystem plans, allowing the agency to better support communities through new institutional frameworks. The shift to place-based plans resulted in the development of activities and programs that engage communities to share, understand and document traditional resource management practices and knowledge.



The mapping coral reef fisheries of the Mariana Islands project in 2016 exemplified how management can better identify potential knowledge gaps and data limitations using fishermen's traditional knowledge. *Photo: Josh DeMello.*

In 2016, the Council supported Pacific Coastal Research and Planning's project to map coral reef fisheries of the Mariana Islands. The project included workshops that captured traditional knowledge using both printed maps and participatory GIS—a social learning tool that uses computer visual representations to aid facilitation. Through these exercises, fishermen provided input and contributed to spatial data intended to benefit coral reef fisheries. This participatory mapping helped to bridge a gap between traditional fishing knowledge and historical fishing data.

In an effort to improve data collection and close data gaps, the Hawai'i Advisory Panel (AP) has launched a similar project called "FishMaps" to characterize the bottomfish, pelagic, coral reef, crustacean and precious coral fisheries. AP

members have many years of experience in the local fishing community as fishermen, seafood marketers and researchers, among others. The goal of the AP-led initiative to identify fishing ko'a (coral or traditional fishing areas) and associated fisheries is to ensure the fishing community can continue fishing even after potential new spatial management actions are enacted.

The Hawai'i AP recognizes fishermen revisit locations where they grew up fishing, areas close to home and comfortable access points. Fishermen go to different fishing ko'a based on their observations of the moon, tide, temperatures, currents and waves. Closing one fishing area restricts fishers from one location rather than allowing them to circulate through their different spots. This project intends to demonstrate that fishers rely on many ko'a around the state.

In the coming months, the Hawai'i AP will call on local fishermen to help complete the ko'a map. To get a seat at the table during discussions with managers or developers, panel members need to know who they should contact. Let the AP know where the important fishing grounds are located so the group can help you protect those areas when development or regulations are discussed. The AP isn't looking for your exact fishing spots, rather which areas are good for certain species (e.g., ono are normally found around this contour; this particular area outside of the westernmost point is important for hapu'upu'u, etc.). The Hawai'i AP plans to hold sessions with fishermen to provide background on the project, present current information and solicit additional input to make the map as complete as possible. Keep an eye on www.wpcouncil.org for more information or contact Council staff Zach Yamada (808-522-8220, Zach.Yamada@wpcouncil.org). 🐟



Fisherman reeling in his fish off of a favorite fishing spot at Ka Lae, Hawai'i, aka South Point. *Photo: Josh DeMello.*



Council Adopts Oceanic Whitetip Shark Protections for Hawai'i and American Samoa Longline Fisheries

To improve the post-hooking survivorship of oceanic whitetip sharks, the Western Pacific Regional Fishery Management Council voted in June 2021 to prohibit wire leaders in the Hawai'i deep-set longline fishery and require removal of trailing gear for all longline vessels operating under the Pacific Pelagic Fishery Ecosystem Plan. Available scientific information supports the fishing gear change from steel wire to monofilament nylon leaders to facilitate a shark's ability to free itself from an accidental hooking by biting through the line. A new risk analysis from the Pacific Islands Fisheries Science Center (PIFSC) presented at the June meeting found that a longline fishery gear change by the Hawai'i deep-set fleet from wire to monofilament leaders would reduce the catch and mortality of oceanic whitetip sharks by approximately 30%.

This conservation effort was initially developed by the Hawaii Longline Association (HLA) as a voluntary transition presented at the Council's December 2020 meeting. Since wire leaders are used as a safety measure to prevent fly-back of the weighted swivel, HLA is developing a training program for crew on shark handling and safety protocols. The Council emphasized the importance of balancing crew safety with the requirement to remove trailing gear, and recommended that fishermen target removing trailing gear down to less than 1 meter (about 3 feet), only if it is safe to do so.

The Western Pacific Region has two other active longline fisheries—the Hawai'i shallow-set and the American Samoa longline fisheries—both of which already use nylon leaders. For this reason, the Council's action focused on prohibiting wire leaders in the Hawai'i deep-set longline fishery, but the trailing gear requirement applies across the board.

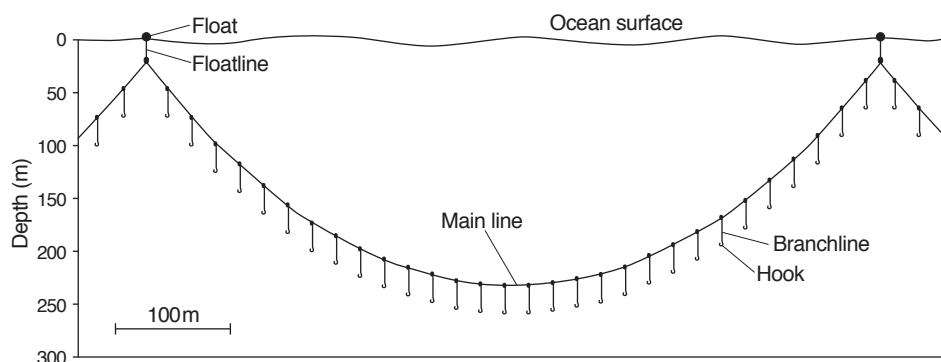
In making its final decision, the Council received public comments requesting consideration of additional measures to protect oceanic whitetip sharks. One of those is a measure that would remove the shallowest hooks within each section of the longline fishing gear. Analysis of available observer data showed that oceanic whitetip sharks are typically caught more frequently on hooks that are placed closer to the surface. Each longline gear section between two floats has 25–30 hooks. A removal of the three shallowest hooks could either mean that fishermen would have six fewer hooks in each section, or that they would make each section between two floats longer to keep the hooks away from the shallowest portion of the catenary curve. Either option could mean significant impacts to the fishery's operation and revenue. PIFSC's risk analysis showed that the impacts of a measure to remove the shallowest hook in the Hawai'i deep-set longline fishery could be as much as \$11-13 million per year.



Oceanic whitetip shark. Photo: Mark Royer.

This measure would also be difficult to regulate and enforce, and data are lacking on whether removing hooks would contribute to reduce oceanic whitetip shark catches, or if those catches would simply shift to other hooks. For these reasons, the Council did not adopt this measure.

Oceanic whitetip sharks are listed as threatened under the Endangered Species Act and are subject to overfishing and are overfished in the Western and Central Pacific Ocean (WCPO), primarily due to foreign fishing. U.S. longline impacts on oceanic whitetip sharks are only about 6% of the catch in the WCPO. Recognizing the low impact on the stock and the importance of leveling the playing field for U.S. fisheries, the Council previously recommended that wire leader usage also be reduced in international longline fisheries. According to a recent study, the WCPO oceanic whitetip shark stock is projected to rebound if catch at the international level are reduced by just 10%. 🐟



A catenary curve is the shape that an idealized hanging chain or cable assumes under its own weight when supported only at its ends. This image shows the distribution of hooks based on catenary geometry from a typical set used in the Hawai'i longline fishery that deploys from 25–30 hooks between floats.



New Study Finds Age and Growth of Popular Recreational Fish

The Journal of Fish Biology published the first robust age and maturity study on ulua aukea and omilu by Hawai'i fishery scientists. These two jacks are the most important nearshore species targeted recreationally throughout Hawai'i, with many fishing clubs and tournaments devoted to them.

Poseidon Fisheries Research (PFR) scientists studied ulua aukea, or giant trevally (*Caranx ignobilis*), and omilu, or bluefin trevally (*Caranx melampygus*), to find their growth rate, longevity and maturity. Researchers collected more than 100 samples of each species from recreational fishermen at fishing tournaments, and from the Pacific Islands Fisheries Group and the Hawai'i Division of Aquatic Resources.

Scientists found that, just as in humans, as these fish age, their size and weight can vary. The oldest ulua aukea weighed 50 pounds and was 31 years old, while the heaviest (80 pounds) was 24 years old. The oldest omilu was 24 years old at nearly 14 pounds.

Scientists also found that the average size at maturity, a key population metric, differed between males and females. Female ulua aukea matured at 594 mm (about 23 inches) and 4.4 years, while males matured at 465 mm (about 18 inches) and 2.8 years. Omilu reached maturity at 372 mm (about 14.5 inches) and 4.1 years for females and 329 mm (13 inches) and 2.9 years for males.

"The collected age and maturity data will be important for future management of these highly prized and ecologically important predatory species in Hawai'i," said Cassie



Poseidon Fisheries Research scientists extract the gonads from an ulua aukea provided by fishermen at the East Maui Casting Tournament in Hana. Photo: PFR.

Pardee, study co-author and PFR fishery biologist. Fishers can be found camping along the coast ready to battle one of the toughest fighting fish and hoping to land a fish that can be upwards of 100+ pounds. "Ensuring that the best scientific data for ulua and omilu are available for stock assessments will allow fishermen to continue fishing sustainably," added John Wiley, a PFR fishery biologist and co-author on the study. 🐟

The study is available in the June 2021 issue of the Journal of Fish Biology: <https://onlinelibrary.wiley.com/doi/10.1111/jfb.14828>.

For more information about Poseidon Fisheries Research, visit www.poseidonfisheriesresearch.org or follow on Facebook (/poseidonfisheriesresearch) and Instagram (@poseidon.fisheries).

Fisheries Development Projects are Top Priority for American Samoa

The National Marine Fisheries Service (NMFS) announced Aug. 5, 2021, the approval of a marine conservation plan (MCP) for American Samoa. This agency decision is effective for three years, from July 25, 2021, through July 24, 2024.

The latest plan outlines objectives and priorities to maximize sustainable fisheries benefits through fisheries infrastructure, fisheries research and fisheries development for the people of American Samoa. Fishing activities constitute an integral part of the Samoan culture and fisheries development is important for the food security and economic stability of the territory's 55,000 inhabitants.

The American Samoa MCP contains the following conservation and management objectives:

1. Maximize social and economic benefits through sustainable fisheries.
2. Support quality scientific research to assess and manage fisheries.
3. Promote an ecosystem approach in fisheries management.
4. Recognize the importance of island culture and traditional fishing in managing fishery resources and foster opportunities for participation.
5. Promote education and outreach activities and regional collaboration regarding fisheries conservation.

6. Encourage development of technologies and methods to achieve the most effective level of enforcement and to ensure safety at sea.

Several projects were ranked as very high priority, such as fishing infrastructure improvements to docks and ramps, reviving fishermen's co-ops and developing fish storage and holding facilities in Manu'a, and conducting a comprehensive economic valuation of tuna fisheries to the American Samoa economy.

Projects funded under previous MCPs include bottomfish data collection efforts, purchase and installation of large capacity ice machines to provide fresh fish for sale locally and export, and the Malaloa dock extension to support the longline fishery, among others.

U.S. regulation allows Specified Fishing Agreements (50 CFR 665.819) that offer a portion of a U.S. Participating Territory's fishing quota in exchange for funds to support projects in the territory's MCP. At its June 2021 meeting, the Western Pacific Regional Fishery Management Council reviewed the plan and confirmed its consistency with the Magnuson-Stevens Act and applicable fishery ecosystem plans. The governor of American Samoa then submitted the MCP July 21, 2021 to NMFS for review and approval. 🐟

The *Federal Register* notice and plan are available at: www.wpcouncil.org/fr-notice-marine-conservation-plan-for-american-samoa-western-pacific-sustainable-fisheries-fund-08-05-2021.



Council Supports Territory Governments Through Student Capacity-Building

The Western Pacific Regional Fishery Management Council's U.S. Pacific Island Fisheries Capacity-Building Scholarship Program was initiated in 2015 to address a lack of local capacity in fisheries management in the U.S. Pacific Islands of American Samoa, the Commonwealth of the Northern Mariana Islands (CNMI) and Guam. Students accepted into the program are required to return to their home islands to work for the designated local fishery management agency for a period of no less than the number of years they were recipients of the scholarship.

An integral part of the scholarship program is an eight to 10-week paid summer internship that provides students valuable hands-on experience and skills that can be used in the position with their local fishery management agency. The internship also counts toward course requirements at the students' universities. COVID 19-related restrictions have required the Council to be flexible with its plans for the summer student interns, who typically travel to Honolulu to work on projects at the main Council office, or with the National Marine Fisheries Service.

During summer 2021, two students from American Samoa stayed in Hilo to complete their internship at the University of

Hawai'i (UH) at Hilo and one CNMI student traveled from the University of Guam to Saipan. Alphina Liusamoa and Fuamai Tago learned fish biosampling techniques from UH professor Tim Grabowski, and Jude Lizama worked with the CNMI Division of Fish and Wildlife's Data Fisheries Section. All three students also learned the basics of the Magnuson-Stevens Act (MSA) Council process through readings and exercises with Scientific and Statistical Committee (SSC) member, Education Committee Scholarship Program Chair Craig Severance.

The students described the benefits of their summer experience.

Alphina Liusamoa

This summer, I had the privilege of working at UH at Hilo under Dr. Tim Grabowski. I was one of four students (one graduate student and three interns, including myself) that worked with otoliths. I also worked for Dr. Craig Severance, and through his readings and assignments, I was able to understand more about the Council and the MSA.

With Dr. Severance, I virtually attended some of the 2021 public Council meetings for the first time, including the American Samoa Advisory Panel and 140th SSC meetings. The amount of information shared was immense and the conversations were like a different language. It was a whole new experience for me. The issues discussed were both engaging and enlightening, and the presentations were outstanding. Some of the subjects covered at the meetings included updates for American Samoa bottomfish, 2022 territorial bigeye tuna catch and allocation limits, longline fishing gear and release improvements to promote shark survivability, and 2020 annual fishery status reports, among others. I thought the discussion on coral recovery was also quite interesting. The topic piqued my interest because one of the top global objectives right now, in my opinion, is to develop strategies to reverse declines in coral populations. Coral reefs form the backbone of our islands, particularly in American Samoa.

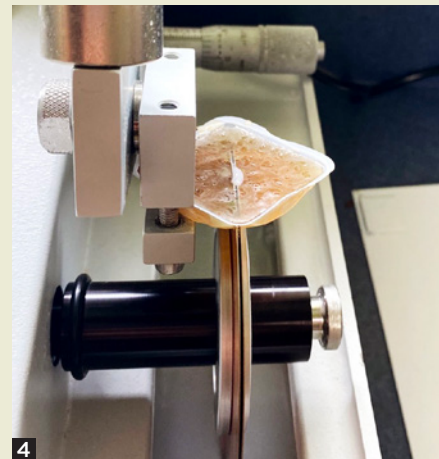
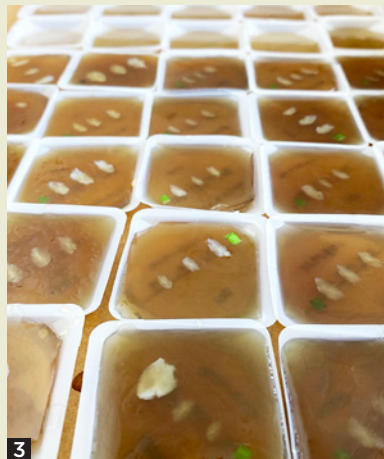
Dr. Grabowski taught me about fish otoliths, which are small bones made primarily of calcium carbonate. They are found in the inner ear of vertebrates and play a role in balance and hearing. I learned how to use the "open-the-hatch" technique to collect otoliths from roi and kole fishes and then mount them on weigh-boats using microscopes, with the nucleus aligned with the line on the weigh-boat. I then



Alphina Liusamoa extracts otoliths from kole. Photo: Fuamai Tago.

prepared resin for the weigh-boats, and once it set, used a special saw to cut a thin layer of the hardened otolith material. After I polished the sections, I examined and photographed them under a microscope.

The most essential thing Dr. Grabowski taught us about otoliths is to not work quickly, in case you make a mistake and don't realize it until the very end. This could be detrimental to your project, and in the worst-case scenario, you may have to start over or discard the majority of your hard work. Also, the better organized a data set is, the easier it will be to interpret.

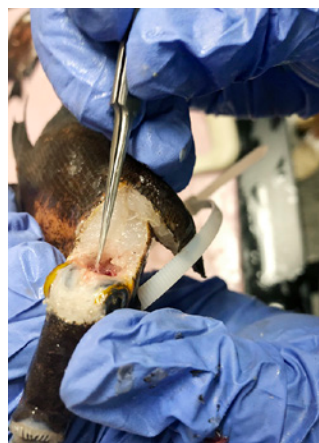


[1] Alphina Liusamoa (right) and Nathaniel Greenwald use a microscope to mount otoliths on weigh-boats. Photo: Fuamai Tago. [2] Dr. Tim Grabowski pours resin onto otoliths in weigh-boats. [3] Hardened resin-otolith material. [4] Otolith preparation is ready to be thinly sliced on a saw. Photos: Alphina Liusamoa.

Fuamai Tago

My summer internship with the Council taught me a lot about the organization and the importance of data. My internship consisted of working with Dr. Tim Grabowski at UH Hilo on fish biosamples and understanding Council principles and processes through Dr. Craig Severance.

The Council works in coordination with federal and local governments to develop and implement regulations to support sustainable fisheries. Although I was not able to personally meet with American Samoa's Department of Marine and Wildlife Resources, I did have the opportunity to better understand Council processes by virtually attending the SSC meeting, paired with my Council 101 assignments. The readings opened my eyes to the cultural, social and economic realities of the Western Pacific Region that guide the Council's decisions. I learned more than I expected about my home island and its fisheries resources. For American Samoa, fish have been, and still are, an important commodity for both the local culture and economy.



Fuamai Tago dissects a kole using the "open-the-hatch" method to extract an otolith. Photo: Fuamai Tago.

During my fish otolith lab work with Dr. Grabowski, I quickly realized that a variety of useful information can be derived from the data collected from such small, fragile structures. Otoliths reveal information about a fish's life, such as its age and individual growth history that can later be used in fish stock assessments and management. Council decision-making processes relies heavily on scientific information provided by the Pacific Islands Fisheries Science Center, thus creating otolith data is one important method that can contribute to those decisions.

Both my hands-on experience and newfound knowledge about the Council will assist me in understanding my island's economy, and how to better preserve, protect, manage and conserve our fisheries resources.

Jude Lizama

My summer internship for the Council involved working with the CNMI Division of Fish and Wildlife (DFW) to assist with their fishery-dependent data collection and learning how the Council itself functions by attending public meetings and studying its management processes. Wholly, working at DFW was a continuation of my previous employment. I facilitated data collection, summarized data for reports and trained Fishery Data staff in CNMI creel survey methodology and species identification of common food fishes. Nevertheless, I also coordinated with staff to achieve nearly total compliance from fish buyers per the CNMI mandatory reporting regulation for commercial fishing, corroborated catch claims by applicants for the 2020 CARES Act fishing assistance and consolidated all historical fishery data for analysis within DFW.

Simultaneously, by attending the 2021 SSC and Council meetings, as well as doing my Council 101 assignments, I learned how the CNMI benefits from DFW implementing its recommendations while the agency fulfills its obligations under the MSA. Particularly, I learned that DFW's fishery data collection is designed to provide a long-term view of the fishery and is instrumental in the Council's decision-making. Together these experiences and the new insight I gained will allow me to be better prepared for whatever management and scientific challenges I encounter in my career. 🐟



L-R: Angela Dela Cruz (DFW, previous scholarship recipient), Jude Lizama, John Gourley (Council vice chair for CNMI), and Michael Tenorio (DFW) attend the 186th Council meeting in June 2021 at the Council's satellite office on Saipan. Photo: Floyd Masga.



SFA Tournament Rocks the Marianas

The Saipan Fishermen's Association successfully organized its 37th Annual Saipan International Fishing Tournament in the Commonwealth of the Northern Mariana Islands (CNMI). The two-day tournament, held July 10–11, 2021, registered 90 vessels (including 17 boats from Guam and five from Tinian) and 377 anglers. The tournament is the largest and longest-running fishing tournament in the region.



This year's grand prize winner was *Da'Net* from Guam, with Captain John Hattig and crew Frank Benavente, who landed a 358-pound billfish. They received the perpetual tournament trophy, a \$3,000 cash prize and \$5,300 for the fisher's side bet. The tournament ended with an awards banquet at the Aqua Resort, with 477 people in attendance. Congratulations to the Saipan Fishermen's Association! 🐟



[1] 90 vessels line up awaiting the 6 a.m. start signal. [2] *Da'Net* Captain John Hattig and crew member Frank Benavente with their grand prize winning 358-pound billfish. [3] Grand prize billfish is transferred to the weigh station. [4] Fishers and family members register and await entry to the banquet area. Photos: Floyd Masga.

Category	Placement	Weight (lbs)	Boat/Team Name	Captain Name	Crew Name(s)
SKIPJACK	First	9.4	<i>Santa Soledad</i>	Melchor Lerum	Joel Jeminez
	Second	9.3	<i>Handliner</i>	Max Morag	James Rayphand
	Third	8.7	<i>Tony Tenorio</i>	Tony Tenorio	Jennifer Tkel, Jesse Tenorio
MAHI MAHI	First	24.7	<i>Regulator</i>	P. J. Aldan	Phill Aldan, Ben Fitipol, Ricky George, Ray DL Cruz, Kiko Togawa
	Second	9.0	<i>Salty Bandits</i>	Masaki Kitami	Kalama Fernandez, Joey Tudela
	Third	7.5	<i>Catmandu</i>	Michael Snell II	Michael Snell III, Latrell Snell, Lorenz Snell
WAHOO	First	32.2	<i>CJ & MJ</i>	Manuel Mogar	Lawrence Pantoloa
	Second	25.8	<i>St. Christopher</i>	Juan Barcinas	Robert Sasamoto, Antonio Muna
	Third	24.7	<i>Rosemary</i>	Tom Aguon	Gene Bolton
YELLOWFIN	First	67.0	<i>Cecilio & Kapono</i>	Gary Sword	Ivan Blanco, Sr., Ivan Blanco, Jr., Ralph Yumul, David Atalig
	Second	58.0	<i>MV Kiddo</i>	Tak Nakazato	Courtney Nakazato, Koniko Nakazato, Jowel Naputi
	Third	50.0	<i>Sesa</i>	Steve Reyes	Kevin Diaz, Jesse Borja
BILLFISH	Grand	358.0	<i>Da'Net</i>	John Hattig	Frank Benavente
	First	327.0	<i>Defiance</i>	Rufin Inos Jr.	Tero Takai, Vince Inos, Asap Ogumoro, Jack Salas
	Second	260.0	<i>Bella</i>	Perry Inos	Dixie Camacho, Johanna Inos, Pen Gus Inos, Debra Inos, Anastasia Inos
	Third	195.7	<i>V Marine</i>	Ben Blas	Jack Namauleg, Juan Taitano, Mario Valentino, Bob Jones, Sean Ficke, Pilar Jones, Joe Pastor
TOTAL WEIGHT	First	305.0	<i>Villia Marie</i>	Victor Hocog	Val Hocog, Ray Yumul, Jordan Ogo



Participating for the first time in the tournament were four traditional sailing canoes or flying proas, built by the CNMI non-profit corporation 500 Sails to promote traditional fishing and navigation. *Photo: Floyd Masga.*



Importance and Cultural Significance of Harvesting Akule in Leone Village

Fishing for akule (bigeye scad) has been a sacred tradition throughout many villages in American Samoa. Fishermen carried knowledge of fish movements and seasonality through the years and were able to determine and predict the return of the akule. Though rituals and practices vary from village to village, some aspects of harvesting akule remain the same. Women weave baskets and traps made out of coconut leaves that are connected together to form a barrier. Chiefs and skilled fishermen position themselves around the bay to keep track of the location of the school. When the school gets close enough to shore, the high talking chief instructs the aumaga (untitled men) and villagers to surround the school and herd the fish to shore with the woven coconut leaves.



This year, the village of Leone gathered around the bay to harvest one of the biggest akule run in recent years. The most recent record of a large harvest in Leone was in 2012, when more than 20 aumaga fished for akule over the course of several days. Before then, the last known harvest was in 1981. Historically, akule season for Leone is at the beginning of the year. This year, the village waited until May to begin the harvest.

The traditional method of using woven coconut fronds was combined with modern kili (thrownets) to trap the school of fish.

It is believed that a group of uluas (giant trevally) scared the school of akule into the bay. Only one ulua was caught this year, which is customarily gifted to the high ranking chief or clergy. Akule is considered as a gift from God and therefore very sacred to the Leone people.

Neighboring villagers and outsiders are not allowed to fish in the village during akule season, and the catch cannot be sold. As a thanksgiving for a bountiful harvest, prayers of gratitude and blessings are offered before the catch is divided among clans to be enjoyed by all of Leone with hopes of a good harvest in the next akule season. 🐟

[1] People of Leone Village surround a school of akule May 1, 2021, with their woven coconut fronds to herd the fish to shore.

Photo: Natasha Ripley. [2] Leone residents used kili (thrownets) to trap the fish closer to shore and sort them into coolers. Photo: WPRFMC.

[3] A village aumaga (untitled man) stands proudly with an ulua he caught during the akule harvest. In American Samoa, ulua is customarily given to high chiefs and clergy. Photo: WPRFMC.



The Magnuson-Stevens Fishery and Conservation Act mandates that the Council prevent overfishing while achieving optimum yield, using the best scientific information available. The Council works closely with the National Marine Fisheries Service (NMFS) on fish stock assessments that support management decisions.

What types of data do scientists collect for fish stock assessments?

1. **Fishery-dependent data** are collected directly from the commercial and noncommercial fisheries and may include fishing effort, total amount of fish removed from the ocean (landings and discards), species and biological information.

- The Hawai'i Fisherman Reporting System compiles catch data from commercial fishermen via paper reports or online. (mandatory)
- Creel surveys collect general fisheries information for commercial and noncommercial boat and shore fisheries in American Samoa, Guam and the Commonwealth of the Northern Mariana Islands (CNMI). (voluntary)



Fishery-dependent creel survey in American Samoa. Photo: WPRFMC.

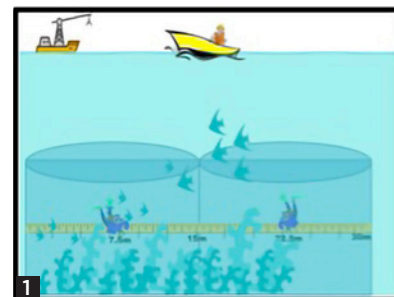
- Commercial receipt book systems capture the portion of the boat and shore fisheries that is sold to seafood markets – mandatory in Hawai'i (called Dealer Reporting System), American Samoa and the CNMI, and voluntary in Guam.
 - The Hawai'i Marine Recreational Fishing Survey gathers data from noncommercial fisheries. (voluntary)
 - The Territorial Commercial Fisheries Biosampling Program collects biological samples from the commercial or non-commercial fisheries from their normal fishing operations.
2. **Fishery-independent data** are collected independent from commercial or noncommercial fishery data. These data are generally collected using at-sea surveys, following a statistical experimental design. NMFS scientists and partner organizations gather data on fish stock abundance, life history, and various environmental factors that may affect their abundance and distribution.

Examples of ways to collect this data used in the Pacific Islands Region:

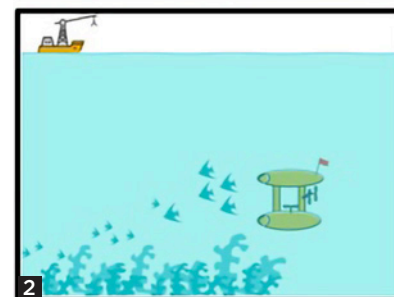
- Cooperative research with local fishers, such as the hook-and-line sampling done by the Pacific Islands Fisheries Group on main Hawaiian Islands bottomfish. This survey also uses MOUSS (described at right).

- Research Biological Sampling—provides life history information following a sampling design.

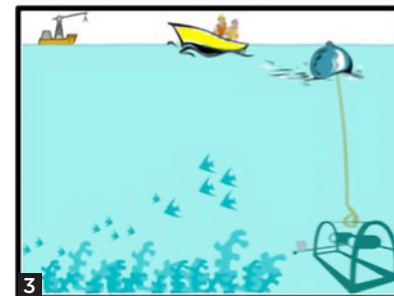
- Stationary Point Count (SPC) [1]—a type of non-invasive underwater-survey method to count shallow-water reef fish systems. An SPC survey involves 2 adjacent divers each identifying, counting and sizing fishes within a visually estimated 50-foot diameter cylinder. Divers also estimate the bottom habitat of their cylinder area and take photos for later analysis.



- Autonomous underwater vehicles (AUVs) [2]—untethered robots that perform visual and acoustic surveys to map habitat below diver depths (>165 feet).



- Bottom Camera Bait Station (BotCam)—stationary stereo-video underwater camera system to collect video footage of bottomfish in their natural habitat without artificial lights. Scientists can observe, identify, count and measure fish, even if they are not biting.



Source: NMFS.

- Modular Optical Underwater Survey System (MOUSS)—smaller, lighter BotCam.
- Baited Remote Underwater Video (BRUV) [3]—similar to BotCam, but more suitable for deployment on coral reefs because they are smaller, lighter and can be deployed closer to the ground to conduct fish surveys down to depths of ~300 feet. 🐟

Source: www.fisheries.noaa.gov



School of opakapaka captured by a MOUSS. Source: NMFS.



Get to Know Your Council Members:

Manny Dueñas

Manny Dueñas was appointed to the Western Pacific Regional Fishery Management Council as an obligatory voting member representing Guam as vice chair in 2021. He is the chairman of the Guam Fishermen's Cooperative Association (GFCA). As a nonprofit organization, the GFCA strives to give back to fishermen not only by paying the best price for their fish, but by supporting the local fishing community with advocacy for the fair treatment of fishers with rules and regulations that make sense, and are in the best interest of Guam's more than 4,000-year-old fishing culture.

You were part of the Council from 2004 to 2012. Why did you decide to serve again?

There are important fishery issues that need to be addressed. Guam's interests should be placed on the table for discussion, and I intend to take the lead in driving them at the Council level. There are many other concerns that also need to be addressed, from military buildup to Compact of Free Association (COFA) impacts.

I want to continue my efforts to build local capacity, not just in Guam's fisheries, but with other jurisdictions under the Council umbrella. The former Commonwealth of the Northern Mariana Islands Governor Benigno Fitial once thanked me for helping the CNMI and gave me a plaque to show his gratitude.

My whole purpose is to act not just for today, but for tomorrow—for the fishermen to maintain a cultural relationship with the ocean.

What have you been doing since you were last on the Council?

I've been trying to deal with local issues, such as fishing rights and fisheries management with the local government, the legislature and the governor's office. I've also been working with the board of the GFCA to move forward with construction of the new Co-op facility.

What are some issues that Guam fisheries are facing?

Shark depredation is still unresolved and it affects all sectors of Guam's coastal fisheries, including pelagic and bottom-fish fisheries.



Manny Dueñas (left) and members of his crew beside a 350-pound black marlin. Photo: Michael Dueñas.

I don't believe fishing by Federated States of Micronesia (FSM) citizens in the U.S exclusive economic zone around Guam should be allowed as it conflicts with accountability measures outlined by the COFA between the FSM and the United States.

Ritidian and other military firing ranges adversely impact small-boat access and activity along the central to northwestern parts of Guam. The ranges negatively affect natural fish aggregation areas for seasonal pelagic species, as well as at bottomfish grounds. These ranges are expected to be used 75% of the calendar year, potentially removing 20–30% of the coastal fishery harvest.

I am also very concerned about Guam's bottomfish stock's status as overfished and the lack of data that is needed to support accurate stock assessments.

Lastly, what is your favorite fish to eat and how do you prepare it?

Head of Onaga Soup

Cooked in light coconut milk, onion, garlic and regular soup base. Cook until tender. Put ingredients together and boil, then add onaga head. Once boiling, cover then simmer for 30 minutes (recommended over fire). Eyeballs are the best!

I appreciate sharks because they eat the body and leave the head for me to eat. 🐟

"Ono"* Ono with Marinated Vegetables

Courtesy of **Asuka Ishizaki**
(Council staff)

Ingredients

- 1 ½ lbs fresh ono (wahoo), cut into 2 inch pieces
- salt and black pepper, to taste
- ¼ cup corn or potato starch
- olive oil for pan frying
- ½ medium onion, sliced
- 1 bell pepper (yellow, red, green or mix), sliced
- 1 small tomato, chopped
- ¼ cup cilantro, chopped

Marinade

- 3 tbsp vinegar or lemon juice
- 2 tbsp olive oil
- 1 tsp fish sauce

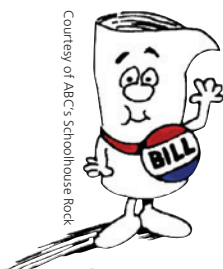


Preparation

1. Season fish with salt. Let sit for at least 10 minutes.
2. Combine marinade ingredients. Add the onion, pepper, tomato and cilantro, and set aside.
3. Pat fish dry, sprinkle with pepper and dust lightly with corn starch.
4. Pan fry fish in a thin layer of oil over medium heat, flipping once. Remove fish from pan when no longer pink on sides.
5. Arrange fish on a plate, top with marinated vegetables and pour over remaining marinade.

*Ono is a Hawaiian word meaning "delicious."

Congressional Corner



Courtesy of ABC's Schoolhouse Rock

After nearly two years of information gathering, a bill to reauthorize and amend the Magnuson-Stevens Fishery Conservation and Management Act (MSA) was introduced in the U.S. Congress.

Congressman Jared Huffman (D-CA) and Congressman Ed Case (D-HI) introduced H.R. 4690 July 26, 2021, that provides for climate-ready fisheries, increased support for fishing communities, and improving science, data and transparency. The bill took into account input received from listening sessions held across the country to engage diverse perspectives, interests and needs of individuals with a stake in ocean and fisheries resources.

Western Pacific Regional Fishery Management Council members and the Hawai'i seafood industry were among the invited panelists at the Feb. 21, 2020, listening session held in Honolulu, Hawai'i. Their statements echoed the general consensus nationally that America's primary fishing law, the MSA, is overall

doing its job and doing it well. The Council's testimony noted the success of the MSA in the Western Pacific Region, including its strong public participatory process.

H.R. 4690 includes amendments and provisions that the Council is following to determine what effect they might have on fisheries in the region. The inclusion of a definition of "subsistence" fishing, changes to the Sustainable Fisheries Fund, new provisions for Council member appointments, and changes to essential fish habitat, data collection and stock assessments are among the items being tracked. How this will affect the fisheries and whether the introduced language will make it to a final, passed bill is unknown at this time. The bill was referred to the Committee on Natural Resources and to the Committee on Agriculture for further discussion and action and is at the beginning of the journey to becoming law. Stay tuned for updates.

The House of Representatives has been busy holding hearings on multiple bills in the House Committee on Natural Resources. In May, the Committee held

a legislative hearing on H.R. 160 that would reauthorize the Coral Reef Conservation Act of 2000 and also provide the regional fishery management councils with a seat on the U.S. Coral Reef Task Force. The hearing included witnesses from Guam, Hawai'i and American Samoa. The committee held a hearing June 22, 2021, on 13 different bills with witness testimony, including from Hawai'i State Senator Chris Lee. Bills included H.R. 660 that provides for shovel-ready restoration grants for fisheries, H.R. 3764 that deals with ocean-based climate solutions and HR 3160 to keep America's waterfronts working, amongst other bills. The committee held a markup session July 14, 2021, on some of those bills in the previous hearing for potential action by the House.

It appears the House is gearing up for major changes to ocean legislation and the Council will continue to monitor. For up-to-date information on the proposed MSA changes and other congressional legislation, visit www.congress.gov. 🐟

Council Family Updates

The U.S. Department of Commerce has appointed three new members to the Western Pacific Regional Fishery Management Council. Council members are appointed to both obligatory (state-specific) and at-large (regional) seats. Council members serve a three-year term and can be reappointed to serve three consecutive terms. The current term is from Aug. 11, 2021 to Aug. 10, 2024. The Council members are:

OBLIGATORY SEATS

- **Manny Dueñas II** (Guam)
- **Matt Ramsey** (Hawai'i)

AT-LARGE SEAT

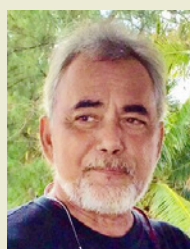
- **Will Sword** (American Samoa) *Out-of-cycle appointment, term expires 2022.*

At the 186th Council meeting, the Council supported the following advisory body changes:

- Appointed new members to the Non-Commercial Fishing Advisory Committee:

- **Lee Alameida**, Maui Cooperative Fishing Association
- **Alex Castro, Jr.**, Commonwealth of the Northern Mariana Islands (CNMI) Department of Public Works
- **Wayne Pangelinan**, CNMI Public School System Head Start/Early Head Start Program
- **Leonard Yamada**, Fisherman
- **Brian Yoshikawa**, Maui Sporting Goods

- Appointed **Michael Lee**, Garden & Valley Isle Seafood Inc., to the Fishing Industry Advisory Committee
- Appointed **Cody Schrader**, United Fishing Agency, as an alternate on the Hawai'i Advisory Panel (AP) and **Nate Ilaao**, Flying Fox Brewing Co., as an alternate on the American Samoa AP
- Appointed **Lynn Rassel**, National Marine Fisheries Service Pacific Islands Regional Office, to the Pelagic Plan Team



Manny Dueñas II



Matt Ramsey



Will Sword

Upcoming Events & Action Item Summary

The 141th Scientific and Statistical Committee meeting will be held Sept. 14–16, 2021, via Webex. Direct link to the meeting: <https://tinyurl.com/141SSCMtg>

Major agenda items include: Options for revising seabird mitigation measures in the Hawai'i deep-set longline fishery (action item); and Second Tropical Tuna Workshop and Western and Central Pacific Fisheries Committee Science Committee updates.

The 187th meeting of the Western Pacific Regional Fishery Management Council will convene Sept. 21–23, 2021, via Webex. Direct link to the meeting: <https://tinyurl.com/187CouncilMtg>. The meeting will have the following host sites, which are subject to local and federal safety and health guidelines regarding COVID-19:

- Tedi of Samoa Bldg., Suite 208B, Fagatogo Village, American Samoa
- BRI Bldg., Suite 205, Kopa Di Oru Street, Garapan, Saipan, CNMI
- Cliff Pointe, 304 W. O'Brien Drive, Hagatña, Guam

For more information on agendas, meeting documents and the web conference connection, go to <https://www.wpcouncil.org/meetings-calendars/>.

The Council will consider and may take action on the issues summarized below.

Standardized Bycatch Reporting Methodology (SBRM) & Fishery Ecosystem Plan (FEP) Amendments: In 2017, the National Marine Fisheries Service (NMFS) published a final rule providing guidance on the Magnuson-Stevens Act (MSA) requirement that all fishery management plans establish a SBRM to assess the amount and type of bycatch occurring in a fishery. The final rule establishes requirements and provides guidance to regional fishery management councils and the U.S. Secretary of Commerce regarding the development, documentation and review of such methodologies, and requires that all plans be consistent with the new guidance by February 2022.

Council staff, in coordination with NMFS, reviewed the Council's five FEPs for consistency with the new guidance. A report given at the June 2021 Council meeting concluded that housekeeping amendments to the FEPs were warranted. The Council recommended that staff work with the NMFS Sustainable Fisheries Division on an omnibus amendment to update the SBRMs that will be considered for final action.

Seabird Mitigation Measure Revisions in the Hawai'i Deep-Set Longline Fishery: The Council at the December 2020 meeting initiated the development of a regulatory amendment to

2021 Council Calendar

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All meetings will be held virtually.

SEPTEMBER

3–11 International Union for Conservation of Nature World Conservation Congress, Marseille, France*

5–9 Western & Central Pacific Fisheries Commission (WCPFC) 2nd Tropical Tuna Measure Workshop*

7 American Samoa Archipelago Fishery Ecosystem Plan (FEP) Advisory Panel (AP) meeting

9 Mariana Archipelago FEP—Guam AP meeting (ChST)

9 Fishing Industry Advisory Committee meeting

11 Mariana Archipelago FEP—CNMI AP meeting (ChST)

14–16 141st Scientific & Statistical Committee (SSC) meeting

20–24 World Fisheries Congress, Adelaide, Australia*

20 Fishery Data Collection and Research Committee meeting

20 Executive & Budget Standing Committee meeting

21–23 187th Council Meeting

22–28 17th Regular Session of the Technical and Compliance Committee (WCPFC)*

26–Oct. 1 5th International Marine Protected Areas Congress, Vancouver, Canada*

OCTOBER

11–24 15th Meeting of the Conference of the Parties to the Convention on Biological Diversity, Kunming, China*

19–21 Council Coordination Committee meeting, Monterey, CA*

NOVEMBER

29–Dec. 7 18th Regular Session of the WCPFC*

30–Dec. 2 142nd SSC meeting

DECEMBER

6–9 188th Council Meeting

**Meetings are not hosted by the Western Pacific Regional Fishery Management Council.*

evaluate options to allow tori lines to be used in lieu of blue-dyed bait and removing the strategic offal discharge requirement in the Hawai'i deep-set longline fishery. Two field trials to develop and test tori lines in the fishery were conducted in 2019–2021 under a joint cooperative research project.

Results show that tori lines are significantly more effective in preventing longline gear interactions with black-footed and Laysan albatrosses than blue-dyed bait, which is currently required as part of the seabird interaction mitigation measures implemented under the Council's Pelagic FEP. Discharge of offal and spent bait is also required under the existing measures, but available information suggests that this practice may increase interactions over time by attracting more seabirds to the fishing vessels. The Council will consider initial action on the regulatory amendment, and may provide direction on the management options and associated analysis.

American Samoa Bottomfish Rebuilding Plan:

In February 2020, NMFS informed the Council that the American Samoa bottomfish stock was considered overfished and experiencing overfishing. The MSA requires the Council to develop a rebuilding plan within 15 months of notification. Based on the most recent catch data in the American Samoa Annual Stock Assessment and

Fishery Evaluation Report published in June 2021, the Council will consider taking final action to rebuild the bottomfish stock in American Samoa in 10 years.

Main Hawaiian Islands (MHI) Uku Annual Catch Limits for Fishing Years 2022–25: At its September 2020 meeting, the Council set an annual catch target for MHI uku of 291,010 pounds, with a 36% risk of overfishing per fishing year. The Council convened an action team to develop in-season accountability measures that apply only to the commercial fishery in federal waters. This would track catch using the fisher monthly reports and close both the commercial and noncommercial uku fishery if the commercial limit is projected to be reached.

At the June 2021 meeting, staff presented results to the Council on an analysis of managing the commercial and noncommercial uku fisheries separately or as a whole. The results showed the consequences of sector allocation outweighed the benefits. The Council thus recommended managing the commercial and noncommercial fishery in its entirety and applying the in-season accountability measure. The Council will review the effects analyses and consider taking final action on the annual catch limit specification. 🐟

