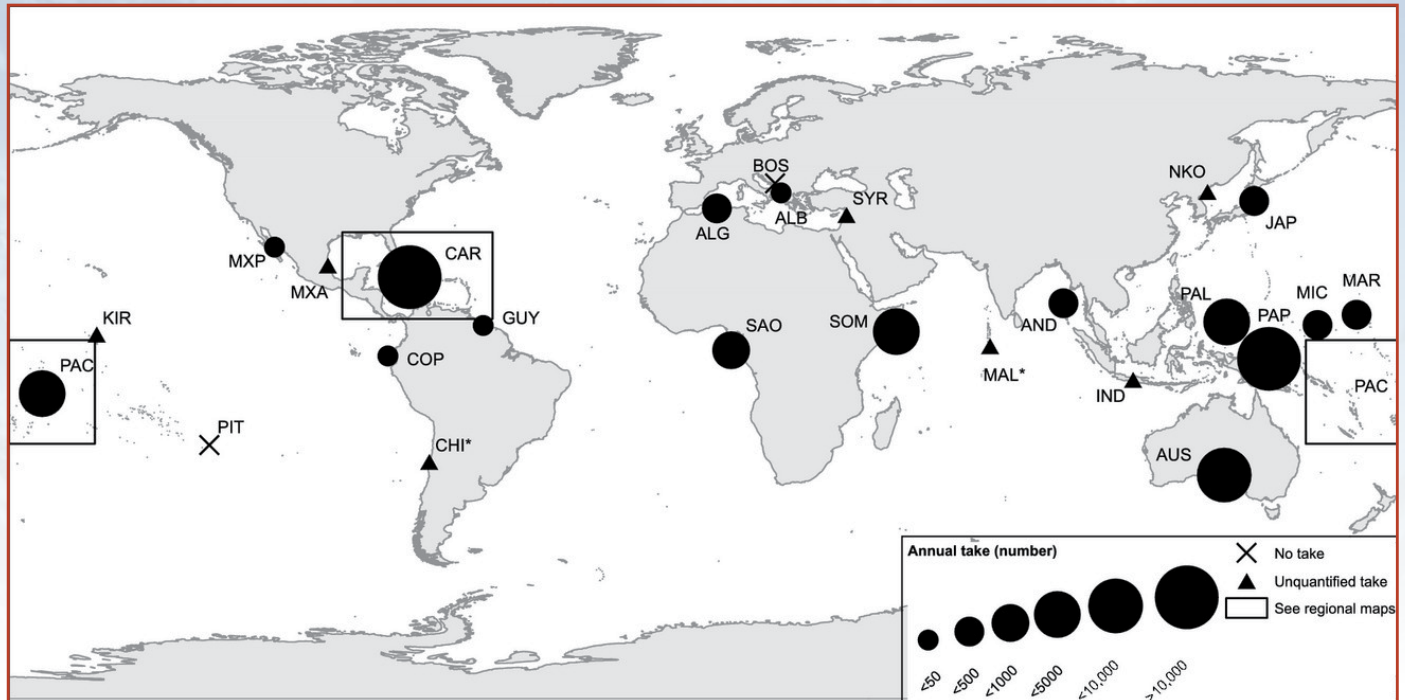


Sustainable Take of Sea Turtles: A Global Perspective



Estimated annual legal marine turtle take by country or territory (data from 1 January 2010 to 1 January 2013). Data for the Caribbean (CAR) and Pacific (PAC) regions have been grouped and are shown in further detail in Fig. 4a,b. No take = no known legal or illegal take; Unquantified take = illegal take data found only or take known to occur but no data available. *Country with moratorium. Country abbreviations (countries in brackets indicate dependency): ALB = Albania; AND = Andaman and Nicobar Islands (India); AUS = Australia; BOS = Bosnia and Herzegovina; CHI = Chile; COP = Colombia (Pacific coast); GUY = Guyana; IND = Indonesia; JAP = Japan; KIR = Kiribati; MAL = Maldives; MAR = Marshall Islands; MIC = Federated States of Micronesia; MXA = Mexico (Atlantic coast); MXP = Mexico (Pacific coast); PAL = Palau; PAP = Papua New Guinea; PIT = Pitcairn Islands (UK); SAO = Sao Tome and Principe; SYR = Syria. Take is also shown for countries with unverified legislation (ALG = Algeria; NKO = North Korea; SOM = Somalia). Note: Position of symbols is not representative of locations of take data. Source¹.

Sustainable use of sea turtles may seem like a foreign concept today, especially in the United States where sea turtles have been federally protected under the Endangered Species Act (ESA) for more than four decades. But across the Pacific Islands and throughout the world, sea turtles have been utilized as important natural and cultural resources for millennia. Much of the unsustainable “take” can be attributed to commercial-scale exploitation and trade that peaked in the early- to mid-1900s, which led to the prohibition of take under the ESA in the United States and restrictions on trade through the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in the 1970s.

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STORY ICON KEY

REGIONAL INTEREST



CONSERVATION



FISHERMEN



EDUCATORS



GOVERNMENT



Federal



Hawaii

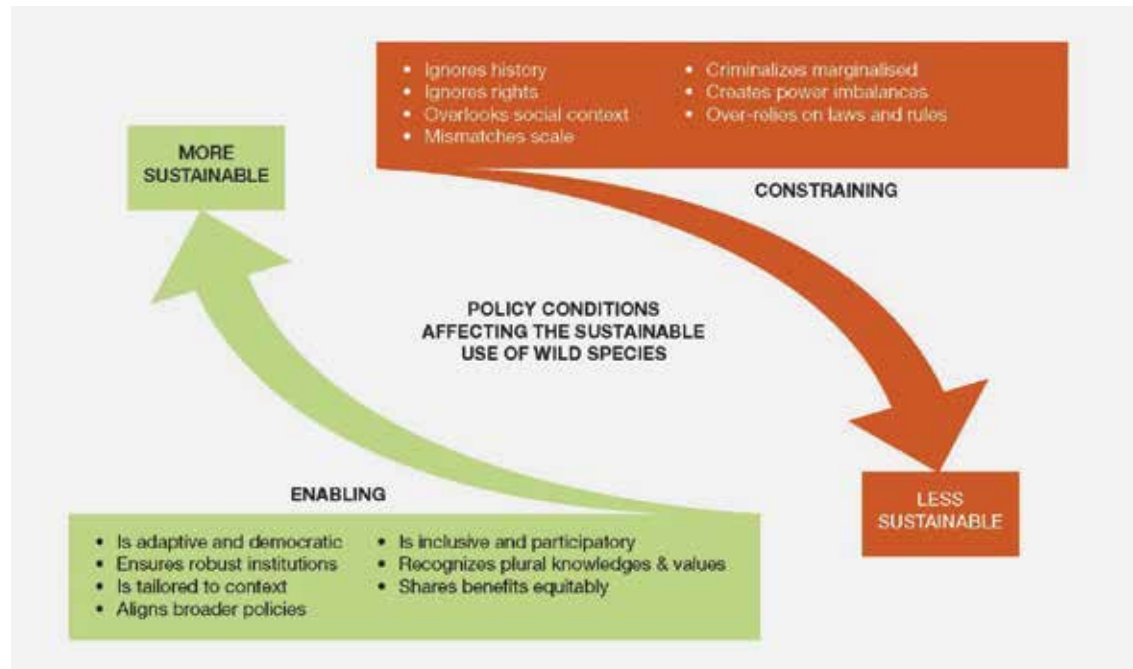


Guam/CNMI



American Samoa

*Dedicated to ecosystem-based
fisheries management in the
U.S. Pacific Islands.*



Source²

Take as defined under the ESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

Today, the legal harvest of sea turtles and their eggs is still allowed in many parts of the world—42 countries and territories to be exact, according to a global assessment published in 2014. Most of the turtle species taken are green turtles. The majority of legal turtle take is located in small island states in the Pacific and the Caribbean, with take in the Pacific being characterized by cultural significance with associated customs, whereas take in the Caribbean tend to have regulations for closed seasons, size restrictions, permits and gear restrictions.

One of the regions with the largest remaining legal turtle fisheries is in the waters of Australia and Papua New Guinea by Australian Aboriginal and Torres Strait Islanders. The turtle fishery in Torres Strait is managed as a subsistence fishery for the traditional inhabitants of the area and through 15 indigenous community-based management plans developed with funding support from the Australian government. A scientific assessment conducted in 2016 showed that while there are uncertainties with the status of the green turtle populations, the harvest is likely to be at a sustainable level.

In Nicaragua, subsistence use of sea turtles is allowed on the Atlantic coast of the country, recognizing the Caribbean coastal communities' traditional rights use to natural resources. However, much of the country's traditional relationship with sea turtles changed during 200 years of foreign-led exploitation and trade that started in the 1800s. Turtle harvest is now driven by local market demand and turtle meat is commonly sold in the markets to generate income and feed one's family. Catch rates have been declining, which suggests that the foraging aggregations from which the turtles are harvested may be declining, but the population trend at the source nesting beaches at Tortuguero, Costa Rica is increasing. As a side note, Nicaragua is located within the range, but not a signatory to the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC). Thus, the country is not subject to the take prohibition under the IAC, which is a major barrier to allowing cultural harvest of turtles in the U.S. Pacific Islands (see the "Treaty Deadlock" article in the Winter 2022 issue of *Pacific Islands Fishery News* www.wpcouncil.org/wp-council-newsletters).

Another example of sustainable take is in Ogasawara, a small archipelago in Japan located half way between Tokyo and the Mariana Archipelago, where a regulated small-scale commercial harvest of turtles with an annual harvest limit has been maintained at a steady

level for decades. Green turtles seasonally migrate to the islands to mate and nest, so only the adults are harvested and harvesting is prohibited during the peak nesting season. The nesting population had been depleted by the early 1900s following several decades of overexploitation, but long-term monitoring data since 1975 show that the population has been recovering in recent decades, even with the steady level of harvest continuing to this day.

These examples represent the broad diversity of management approaches and local context surrounding the legal turtle harvests that exist today around the world. They are also examples of more than 10,000 wild species that are harvested for human food and contribute to human well-being,

as highlighted in the Assessment Report on the Sustainable Use of Wild Species, a new report adopted by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) in July 2022. IPBES, consisting of nearly 140 member states, is known as the “IPCC* for Biodiversity” and is the global science-policy body tasked with providing the best-available evidence to decision-makers.

As recognized in the IPBES Assessment Report on the Sustainable Use of Wild Species, sustainable use of sea turtles and other wild species is central to the identity and existence of many indigenous peoples and local communities. Policy and tools are most successful when tailored to the local context.

The report identifies key elements for the sustainable use of wild species, as well as pathways to promoting and enhancing sustainability in the face of climate change, increasing demand and technological advances. Key elements of policies and tools for promoting sustainable use include:

- * Policy options that are inclusive and participatory.
- * Policy options that recognize and support multiple forms of knowledge.
- * Policy instruments and tools that ensure fair and equitable distribution of costs and benefits.
- * Context-specific policies.
- * Monitoring of wild species and practices.
- * Policy instruments that are aligned at international, national, regional and local levels; maintain coherence and consistency with international obligations and take into account customary rules and norms.
- * Robust institutions, including customary institutions.

With appropriate management, local community involvement, monitoring and enforcement, sea turtle harvest can be sustainable, just as fishery management has been under the MSA. 🐟

*Intergovernmental Panel on Climate Change

Resources

¹2014 Global Assessment – Humber, F., Godley, B. J., & Broderick, A. C. (2014). So excellent a fishe: a global overview of legal marine turtle fisheries. Diversity and Distributions, 20(5), 579-590: <https://onlinelibrary.wiley.com/doi/full/10.1111/ddi.12183>

²IPBES Assessment Report on the Sustainable Use of Wild Species overview: https://ipbes.net/media_release/Sustainable_Use_Assessment_Published



Source²



191st Council Meeting Highlights, June 21-23, 2022

Council Concerned With Lack of Support for Western Pacific Fishing Communities

On the first day of the Western Pacific Regional Fishery Management Council meeting, members learned that while the National Marine Fisheries Service (NMFS) FY2022 budget increased this year, the Council's annual request was reduced by \$343K. This cut will impact capacity-building efforts, the annual report on the status of fisheries in the region and the protected species program.

Council members were critical of the devaluing of fisheries in the Pacific Islands. Council Chair Taotasi Archie Soliai was concerned that Council programs are being impacted. "NMFS keeps talking about equity and justice, but this is not seen in our islands."

Soliai continued, "Our economies and cultures depend on the ocean and fishing," noting the proposed closure of the remaining waters of the Pacific Remote Island Areas north of American Samoa. Governor Mauga

of American Samoa asked President Biden not to expand the Pacific Remote Islands Marine National Monument, while Governor Ige of Hawai'i supported the request by the Pacific Remote Islands Coalition (PRIC). "Hawaii has a large, highly developed and diversified economy. American Samoa does not," said Governor Mauga. "American Samoa is highly dependent on the United States for financial assistance to support our infrastructure, harbors, airports, hospitals, and schools. If our tuna industry collapses, American Samoa will become more dependent on U.S. financial aid."

Manny Dueñas, Council vice chair from Guam, echoed the chair's comments, noting that the reduction of funding and additional closures are a "personal and major concern to the fishing communities in the islands" and that "in the Marianas, we need to fish to feed our people."

Council members discussed a delinquent NMFS draft bottomfish fisheries biological opinion (BiOp) that was

provided to the Council a few weeks prior to the meeting for comments. The publication of the opinion took three years to develop and John Gourley, Council vice chair from the Commonwealth of the Northern Marianas (CNMI), commented, "fishermen have been waiting for this to be completed to ensure they weren't adversely affecting the protected species in their area." *(Update: NMFS issued the final bottomfish BiOp concluding the Hawai'i, Guam and CNMI bottomfish fisheries are not likely to jeopardize the continued existence of threatened oceanic whitetip sharks. See page 20 for more information.)*

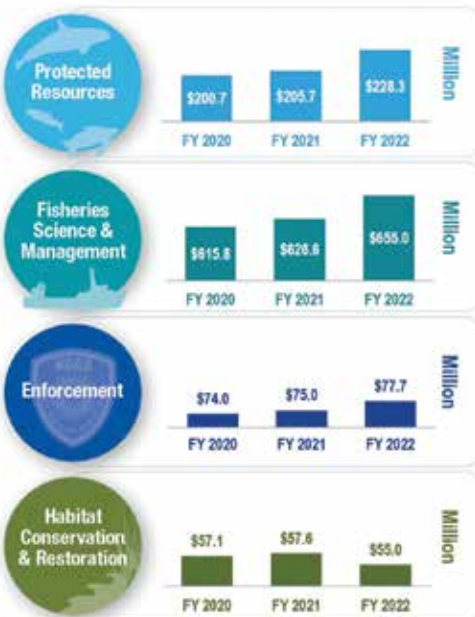
The Council also requested the U.S. Coast Guard station a fast response cutter in American Samoa to support U.S. coastal security, national and international fishery patrols, search and rescue and national defense. As international fisheries around American Samoa grow, the Council would like to ensure that illegal, unreported and unregulated fishing does not encroach into the U.S. exclusive economic zone.

Council Supports Conservation Definition Proposed by Council Coordination Committee

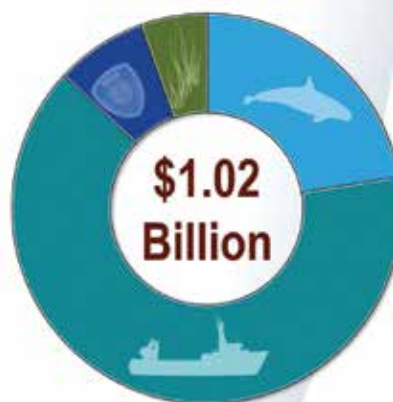
The Council requested NOAA and the Council for Environmental Quality (CEQ) adopt a Council Coordination Committee (CCC) area-based management subcommittee's proposed definition of "conservation area" to identify qualifying regions in President Biden's "30x30" initiative. The CCC represents the eight Regional Fishery Management Councils in the nation.

"The Council has a golden opportunity to support what the CCC has done, and help NOAA and the CEQ move forward with a sensible and fair definition of conservation that not only includes provisions to protect biodiversity, but also promotes wise use of fisheries," said Will Sword, Council vice chair from American Samoa.

NMFS Budget (ORF)

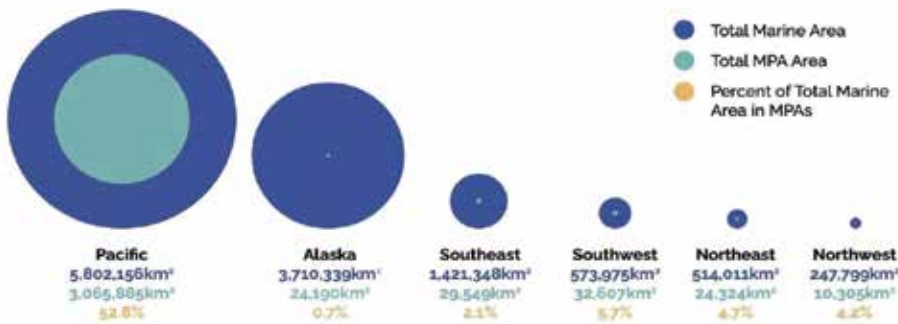


FY 2022 Enacted



A breakdown of the National Marine Fisheries Service FY2022 budget by sector. WPRFMC has received a \$343K reduction in funding from NMFS for its programs. Source: NMFS. (Note: ORF = operations, research and facilities)

Total Area of MPAs in each U.S. Region



The vast majority of highly or protected waters within the U.S. exclusive economic zone are located in waters under Council jurisdiction according to a study by Sullivan-Stack et al., 2022.

The Council recommended CEQ follow National Environmental Protection Act guidelines when implementing America the Beautiful and consult state and territorial governors affected by new conservation areas. In addition, the Council informed NOAA, the CEQ and Biden Administration that the Western Pacific Region has met 97% of the “30x30” goal to conserve 30% of all U.S. lands and waters by 2030 with its existing marine managed areas.

Council Requests Better Coordination with NOAA on ESA Biological Opinions

Council members expressed their frustration with BiOp delays for the Hawai‘i deep-set longline and American Samoa longline fisheries, noting the extended delays create uncertainties that cause anxiety. The Council called upon NMFS to include the Council in developing any reasonable and prudent measures in advance of the draft BiOps on the fisheries.

An NMFS policy directive recognizes the Council’s unique role in helping the agency comply with the Endangered Species Act (ESA). The Council is charged with developing fishery management regulations under the Magnuson-Stevens Act (MSA), which are approved by the Secretary of Commerce and then implemented by NMFS. Despite repeated Council requests over the past three years, NMFS has not discussed potential measures that may be needed to reduce the fisheries’ impacts on ESA-listed species.

2023 Territorial Bigeye Tuna Catch Limits Set

The Council recommended setting a 2023 catch limit of 2,000 metric tons (mt) of bigeye tuna each for American Samoa, Guam and the CNMI. Each U.S. Participating Territory would have a transfer limit up to 1,500 mt to Hawai‘i-based U.S. longline vessels operating under approved specified fishing agreements with the territories. Total transfers would be limited to 3,000 mt.

The Hawai‘i longline fishery has a low impact (3% of total catch) on the Western and Central Pacific (WCPO) bigeye tuna stock. The Council

recommended exploring an increase to the U.S. longline catch limit for WCPO bigeye tuna and increasing future allocation limits from the territories to Hawai‘i-based longline vessels.

Council Offended by Removal of Last Vestiges of US Ocean Waters Open to Fishing

The Council supported permitting non-commercial fishing and prohibiting commercial fishing in the Monument Expansion Area of the Northwestern Hawaiian Islands (NWHI) (50 to 200 nautical miles). Council members

were infuriated because continuing to close areas to fishing is an affront to indigenous peoples. Members stressed the importance of continuing indigenous cultures and practices. Guam Council Vice Chair Manny Dueñas said, “Permitting fishing perpetuates Hawaiian culture, and does not preserve it in a pickle jar. Whether they decide to or not, I want the Hawaiians to have the opportunity to be able to practice their culture.”

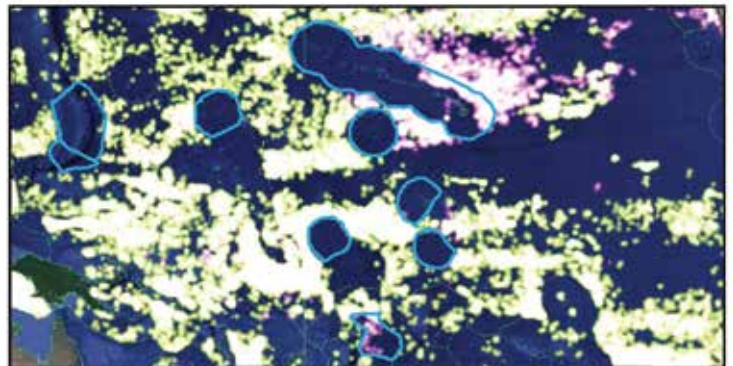
“It is important that we allow Native Hawaiian traditional practices, but minimize the impacts from non-native fishing,” said David Sakoda, Council representative for the State of Hawai‘i.

Council Executive Director Kitty Simonds asked, “How much more protection would we have by an overlay of



Fishing Effort in the Pacific Ocean

and US Exclusive Economic Zone - 2 million square miles



Three months fishing effort (Oct-Dec 2019). Yellow = Foreign fishing vessels, Pink = U.S. fishing vessels, Light blue = U.S. EEZ. Vessels are mainly purse seine, longline, and pole-and-line vessels targeting tuna and swordfish. Data source: Global Fishing Watch.

the sanctuary? Closing these waters to protect migratory fish is futile when the fish move everywhere.”

The Council will develop the details for provisions related to non-commercial fishing in the NWHI, including Native Hawaiian practices and cooperative research to amend the Council’s Fishery Ecosystem Plans for initial action in September.

The meeting agenda and summary of action items are available at www.wpcouncil.org/event/191st-council-meeting-virtual. 🐟



The Return of Fishing to the Northwestern Hawaiian Islands

The Northwestern Hawaiian Islands (NWHI) were historically visited by Native Hawaiians to fish and gather resources. Archaeological evidence of fish hooks and fishing shrines indicate that the islands were used for fishing from approximately 1,000 AD. The islands continued to be utilized by Native Hawaiians until the late 1800s, and following that by U.S. and foreign fishermen until the Fishery Conservation and Management Act passed in 1976. A tripartite study in the late 1970s led to



A ko'a, or fishing shrine on Niihau, NWHI. Ko'a can be a stone, a pile of stones or a stone platform near shore. Photo: David Boynton. Source: Introduction: Hawaiian Fishing Traditions, Dennis Kawaharada, 2006.

a cooperative research program to identify NWHI marine resources and, in turn, fisheries for lobsters and deepwater bottomfish.

The Western Pacific Regional Fishery Management Council's first fishery

management plans were developed in response to the increasing fishery operations in the NWHI. Throughout the 1980s and into the 2000s, the Council established management measures in the NWHI including spatial management and limited-entry for bottomfish; no-take zones, gear restrictions, and quotas for crustaceans; no-take refugia and quotas for precious corals; and a protected species zone 50 nautical miles (nm) around the NWHI, within which longline fishing is prohibited. The latter became what is now known as the Papahānaumokuākea



Action Area. Source: NOAA.

Marine National Monument (PMNM).

Through a handful of Executive Orders and Presidential Proclamations, fishing in the NWHI became limited not by scientific justification or a lack of resources, but to appease conservation interests. The NWHI continued to provide fish for local communities until it was closed through the use of the Antiquities Act. However, Proclamation 9478 issued in 2016 allowed fishing to once again return to the NWHI as a regulated activity.

In December 2016, the Council held initial public scoping sessions on potential fisheries regulations for the Monument Expansion Area (50-200 nm) around the NWHI. Participants at these sessions wanted to ensure there was a streamlined permitting process, an allowance for research fishing and clear and enforceable regulations. The Council looked at potential options for fishing regulations in 2017 but decided to take no action at that time. In 2021, a push for a national marine sanctuary in the NWHI began to take shape and the Council was asked to provide fishing regulations for the same area of the Monument Expansion Area as prescribed under the National Marine Sanctuaries Act.

The Council is considering options to provide opportunities to once again fish in the NWHI. While the original

PMNM allows for sustenance fishing (catching and consuming within the monument), the Council's options for fishing in the Monument Expansion Area include catching and bringing fish back for noncommercial purposes. The Council may also consider whether customary exchange, or the nonmarket exchange of marine resources between fishermen and community residents, should be included.

The proposed fishery management measures for the Monument Expansion Area of the NWHI will need to be consistent with both Proclamation 9478 and the goals and objectives of the proposed national marine sanctuary. While the proclamation prohibits commercial fishing, the Council at its 192nd meeting in September may move forward to recommend NMFS implement regulations that prohibit commercial fishing and provide permits for noncommercial fishing. With the fishing regulations in the Code of Federal Regulations, there will be stronger enforcement and legal clarity for the area.

Get involved! Public comment is welcomed at the Council meeting and its other advisory group meetings. To find out more about this amendment, the meetings and public commenting opportunities for designating fishing regulations for the NWHI, visit www.wpcouncil.org/nwhi-fisheries-2 and participate in the Council process. 🐟

Essential Fish Habitat: An Uku Case Study

Fisheries management is a dynamic process given the ever-changing population levels, fishing pressure and shifts in environmental conditions. To appropriately manage U.S. fisheries, the Western Pacific Regional Fishery Management Council is mandated through the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to develop plans to ensure equitable access to the resources, monitor incidental catch, reduce interactions with protected species and identify essential fish habitat (EFH). All of these components are a vital part of fisheries management, but here we use uku (*Aprion virescens*) as a case study to highlight what EFH is, how it is designated and the process to refine EFH areas as improved scientific information becomes available.

EFH, as defined in the MSA, means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. The Council must describe EFH and provide maps of the geographic locations or boundaries within which EFH for each species and life stage is found. Additionally, the Council must identify EFH that is especially important ecologically or particularly vulnerable to degradation as “habitat areas of particular concern” to help provide additional focus for conservation efforts. In doing so, the Council evaluates potential adverse effects of fishing activities on EFH and develops management measures that minimize those effects to the extent practicable.

For a habitat generalist species like uku, current EFH includes parts of the open ocean, deep lagoons, channels, harbors, shallow and deep reefs, and benthopelagic waters (i.e., living and feeding near the bottom as well as in mid-waters or near the surface). You may be thinking to yourself, what habitat is not considered EFH for uku? This same question was pondered by fisheries managers and led to two research projects focusing on refining EFH for uku in the main Hawaiian Islands (MHI). These two studies were vetted through the Western Pacific Stock Assessment Review (WPSAR) to improve and refine the Council’s designation of EFH.

WPSAR is a cooperative effort between

the Council and the National Marine Fisheries Service (NMFS) to improve the quality, timeliness, objectivity and integrity of stock assessments and other scientific information used in regional fishery management. The WPSAR review framework defines roles and responsibilities, summarizes the scope and describes the review schedule in coordination with the overall Council process.

Both uku EFH studies were assigned a “level” which corresponds to data availability. NMFS has provided guidelines to evaluate the quality of available data used to identify EFH and is rated across four levels (Figure 1). The first study was categorized as Level 1 EFH based on modeling the presence and absence of uku from survey observations. Since uku occupy habitats across a range of depths, it was necessary to use different survey data for shallow (0-30 meters) and deep (30-300 meters) waters. The second study was characterized as a Level 2 EFH modeling framework, which employed various density data enhanced by satellite products to estimate uku abundance in shallow MHI waters. This was the first study to use a large, fishery-independent database as a source of information for analysis and prediction of the habitat distribution of uku along the nearshore coastal area in the MHI region.

As part of the WPSAR, reviewers analyzed the reports and questioned the methods used to refine uku EFH. The panelists are bound by terms of reference, which are agreed upon prior to the WPSAR. The terms of reference offer guidelines reviewers can follow to ensure each study includes accurate information, uses appropriate data and describes the uncertainty within the models. Ultimately, the results of both studies provided information on the spatial distribution of uku, which fisheries managers will eventually use to distinguish and refine

uku EFH. The WPSAR concluded with the panelists acknowledging that both studies adequately met the terms of reference. A final panelist report on both studies and the WPSAR process is in press and will be presented to the Scientific and Statistical Committee (SSC) and Council in September 2022.

What’s Next?

The SSC will review the report with the goal of certifying both studies as the best scientific information available. This is the final step prior to the data and reports being used to inform policy decisions. This certification will be presented at the September Council meeting. The Council will then either send comments back to the SSC and WPSAR, or accept the SSC’s certification and direct staff to draft an amendment to the Hawai’i Archipelago Fishery Ecosystem Plan refining uku EFH based on the results of the two studies. 🐟

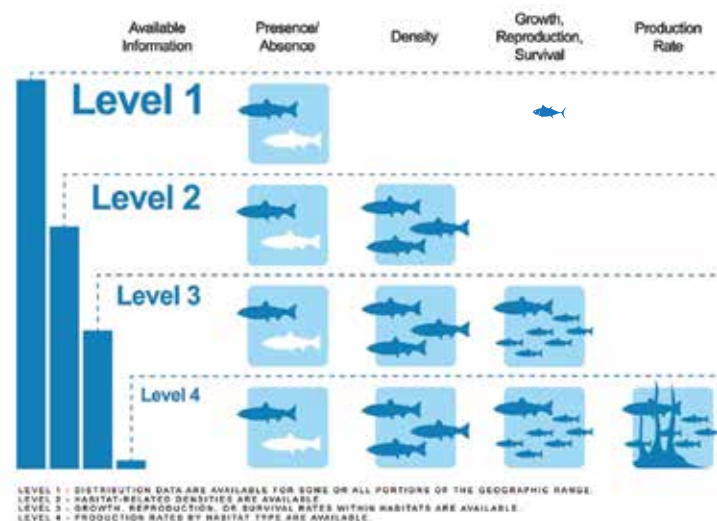


Figure 1. EFH levels are based on data availability and apply guidelines to the WPSAR process. Source: www.fisheries.noaa.gov/national/habitat-conservation/essential-fish-habitat.

For more information, visit:

EFH - www.fisheries.noaa.gov/national/habitat-conservation/essential-fish-habitat

WPSAR - www.fisheries.noaa.gov/pacific-islands/population-assessments/western-pacific-stock-assessment-review

FEPs - www.wpcouncil.org/fishery-ecosystem-plans-amendments

Uku - www.wpcouncil.org/wp-content/uploads/2022/05/Uku-Fact-Sheet.pdf

The uku stock in the main Hawaiian Islands is doing great – not overfished (population size is too low) or experiencing overfishing (more fish are being removed than is sustainable).

Project Mālama Ola participants gather at the ahu (mound or stone heap serving as a marker) after a day of kilo in the muliwai (estuary) in Hanalei River. Photo: Kamealoha Smith.



Kaua'i 'Ohana Continue the Work of 'Aha Moku

This is the third in a series on the 'Aha Moku, exploring how Community-Based 'Ohana Councils on Kaua'i put the system into practice.

In 2012, Act 288 was enacted and signed by Governor Abercrombie to establish the 'Aha Moku Advisory Committee (AMAC) within the Department of Land and Natural Resources to advise the department chair using an 'Aha Moku system perspective on issues under the responsibility of this agency. The 'Aha Moku system is a land, water and ocean system of best practices based upon the indigenous resource management practices of ahupua'a and moku (regional) boundaries. The AMAC is composed of eight members, each representing the eight main Hawaiian Islands.

The AMAC was active through 2016, but from 2016 to early 2022, the State of Hawai'i governor and legislature did not appoint any new members. On April 14, 2022, the legislature finally confirmed eight nominations to the committee. Although it is an accomplishment to reinstate the AMAC, traditional resource management in Hawai'i did not stop due to the committee's inactivity. During the lull, the Kaua'i



Hau bush overgrowth restricts the flow of the Hanalei River and the narrower waterway creates dams and marshy lands. Photo: Kamealoha Smith.

community continued the work of 'Aha Moku, serving as a "traditional practice" rather than as a "governing body."

Due to the political nature of the AMAC, the Kaua'i community organized its work through 'ohana (family) with kuleana (responsibility) for areas

on the island, with 'Aha Moku as a foundational practice to rebuild, restore and revitalize practices that have been carefully handed down through generations of kupuna (ancestors). The 'ohana from Halelea, Ko'olau and Puna are currently working in two watershed environments in the ahupua'a (districts) of Hanalei and Wailua.

In Hanalei (North Kaua'i), the 'ohana are engaged in several projects to engage and support communities in partnership with community-based nonprofits using funding from private,

state and federal agencies. Project Mālama Ola focuses on researching the impacts of climate change and other threats to the Hanalei River and Watershed. With support from the U.S. Fish and Wildlife Service and the Office of Native Hawaiian Relations in Washington D.C., this 1.5-year research project is developing and implementing a native fish habitat and migration inventory, assessment and monitoring protocol based on traditional methodology. One key element is using the Kaulana Mahina (Hawaiian moon calendar), which includes elements of kapu (when it is ok and not ok to fish based on fish spawning patterns) to better understand the impacts of climate change and green waste debris on the native fish habitat, spawning and migration patterns in Hanalei River.

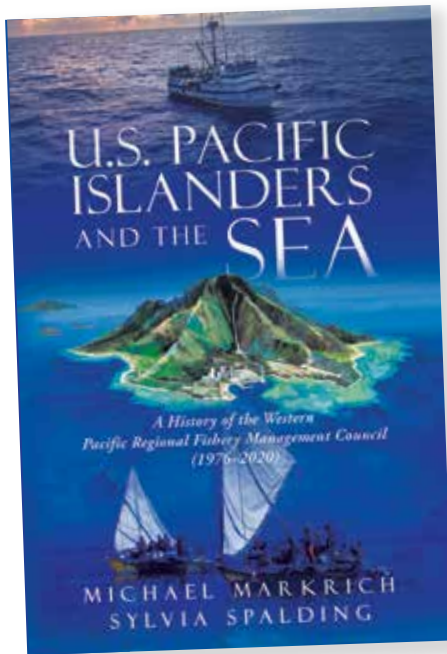
Project participants engage in kilo (observation) to gather information about the 'ama'ama (striped mullet), āholehole (flagtail) and other native fish. They are creating educational materials in Hawaiian and English for schools, agencies and others who have kuleana for project and management resources in the waterways of Kaua'i and Ni'ihau.

Project Mālama Ola also supports the vision of the local community that came together in the aftermath of the April 2018 floods on Kaua'i to develop a plan to repair and restore wetlands in Hanalei Valley. The goal of the Hau Bush Maintenance Project is to clear the 'āina (land) of green waste debris by cutting hau bush and helping the water flow freely to the ocean in the lower areas of Hanalei River. This project exemplifies the community showcasing the important role that traditional knowledge and modern technology plays in helping with recovery efforts from the numerous natural disasters the north shore of Kaua'i has experienced.

In Wailua (East Kaua'i), the 'ohana from Halelea, Ko'olau and Puna have worked with native farmers, fishermen and other vendors to start a community-based farmer's market through a federal grant. They have also collaborated with 'ohana from the Wailua and Kapa'a area to restore lo'i kalo (taro patches) and 'auwai (streams) in Keauhua Valley.

Although not working through the governing AMAC body, the 'ohana on Kaua'i demonstrate that the work of 'Aha Moku can still be done. For more information on the projects highlighted in this article, visit www.hanaleiriverheritagefoundation.org. 🐟

New Book Reviews the 44-Year History of the Council



The Western Pacific Regional Fishery Management Council published *U.S. Pacific Islanders and the Sea: A History of the Western Pacific Regional Fishery Management Council (1976-2020)* in August 2022. The book examines what it took to replace unregulated foreign fishing in the U.S. waters around the Pacific Islands with well-managed American fisheries, while addressing equity and justice for the region's underrepresented, indigenous fishing communities. Founding members of the Council and its Scientific and Statistical Committee recall what motivated them to make the decisions they did to manage U.S. fisheries in the region.

This history recounts the struggles of both the U.S. fishing industry to operate and the native peoples to maintain their cultural relationship with the ocean within an ever increasing regulatory environment. The book was written to inform all who are interested in natural resource management, the seafood industry, indigenous issues and government policymaking, covering a wide range of topics from sport fishing to environmental justice, climate change and food security.

U.S. Pacific Islanders and the Sea is available in hardback, paperback and e-book formats (ISBN 978-1-9448-2780-9, ISBN 978-1-9448-2781-6 and ISBN 978-1-9448-2782-3).

The book's authors drew not only from in-depth research but also from their strong backgrounds in the field of fisheries in the region. Michael Markrich holds degrees

in history and in agricultural and resource economics and has been recognized for previous writings on ocean issues. Sylvia Spalding has degrees in journalism and in English (expository writing) and has received awards for ethics in journalism and for excellence in marine education. 🐟



Congressional Corner



Follow the bills that impact your fisheries at www.congress.gov.

As summer cools down, politics in the Capitol are heating up. Primary elections are in full swing as Congress prepares for the general election in November. Much of the legislative work is likely to be put on hold until after the elections; then there may be a race to the finish of the 117th Congress with a flurry of activity expected on the thousands of bills still in committee in both the House of Representatives and the Senate. Among them are numerous bills regarding fishing and potential reauthorization of parts of the Magnuson-Stevens Fishery Conservation and Management Act, with a couple of bills already passed into public law.

The American Fisheries Advisory Committee, S. 497, became Public Law No. 117-121 May 12, 2022. This law creates an advisory committee to assist in awarding fisheries research and development grants. The committee will include six regions with three members and up to four at-large members appointed by the Secretary of Commerce. Region 1 consists of Alaska, Hawai'i, the Commonwealth of the Northern Marianas, Guam and American Samoa and will be responsible for identifying the needs of the fishing community, developing the request for proposals, reviewing applications and selecting applications for approval for a new grant program. The law provides an opportunity for a representative of the relevant regional fishery management council so the Council hopes to provide updates on this committee in the future.

Another bill that may become a law soon is H.R. 4521, the America Creating Opportunities for Manufacturing Pre-Eminence in Technology and Economic Strength (COMPETES) Act. The America COMPETES Act passed the House in February 2022 and was sent to the Senate. The Senate made an amendment that replaced the bill text with S. 1260 (United States Innovation and Competition Act of 2021) and passed the bill sending it back to the House for conference.

The bill originally addressed federal research and security to advance technological innovations, but through numerous amendments ballooned into a giant bill that included everything from diplomatic relations with China to global testing and vaccination for COVID-19. Also included in the original bill were provisions from H.R. 2811 that would eliminate shark finning as well as other provisions to address illegal, underreported and unregulated (IUU) fishing and forced labor prevention in fisheries. The amended language to H.R. 4521 from the Senate also includes the Shark Fin Sales Elimination provision (Sec. 2518). The House and Senate continue to discuss this bill to resolve any differences, but it is not clear if compromises will be reached.

The dozens of bills in Congress will continue to be reviewed and debated throughout the rest of the 117th Congress, which ends this year. It is likely that many of the bills will be held until after the midterm elections in the fall when it will be clear on who will control the House and Senate in the 118th Congress. It may be preferable to wait until the next Congress to reintroduce the bill or perhaps pass the bill before the new Congress is seated. 🐟



Pain at the Pump in the Marianas



Manny Corpuz at the M&M Fish Mart waits to see what will happen to his business in this difficult economy. Photo: Floyd Masga.

Low Tide and High Tide with CNMI Fuel Prices

The Commonwealth of the Northern Marianas (CNMI) continues to experience a steady increase in fuel prices. A common sight on Saipan is first seeing Mobil Oil Marianas increase its fuel prices, then by 10 p.m. that same day, Shell Marianas follows suit.

The high fuel prices have impacted the entire CNMI, from inflation of household goods and food to the price of electricity. Rota and Tinian have been hit especially hard, with prices at approximately \$8 to \$9 per gallon of regular gas.

These prices have greatly impacted the local fishing industry as well. From recreational and commercial fishers to local tour operators, all have had to endure paying higher fuel prices. The situation has caused a ripple effect on the price of fish, fishing methods used and type of fish targeted.

Several fishers have shared their fears of not meeting their operational daily costs, being able to pay off loans and getting deeper into debt due to inflation. A fish vendor said that with the ongoing war with Russia and CNMI's recovering economy, she doubts prices will improve. Another fish vendor said that due to rising costs, he is selling his fishing vessel and has sent his fishermen back to the Philippines.

One fisher stressed fishermen have to find ways to save on fuel and costs, adding that he foresees prices of catch going up. He noted that smart fishers should follow the common practice of switching to bottomfishing if no birds are in sight when trolling.

The CNMI faces uncertainty and hard-working fishers and vendors are faced with difficult decisions—to continue to move forward or close down.

High Fuel Prices Affect Guam's Fisheries

Guam's small-boat fishery has been greatly impacted by never-before-seen high prices at the pump.

As the production of gas in the U.S. has slowed, augmented by the COVID-19 pandemic, and the war in Ukraine, demand

for fuel drops, resulting in rapidly increasing gas prices. Boat-ers, with large fuel tanks on board their vessels, decided it was best to spend the extra cost filling their vehicles instead. Slowly overcoming the pandemic's lockdowns and restrictive mandates, many who were unable to afford the cost of fishing stayed home and worked on home projects, repaired trailers, and improved their boats with new paint, enclosures and deck repair. Large, heavy four-wheel drive trucks used to tow boats to and from the marina also stayed home as smaller, economical vehicles were used instead to drive around the community. Fishing in Guam became adaptive. And efficient. Those with the skillsets to target specific species come out on top as they catch to sell. On the other hand, artisanal fishermen lacking the knowledge of fishing grounds and skills to target specific pelagic or bottomfish lose out as they burn more fuel chasing a catch.



Gas peaked in May 2022 with a gallon of regular at \$6.339—the highest it has ever been. Price drops are slow to come by.

So, what does this all mean to the cost of fish? To the livelihood of fishermen? To the Guam Fishermen's Cooperative Association (GFCA), and to the local fish markets?

Tim Perez, general manager of Coral Reef Marine

said sales of scooters and small boats are up 30%. Fishermen are switching from the big, high horsepower boats to more manageable means. Perez said in addition to the high fuel prices, the delay in shipping due to global supply shortages compound the issue.

Manny Dueñas, Council member and president of the GFCA, said bigger boats from the CNMI are coming to the Co-op to fuel up because the cost of gas or diesel in Rota or Saipan is \$2 to \$3 per gallon higher. GFCA in turn accommodates these friends from up north by foregoing any profit margin from fuel sales.

Local fish markets increased the importation of reef fish from Chuuk and Palau. Coolers full of fish arrive by air regularly to fill the gap left by local fishermen not fishing as much due to the challenges imposed by increased costs. All this translates to increased cost of fish at the market. Especially pelagic fish like yellowfin, marlin, skipjack, wahoo and mahimahi.

Fishermen are resilient, but are hoping that as the cost of going fishing drops, they can continue their passion to fish and carry on the tradition of passing along their knowledge to the youth.

Biba Peskadot! 🐟



Highlights

FROM THE PACIFIC REGION

Team Robalo Breaks Record at 38th Annual Saipan International Fishing Tournament

The Saipan Fishermen's Association organizers held another historical event July 16, 2022. With 88 vessels, a tournament record of 106 pounds (held for 32 years) was broken by a 125.5-pound yellowfin tuna caught by Team Robalo, captained by Ivan Ilmov and crew: Jeff Morggexa, Christbino Rapugpai, Jordan Tagabuel, Albert Emananpiy, Henry Maiuwelau, Mano Piyalal and Frank Retanluk. The *Robalo* headed out around 5:30 am and straight for the nearest fish aggregating device. With no result, the team headed north and by 12:05 pm the battle began. After a 45-minute struggle, Team Robalo landed a giant yellowfin near Banzai Cliff.



(L-R) Henry Maiuwelau, Carlos, Ivan Ilmov, Harmony Atkins and Christbino Rapugpai. Photos: Ivan Ilmov.



Holy marlin! Already a grander has been caught off of O'ahu during the Hanapa'a Shootout June 11, 2022. Butch Farm and team landed a 1,168-pound monster to win the tournament. Photo: Richmond Young.



Congratulations to Western Pacific Regional Fishery Management Council member alumni Michael Goto who was featured in *MidWeek O'ahu* July 27, 2022! As auctioneer and assistant vice president of United Fishing Agency (in charge of the Honolulu Fish Auction), Goto describes life within the commercial fishing industry that is responsible for 80-90% of the local food production in Hawai'i. Check out the full story at: www.midweek.com/michael-goto.



Science and Management 101: Community Engagement

The Magnuson-Stevens Fishery and Conservation Act encourages a bottom-up approach to fishery management that starts with stakeholders. One of the Council's Guiding Principles is to conduct education and outreach to foster good stewardship principles and broad and direct participation in the Council's decision-making process. Council staff was able to put this into practice this summer by meeting with government officials, scientists, fishermen and fish vendors on Guam and Saipan in partnership with the NOAA Pacific Islands Fisheries Science Center (PIFSC).

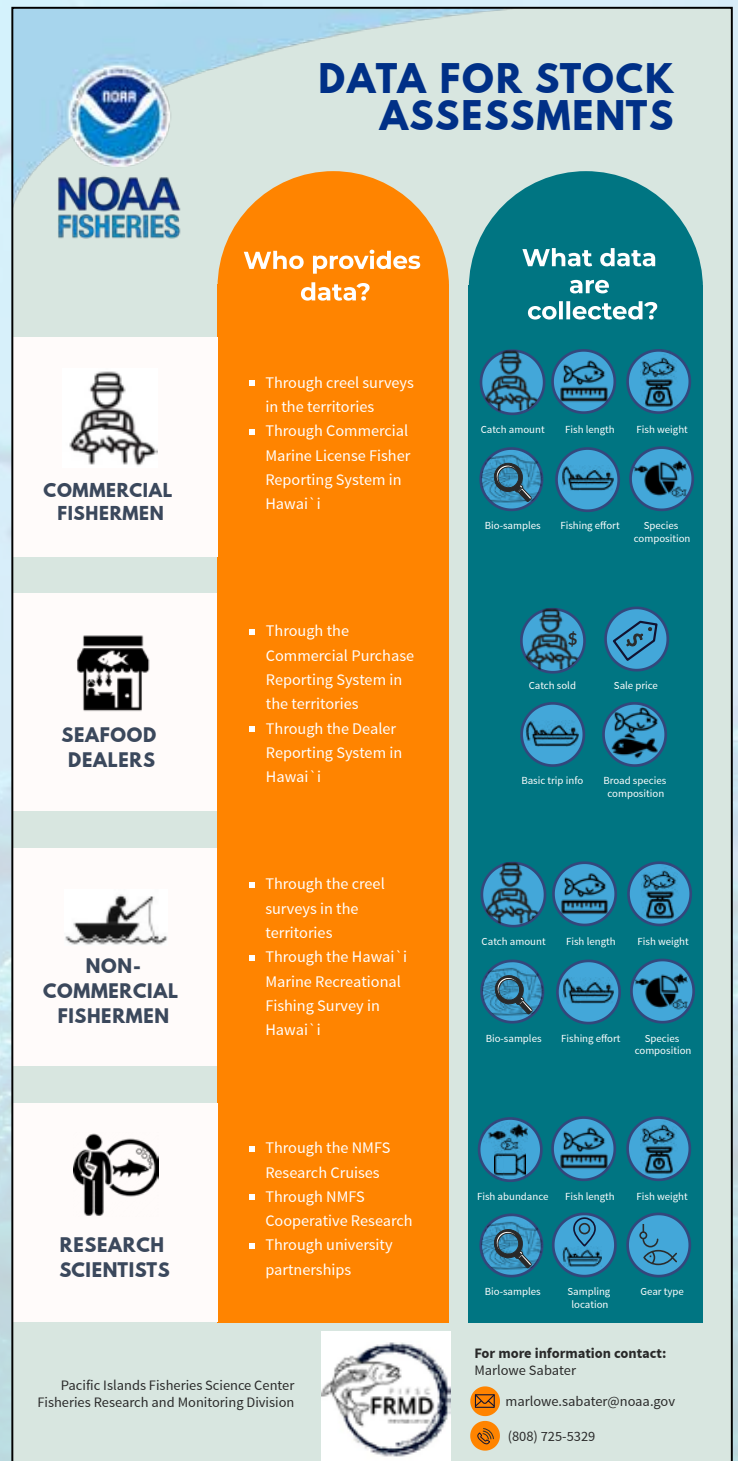
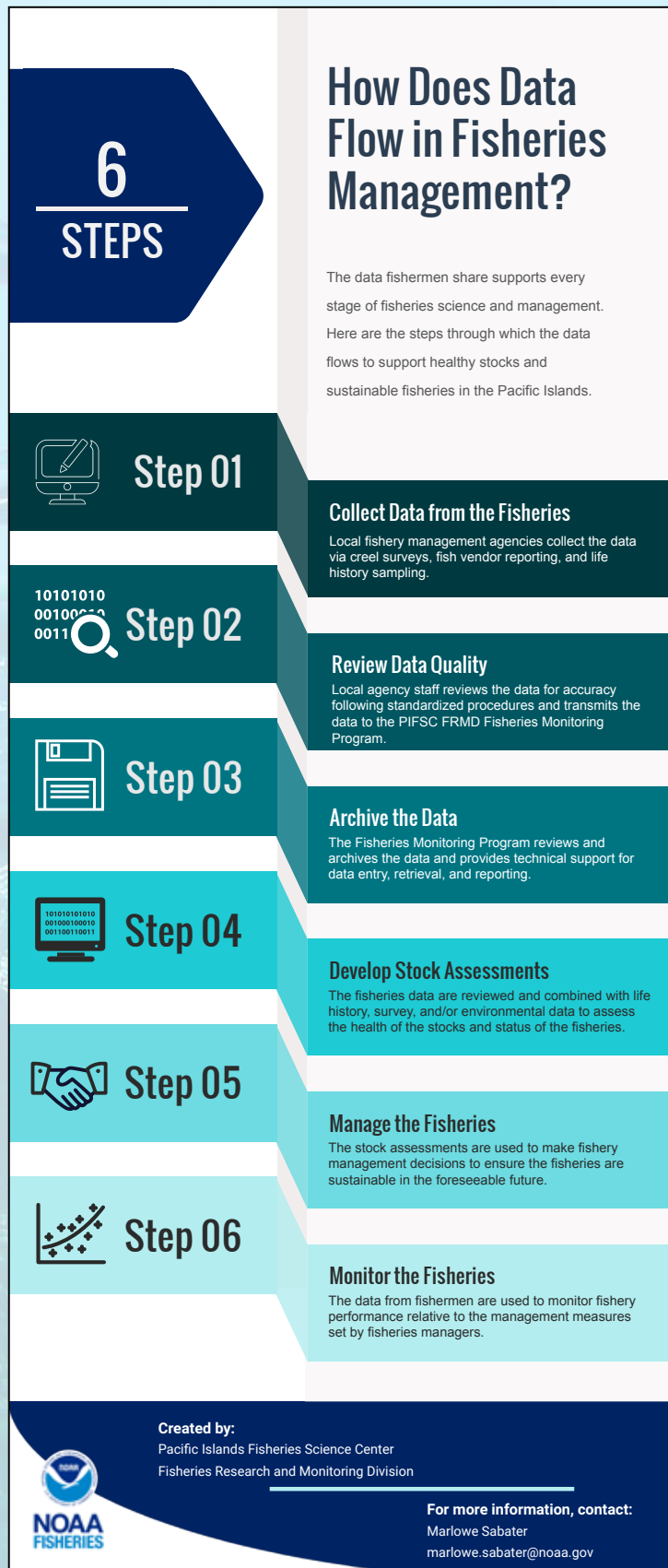
The Council organized a meeting on Guam with Council members and various advisory groups (Advisory Panel, Scientific and Statistical Committee, Plan Team). Discussion topics included data collection, surveys, stock assessments and the implementation of policy through the Council process.

PROCESS FOR MAKING OR CHANGING REGULATIONS

The Council process to make or change regulations involves many stages and includes many steps and opportunities for public input and comment. The Council reviews proposals, options papers, draft amendment documents, National Environmental Policy Act analysis documents, and eventually votes on a preferred alternative, which may become regulations at the end of the process.



Understanding fisheries management can sometimes be difficult and intimidating. PIFSC staff developed several handouts, including those below, to help clarify the intersection of science and management and to emphasize the importance of public participation. For more information on the handouts, please contact Marlowe Sabater: marlowe.sabater@noaa.gov. 🐟



Striped Marlin Research Results in Tantalizing Surprises

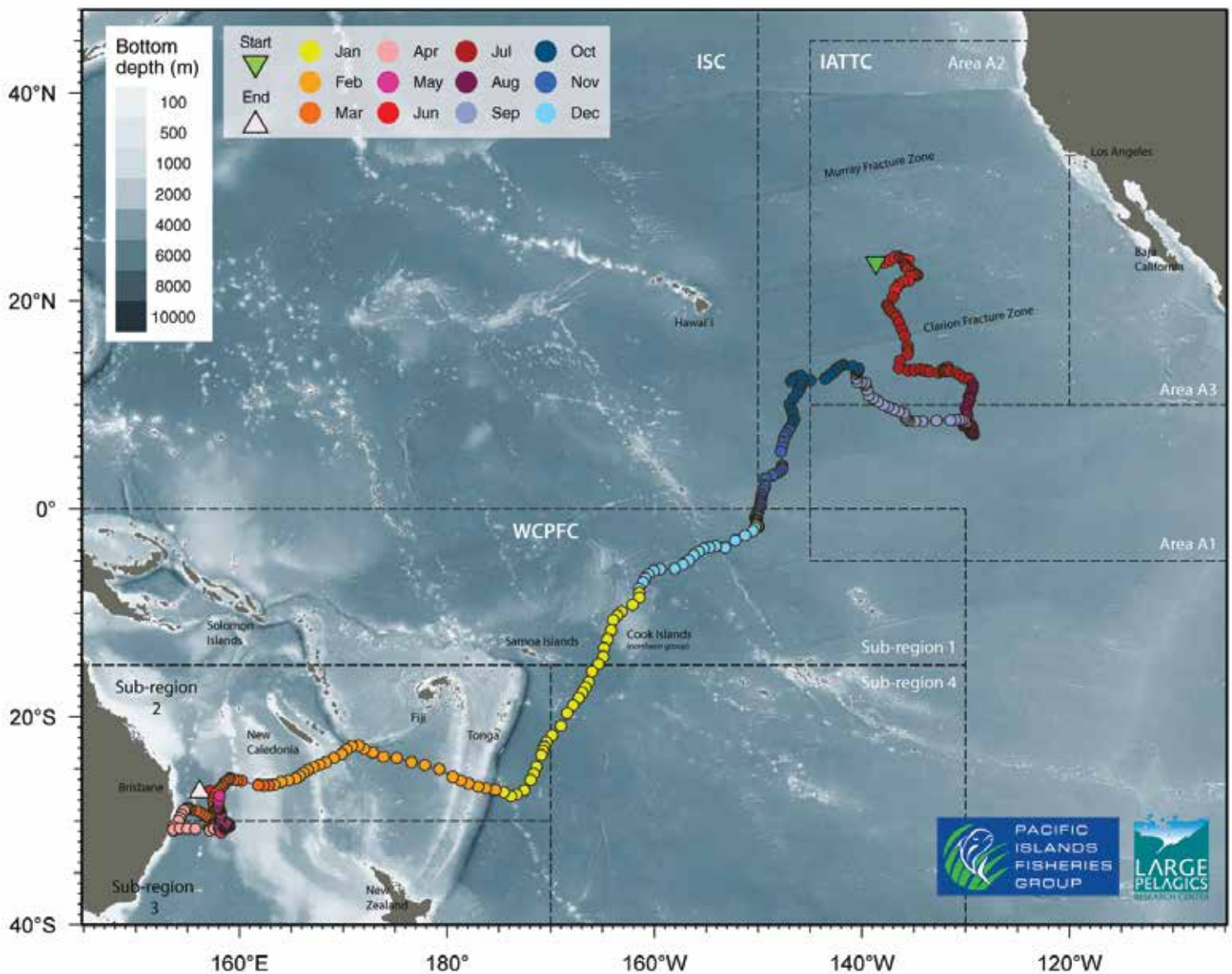


Chart of striped marlin's 1-year migration track. Colors represent months of the year. Courtesy PIFG and LPRC.

Understudied Species Makes Long Journeys Throughout Pacific

The most comprehensive effort to date to characterize striped marlin (*Kajikia audax*) movements in the Central North Pacific has revealed unexpectedly broad movements among tracked specimens, with some traveling to the east coast of Australia or halfway to California from their dispersal points around Hawai'i.

The original research, funded by a NOAA Saltonstall-Kennedy Program grant, was conducted by scientists associated with the Hawai'i-based Pacific Islands Fisheries Group (PIFG) and the Large Pelagics Research Center (LPRC) in Massachusetts. It was recently published

across two papers in the peer-reviewed journal *Frontiers in Marine Science*.

The papers' findings could inform future fisheries management measures affecting striped marlin, at a time when *K. audax*—a top incidental catch of the longline fishery—is considered overfished in the Western and Central North Pacific.

"There is a major lack of information on the movement and ecology of striped marlin in the Central North Pacific," said co-author and LPRC Director **Molly E. Lutcavage**.

"The last dedicated study of striped marlin in the Central North Pacific was

almost two decades ago, and involved only a handful of marlin captured by recreational, or sport, fishers."

Lead author Chi Hin Lam, **Clayward Tam** and Lutcavage partnered with commercial vessels belonging to the Hawaii Longline Association (HLA) to deploy 31, \$4,000 popup archival satellite tags (PSATs) on striped marlin between 2016 and 2019. Tam's cooperative, science-based relationships with skilled longline captains made the partnerships successful.

"This is another example of the Hawai'i longline vessels playing a significant role in cooperative research with leading scientists," said **Eric Kingma**, executive director of HLA. "We have a long history



Striped marlin. Illustration courtesy PIFG.

of scientific collaboration and our fleet has served as a research platform for decades. HLA congratulates the authors on their important findings and looks forward to working with PIFG and other scientists on future fisheries management and marine conservation research.”

The PSATs recorded vast horizontal movements throughout the Pacific Ocean, challenging previously-held notions that striped marlin are highly localized in their regional, coastal aggregations.

The tagged marlin, which were tracked for up to one year, routinely crossed multiple fisheries management boundaries and ocean features like seamounts and fracture zones.

One tagged marlin, PG01, made a trans-Pacific journey not previously observed for its species. Having been tagged in the Eastern Pacific Ocean, PG01 eventually made its way thousands of miles to the central east coast of Australia.

“We didn’t expect a tag showing up off Australia,” Lam said. “I would say that was 50% luck and 100% hard work. Consulting with our captains and tagging partners docked at Pier 38 in Honolulu and providing first-hand training for scientific tagging paid off.”

The tags also showed the striped marlin spent 38 and 81% of their day and night, respectively, in the top five meters of the water column.

The papers’ horizontal and vertical movement data is important for fisheries managers and stock assessment scientists, who require timely, high-quality biological and habitat data to inform population modeling and stock status.

Such data also helps identify best practices to support sustainable harvest, which could include mandated live release and time-area restrictions.

“Longline fisheries targeting tuna and swordfish benefit from any scientific information that helps to reduce unintended interaction with non-targeted catch like marlin, while pursuing economic returns on targeted catch of tuna and swordfish,” Lutcavage said.

In addition to monitoring tagged fish, researchers collected fin clips from Hawai‘i-landed striped marlin. Genetic analyses of 55 striped marlin were assigned to two genetic groups: Australia, New Zealand and Hawai‘i (19 individuals) and Hawai‘i alone (36 individuals), suggesting the Hawai‘i-based longline fleet interacted with individuals from multiple populations.

“Information on stock structure is critical to inform stock assessments and develop appropriate management options, including options to rebuild the stock as needed,” emphasized **Mark Fitchett**, pelagic fisheries ecosystem scientists for the Western Pacific Regional Fishery Management Council.

Lam, Tam and Lutcavage believe more PSAT efforts and genetics analyses are called for, to fill in the scientific gaps underscored by their latest striped marlin research. Improved technology and knowledge of the species’ biology, physiology and life history will better inform management measures for the sustainable harvest of bigeye tuna and swordfish, and a reduction of incidental catch of non-target species like the striped marlin. 🐟

Lam CH, Tam C and Lutcavage ME (2022) Connectivity of Striped Marlin From the Central North Pacific Ocean. *Front. Mar. Sci.* 9:879463. <https://doi.org/10.3389/fmars.2022.879463>

Lam CH, Tam C and Lutcavage ME (2022) Striped marlin in their Pacific Ocean milieu: vertical movements and habitats vary with time and place. *Front. Mar. Sci.* 9:879503. <https://doi.org/10.3389/fmars.2022.879503>



Capt. Sexton and crew of the FV Kelly Ann tagged and released most of the satellite-tagged striped marlin. Photo: Steve Sexton.

Get to Know Your Council Members:

DR. JUDITH P. GUTHERTZ

Learn about the people who balance competing interests while trying to make fishery management decisions for the overall benefit of the nation.



Judith Guthertz was appointed to the Western Pacific Regional Fishery Management Council as an at-large voting member from Guam. She was born and raised in Guam and is a product of the island school system. Guthertz currently serves as a faculty member (and past chair) of the Department of Administration and Legal Studies at the University of Guam. She is also an instructor for the Regulatory Administration and Public

Policy courses at the university and develops policy proposals that assist in the design of environmental and marine resource policies and land use plans for Guam. Guthertz was elected senator with the Guam legislature from 2007-2013, chief of police from 1985-1995, and director of public safety from 1983-1985, among many other positions. Guthertz travels extensively throughout the Western Pacific Region to conduct academic research and provide university-sponsored training services to regional governments.

You were a Council member from 1994 to 2003, serving as chair from 2000 to 2003. Why did you decide to serve again?

The Council is a very special organization, especially to a trained academic such as me who appreciates its scientific and data focus. My previous experience with the Council demonstrated that the organization acts in the best interests of U.S. territories and commonwealths in the Western Pacific. I come from an island with great potential where our people have historically utilized our ocean resources in a very responsible, sustainable fashion. The Council reinforces that tradition in its research and public policy recommendations. I look forward to again helping with this important work as a Council member.

You were the Council's Advisory Panel chair from 2015 to 2018. What have you been doing since you were last on the Council?

Since leaving the Council, I have continued with my advocacy for sustainable fisheries and environmental enhancements for Guam and other island communities in the Western Pacific through my teaching, research and community service endeavors at the University of Guam. A major focus of my work has been to help ensure that the military buildup that is continuing on Guam is compatible with the best interests of the civilian community, particularly when it comes to Guam's fishing constituency and our ocean and environmental resources. I have also been active in supporting Guam's quest for an enhanced political status with the United States as a unification advocate for U.S. statehood for Guam and the Northern Marianas so that both jurisdictions may jointly become the 51st State of the Union.

You previously served as an elected member of the Guam Consolidated Commission on Utilities and are now serving on the board of the Port Authority of Guam. How can your roles in these organizations help the Guam fishing community as a Council member?

To help Guam's fishing community, my focus has been to recommend supportive public policy and to help put into action programs that act in ways that support community opportunities and environmental needs. For example, as a member of the Consolidated Commission on Utilities, I helped the Guam Power Authority come into compliance with the Clean Air Act requirements by supporting the development of alternative new energy resources to help power the island. I also ensured that Guam's freshwater resources are not disturbed due to new military buildup or private sector development projects.

What are some issues facing Guam fisheries and what are your thoughts to address them?

Some of the issues facing Guam's fishermen include ready access to their favorite fishing grounds, both near shore and offshore. As a member of the Board of Directors of the Port Authority of Guam, I have helped to initiate new policies to welcome the Guam community to visit the port and use public spaces for fishing activities. I also initiated programs to renovate the port-operated Agat and Hagatña Boat Marinas and the reconstruction of the Merizo Pier to accommodate rescue and recreational vessels so that they can transverse Guam's southern villages quickly.

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

Tuna fish, especially tuna fish sandwiches, due to a busy work day and community service schedule. 🐟

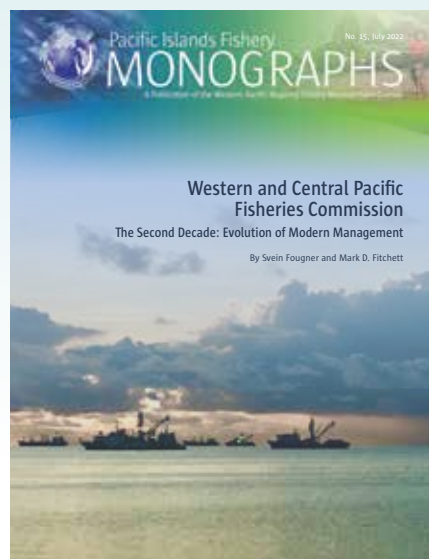
New Outreach Resources



The Council's *Western Pacific Region Status of the Fisheries 2020-21* report is now available at: www.wpcouncil.org/status-of-the-fisheries-2020-21. The publication highlights changes in the U.S. Pacific Island fisheries from 2019 to 2021. Fishery statistics can be affected by numerous variables, including environmental factors and socioeconomic considerations. The COVID-19 pandemic also had notable impacts. Some of these

effects are described, in addition to recent stock statuses and management measures.

Find the full reports at www.wpcouncil.org/annual-reports. To access the data used to generate the reports, go to www.wpcouncildata.org.



The Council published the latest in its Pacific Islands Fishery Monographs series

this summer - *Western and Central Pacific Fisheries Commission, The Second Decade: Evolution of Modern Management*. Authored by Svein Fougner, National Marine Fisheries Service (ret.), and Mark Fitchett, Council pelagic fisheries ecosystem scientist, this monograph is a follow-on to one the Council published in December 2010: *Ten Years and Counting: The First 10 Years of the Western and Central Pacific Highly Migratory Fish Stocks Convention*.

This monograph focuses on progress from 2010 to 2019 in the following areas: conservation of the stocks; trends in fishery catch and values, and in the distribution of catch by species, gear and fleets; the expanding scope of management, including the consideration of environmental resources and values; and the adoption of a more sophisticated and complex management process that could lead to greater stability and predictability in the management of Western and Central Pacific Fisheries Commission fisheries. Find it online in our Education Library: www.wpcouncil.org/educational-resources/education-library. 🐟

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, 2022, to Aug. 10, 2025. The Council members are:

OBLIGATORY SEAT
Will Sword (American Samoa)*

AT-LARGE SEATS
Dr. Judith P. Guthertz (Guam)
Shaelene Kamaka'ala (Hawai'i)

At the 191st Council meeting, the Council supported the following advisory body changes:

*reappointment



Will Sword



Dr. Judith P. Guthertz



Shaelene Kamaka'ala

- * Moved **Reka Domokos Boyer**, National Marine Fisheries Service Pacific Islands Fisheries Science Center (PIFSC), from the Archipelagic Plan Team (APT) to the Pelagic Plan Team (PPT)
- * Appointed **Tye Kindinger**, PIFSC, and **Marlowe Sabater**, PIFSC, to the APT
- * Appointed **Emily Crigler**, PIFSC, to the PPT

Recipe

Pan-Roasted Mahimahi with Ginger Garlic Shoyu

MAKES 6 SERVINGS

INGREDIENTS

1/8 cup shoyu (*soy sauce*), low sodium
2 tbsp sugar
2 tbsp vegetable oil
4 cloves garlic, crushed
2 in fresh ginger, sliced and crushed
2 lbs fish fillets (*mahimahi, onaga, ono, or wahoo*)
4 stalks green onions, sliced
4 stalks cilantro sprigs

DIRECTIONS

1. Combine shoyu and sugar and mix until sugar dissolves. Set aside.
2. Preheat a large skillet on medium-high heat. Add oil, garlic, and ginger. Sauté until golden.
3. Add the fillets and brown quickly on both sides.
4. Pour in shoyu mixture and cover pan tightly. Reduce heat to low and simmer for 4 to 5 minutes, or until desired doneness.
5. To serve, discard garlic and ginger and place on platter. Sprinkle with green onions and garnish with cilantro.



Recipe, Photo and Front Bottom
Photo Courtesy Kapi'olani Community
College Culinary Arts Department

Front Top Photo: Shutterstock



2022 Council Calendar

The 192nd Council meeting will be held in a hybrid format, with in-person participation available for members and the public at the Hilton Hawaiian Village, or remote participation via web conference. For all other meetings hosted by the Council, public attendance is limited to participation via web conference.

SEPTEMBER

5-9
35th Session of the United Nations Committee on Fisheries, Rome, Italy*

6-9
4th NOAA Workshop on Leveraging Artificial Intelligence in Environmental Sciences*

6
Fishery Industry Advisory Committee meeting

6
American Samoa Archipelago Fishery Ecosystem Plan (FEP) Advisory Panel (AP) meeting

8
Mariana Archipelago FEP—CNMI AP meeting (ChST)

8
Mariana Archipelago FEP—Guam AP meeting (ChST)

8
Non-Commercial Fishery Advisory Committee meeting

12-16
2022 NOAA Environmental Data Management Workshop*

13-15
145th Scientific & Statistical Committee (SSC) meeting

19
Pelagic & International Standing Committee meeting

19
Fishery Rights of Indigenous People Standing Committee

19
Executive & Budget Standing Committee meeting

20-22
192nd Council meeting, Hilton Hawaiian Village, Honolulu

21-28
18th Regular Session of the Technical and Compliance Committee, Western & Central Pacific

Fisheries Commission, Pohnpei, Federated States of Micronesia*

23-Oct. 2
North Pacific Marine Science Organization 2022 Annual Meeting*

OCTOBER

17-21
Council Coordination Committee meeting, Washington, D.C.*

NOVEMBER

29-Dec. 1
146th SSC meeting

DECEMBER

6-9
193rd Council meeting, location TBD

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

Upcoming Events

The 145th Scientific and Statistical Committee (SSC) meeting will be held Sept. 13-14, 2022, in a hybrid format with in-person and remote participation options available for SSC members, and public attendance limited to web conference (Webex). Direct link to the meeting: <https://tinyurl.com/145SSCMtg>.

Major agenda items include: Hawai'i Kona crab fishery status determination criteria development; Northwestern Hawaiian Islands (NWHI) fishing regulations alternatives (action item); Aquaculture management framework alternatives in the Western Pacific (action item); False killer whale (FKW) interaction

and depredation analysis; Endangered Species Act (ESA) consultations update; Territorial bottomfish management unit species revision update; and Preparations for international fishery management meetings.

The 192nd meeting of the Western Pacific Regional Fishery Management Council will be held Sept. 20-22, 2022, in a hybrid format, with in-person participation available for Council members and the public at the Hilton Hawaiian Village (2005 Kalia Road, Honolulu, HI), or remote participation via Webex. Direct link to the meeting: <https://tinyurl.com/192CouncilMtg>.

Major agenda items include: Hawai'i Kona crab fishery status determination criteria development; NWHI fishing regulations alternatives (action item); Aquaculture management framework alternatives in the Western Pacific (final action item); FKW interaction and depredation analysis; ESA consultations update; Increasing influence of China in Pacific Islands; and Preparations for international fishery management meetings.

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

Summary of Action Items at the September 2022 Council Meeting



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@wp_council

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

Alternatives for an Aquaculture Management Framework in the Western Pacific (Final Action)

Offshore aquaculture is currently operating in State of Hawai'i waters and has expanded into federal waters around Hawai'i. It is likely to expand into other parts of the Western Pacific Region as demand for seafood increases in the face of limited wild supplies. If managed sustainably, aquaculture has the long-term potential to satisfy seafood demands in island communities and enhance export commerce while providing employment and easing any potential pressure on wild fish resources.

The purpose of this amendment is to establish long-term sustainable aquaculture in federal waters by establishing a federal management program for developing a sustainable aquaculture industry in the exclusive economic zone of the Pacific Islands Region. A management program is needed to ensure that aquaculture activities are environmentally sound, economically sustainable and minimize impacts to wild fish stocks and capture fisheries. The program will provide the Council and National Marine Fisheries Service

(NMFS) with a framework that allows for a review and authorization of where, how, and how much aquaculture is developed, to regulate and manage aquaculture activities in federal waters. The Council will consider taking final action on a regulatory amendment looking at various alternatives for establishing a new limited-entry aquaculture management program.

Alternatives for Fisheries Management Measures in the NWHI (Initial Action)

In 2016, under Presidential Proclamation 9478 President Obama set aside an area adjacent to the Papahānaumokuākea Marine National Monument that constituted a Monument Expansion Area (MEA). Through the proclamation, the Secretary of Commerce (NOAA), in consultation with the Secretary of Interior (USFWS), were provided responsibility for management of activities and species within the MEA under their respective authorities (e.g., Magnuson-Stevens Act (MSA), National Wildlife Refuge System Administration Act, Endangered Species Act, etc.). The Proclamation prohibited commercial fishing activities and allowed for regulated fishing activities within the MEA, including Native Hawaiian practices (exercise of traditional, customary, cultural, subsistence, spiritual, and religious

practices). It also allowed noncommercial fishing, provided that the fish harvested either in whole or in part, does not enter commerce through sale, barter, or trade, and that the resource is managed sustainably.

NMFS sent the Council a letter Sept. 23, 2016, to request the Council's recommendations for amending the Hawai'i Archipelago and Pacific Pelagic Fishery Ecosystem Plans (FEPs) to establish appropriate fishing requirements under the MSA, including the prohibition on commercial fishing and the regulation of noncommercial fishing within the monument MEA. In order to fulfill this responsibility, the Council will look at providing regulations for allowable fishing activities in the NWHI that are consistent with the care and management of the objects within the MEA designated by Presidential Proclamation 9478.

There is a need for the Council's FEPs to be amended to reflect the regulated fishing activities in the MEA allowed by the Proclamation, while optimizing yields for permitted fishing activities that provide social, economic, and cultural benefits for the fishing community. The Council will consider taking initial action to amend permitting and reporting structures for fisheries in the NWHI. 🐟

Western Pacific Bottomfish Fisheries Not Likely to Jeopardize Oceanic Whitetip Sharks



Oceanic whitetip shark. Photo: Mark Royer.

The National Marine Fisheries Service (NMFS) issued the final biological opinion Aug. 26, 2022, for the federally managed bottomfish fisheries in Hawai'i, Guam, the Commonwealth of the Northern Mariana Islands (CNMI) and American Samoa. The biological opinion analyzes the impact of federal actions on species listed under the Endangered Species Act. **NMFS concluded that the Hawai'i, Guam and CNMI bottomfish fisheries are not likely to jeopardize the continued existence of threatened oceanic whitetip sharks**, and authorized the incidental interaction (hooking or entanglement) with 2, 1 and 4 oceanic whitetip sharks every five years, respectively. NMFS also concluded that the American Samoa bottomfish fishery is likely to have discountable effects to oceanic whitetip sharks, based on the lack of documented interactions with the species. 🐟

Rebounds and Lingering Effects from Pandemic-Related Impacts on Fishing Communities Seen in 2021 US Pacific Island Fisheries Reports

The Western Pacific Regional Fishery Management Council released the 2021 Annual Stock Assessment and Fishery Evaluation (SAFE) reports June 30, 2022, for the Hawai'i, American Samoa and Mariana Archipelagos, and Pacific Remote Island Areas and Pacific Pelagic fisheries. The reports represent collaboration among the Council, National Marine Fisheries Service (NMFS), Hawai'i Division of Aquatic Resources, American Samoa Department of Marine and Wildlife Resources, Guam Department of Aquatic and Wildlife Resource and the Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife, who oversee the update and assembly of the reports. The reports summarize fishery performance for the preceding year, including trends in catch, effort and catch rates, and provide information on a wide range of ecosystem considerations. Examples include changes in climate and oceanic variables, "on the water" fishermen observations, socioeconomic trends and protected species interactions and management. Fisheries managers use the information to inform management decisions and ensure the region's fisheries remain sustainable such that a consistent supply of local fish can persist into the future.

In 2021, U.S. Pacific Island fisheries showed some signs of recovery after the COVID-19 pandemic notably affected fishery operations, market demand and data collection efforts in 2020. However, lingering impacts of the pandemic persisted into 2021, especially considering indirect effects on U.S. Pacific Island communities that rely on fishing for social, cultural and sustenance purposes.

The NMFS Pacific Islands Fisheries Science Center (PIFSC) continued to update a temporary section of the SAFE reports describing impacts of and subsequent recovery from the COVID-19 pandemic on regional fisheries and fishing communities. For fishing communities in the U.S. Pacific Islands, fisheries are vitally important in supporting local food systems, nutrition, food security and promoting social cohesion. The impacts to fisheries from the pandemic, as well as the subsequent rebounds, further emphasized the critical role of fishing in each island area.

Socioeconomic Trends

In 2020, the State of Hawai'i implemented protective measures to prevent the spread of COVID-19 including social distancing, cancellation of public gatherings, a stay-at-home/work-from-home order and quarantine requirement for all persons entering Hawai'i. These restrictions led to substantial decreases in tourism and employment rates, creating significant economic hardship statewide, but the restrictions were alleviated through 2021. Tourism increased 153% from 2020 to 2021 mostly due to increased domestic visitors, though tourism was still reduced from pre-pandemic levels. Hawai'i's

Catchit Logit



Council staff and contractors encouraged fishermen to use the Catchit Logit fishery data electronic reporting app at tournaments in the CNMI and Guam throughout 2021. Photo: Lino Tenorio.

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. In the future, these species may be managed as part of territorial fishery management plans.

unemployment levels experienced the largest state-level improvement, declining from over 12% in 2020 to approximately 6% in 2021. In 2021, inflation-adjusted Hawai'i commercial landings and revenues for pelagic and insular fisheries were up about 9% and 40%, respectively, from 2020, with overall market prices approximately 40% higher than 2020. The Omicron variant of coronavirus likely impacted fishing activity later in the year, as December 2021 revenues were down 12% relative to December 2020.

American Samoa had similar travel restrictions and curfews as Hawai'i in 2020 that persisted into 2021. The first positive coronavirus case was reported in the territory in September 2021, though community spread was minimal through the end of the year. While metrics for tourism and unemployment were unavailable for 2021 at the time the SAFE reports were published, it is likely that ongoing travel limitations and other restrictions in 2021 prevented a recovery of the tourism industry from its historic low of visitors in 2020. A portion of surveyed fishers indicated that they had economic challenges with curfews and closed stores complicating fish sales. Travel restrictions also continued to limit fishing crew travelling from Apia, Samoa. The American Samoa longline fishery 2021 revenues increased slightly from 2020, but were still well below pre-pandemic levels. While additional commercial

fishery data for American Samoa in 2021 are withheld due to confidentiality considerations, it is of note that higher fuel prices in 2021, which increased the costs of fishing, likely influenced fishing and economic performance. In American Samoa in 2020, the pandemic caused time spent on fisheries data collection to decrease, though the number of creel survey catch interviews was consistent with pre-pandemic levels. In 2021, as the territory grappled with its first coronavirus cases, there was a notable 53% decline in catch interviews, which may be attributable to depressed fishing effort overall.

In the CNMI, a public emergency declaration in 2020 mandated social distancing, the cancellation of public gatherings, a stay-at-home/work-from-home order, flight suspensions and a quarantine requirement for all inbound residents, which led to the shutdown of tourism, closure of businesses and significant out-migration of international workers. Though no rebounds in tourism were observed in 2021, a travel bubble program was implemented with South Korea to develop a framework to rebuild the tourism industry. Unemployment data were unavailable for 2021 at the time the SAFE reports were published. Fishery revenues increased more than 50% from the previous year, but the increase in fishing costs driven by increased fuel prices likely influenced 2021 fishing activity. In 2020, the CNMI's pandemic-related restrictions limited data collection activities, but sampling effort increased and coverage improved as these restrictions were lifted in 2021.

Guam implemented many of the same pandemic-related restrictions as the CNMI with the addition of a restriction for military personnel to patronize local businesses in 2020, which impacted both employment rates and tourism. Similar to the CNMI, there were no rebounds in tourism in 2021 due to continued foreign travel restrictions from Asia (i.e., Guam's primary market), but incrementally, unemployment reduced to 7.2% in December 2021 from a high of 19.4% in December 2020. Commercial data for Guam's troll and bottomfish fisheries are unable to be reported due to confidentiality restrictions, but fishing costs were considerably higher than the previous year for all expenditures (e.g., fuel, ice, bait and lost gear) and likely impacted fishing activity and economic performance. Fishery data collection activities

in Guam were severely hampered in 2020 due to government shutdowns for large portions of the year, but fishing survey efforts returned to normal after January 2021, with the exception of aerial surveys.

Fishery Performance: Pandemic-Related Impacts and Recovery

By volume, the largest fisheries that the Council manages are the pelagic fisheries, which include the harvest of large pelagic species such as tunas and billfishes by longlining, trolling and handlining, among other gear types. **Table 1** shows the catch, revenue and percent change from 2020 to 2021 for each of the major pelagic fisheries in the region. Pelagic fisheries in Hawai'i mostly had increases in catch and especially revenue in 2021 compared to 2020, with a few exceptions. Total catch in the Hawai'i deep-set longline fishery slightly declined due to decreases in billfish and non-tuna pelagic management unit species (MUS). While bigeye tuna catch has been slightly decreasing since 2015, yellowfin tuna catch has been increasing over the same time period. Despite the comparable landings between 2020 and 2021 for the deep-set longline fishery, revenue increased more than 47% likely due to a large increase in average price per pound of fish. The only other reported decrease in both catch and revenue was for the offshore handline fishery, which may not be representative of actual fishery performance and has prompted the Council to reevaluate how it calculates these parameters for the annual reports.

Notably, in 2021, the Council recommended and NMFS initiated rulemaking to replace blue-dyed thawed bait and strategic offal discharge measures for stern-setting deep-set longline vessels with tori (streamer) lines to reduce seabird interactions, as well as to prohibit wire leaders in the Hawai'i deep-set longline fishery and require the removal of trailing gear in all longline fisheries primarily to reduce shark interactions. However, the implementation of the new regulations was preceded by a majority of the Hawai'i-based longline fishery voluntarily transitioning from wire to monofilament leader lines.

The Hawai'i shallow-set longline fishery experienced the largest increases in catch and revenue across the major pelagic gear types, though this is likely due to 2021 being the first year since 2017 that the fishery was able to operate normally. The fishery operated in

Table 1. 2021 catch and revenue for Western Pacific pelagic fisheries.

Island Area	Fishery	2021		Change from 2020 (%)	
		Catch (lbs)	Revenue (\$)	Catch	Revenue
Hawai'i	Deep-set longline	27,035,381	73,496,249	-0.9	+32.3
	Shallow-set longline	875,373	1,341,717	+31.2	+71.7
	Main Hawaiian Islands (MHI) troll	1,497,917	4,596,217	+17.8	+31.3
	MHI handline	582,330	2,080,454	+15.3	+28.8
	Offshore handline	328,425	1,427,165	-29.7	-71.2
	Other gears	113,360	142,502	+36.2	+78.6
American Samoa	Longline	2,314,589	2,546,564	+16.0	+2.5
	Troll	24,556	n.d.	+89.5	—
CNMI	Troll	379,888	695,009	+24.5	+99.1
Guam	Troll	836,206	n.d.	+39.8	—

Note: Data for 2021 landings and revenues are based on commercial reports and/or creel survey data expansions. Landings and revenues generated from creel survey data are estimates. Not all catch 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. **Background image:** Hawai'i longline vessels at Pier 38 in Honolulu. Photo: Asuka Ishizaki.

Table 2. 2021 catch and revenue for Western Pacific bottomfish fisheries.

Island Area	Fishery	2021		Change from 2020 (%)	
		Catch (lbs)	Revenue (\$)	Catch	Revenue
Hawai'i	Deep-7 bottomfish stock complex	164,171	1,137,655	+1.5	+6.3
	Uku (grey snapper)	60,348	311,521	+25.6	+65.8
American Samoa	Bottomfish	2,215	n.d.	-72.5	—
CNMI	Bottomfish	74,855	194,958	+64.2	+104.8
Guam	Bottomfish	54,217	n.d.	+221.9	—

Note: Data for 2021 landings and revenues are based on commercial reports and/or creel survey data expansions. Landings and revenues generated from creel survey data are estimates. Not all catch 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.

limited capacities from 2018 to 2020 as the fishery closed in May 2018 due to a stipulated settlement; closed in March 2019 due to reaching the loggerhead turtle hard cap; voluntarily ceased operations in the first quarter of 2020 after a large number of loggerhead turtle interactions occurred in January; and remained at port in the second quarter of 2020 in response to pandemic-related impacts. No loggerhead or leatherback sea turtle trip interaction limits were reached in 2021. There were also relatively few seal interactions, which could be attributed to a large marine heatwave that may have caused a shift in seal distribution to outside the areas where a majority of the shallow-set longline effort occurred.

In the midst of a declining trend for American Samoa's pelagic fisheries over the past decade, fishery performance in 2021 saw a slight increase in catch and revenue following the all-time lows in 2020. The American Samoa longline fishery had an uptick in catch, but revenues did not increase proportionally with catch due to a relative reduction in price per pound of albacore tuna, the fishery's primary target species. Catch nearly doubled for the pelagic trolling fishery in American Samoa from 2020 to 2021, driven by a substantial surge of skipjack tuna, coinciding with increased catch rates and effort (i.e., trolling trips/hours) despite declining participation (i.e., active trolling vessels).

Pelagic fisheries in the Mariana Archipelago exhibited similar fishery performance to one another in 2021. The CNMI trolling fishery catch, both total and commercial, notably increased compared to 2020 despite a decline in fishing effort, which indicates an increase in catch rates. Catch increased most notably for the fishery's target species, skipjack tuna, whereas catches for non-tuna pelagic MUS had a much smaller increase due to decreases for certain species (e.g., mahimahi). The large increase in commercial catch may be attributable, in part, to the fact that commercial reporting in the CNMI is now mandatory and local surveyors have been in communication with fish vendors to ensure compliance. To the south, the Guam trolling fishery catch, effort and participation all increased. 2021 commercial data for Guam is confidential, but it is expected that fish sales did not increase to the same extent as total catch since the territory continued to have restrictions that limited fish markets and encouraged fishers to sell their catch through informal channels.

The largest island fisheries managed by the Council are the bottomfish fisheries. These fisheries do not land as much catch or generate as much revenue as the pelagic fisheries, but they remain important to local communities economically, culturally and socially. **Table 2** provides the catch, revenue and percent change from 2020 to 2021 for regional bottomfish fisheries. There was an overall increase in

catch for the Hawai'i Deep-7 bottomfish fishery despite a decrease in the primary target species, 'ōpakapaka, due to increased contributions from onaga and ehu. Fishers reported that 'ōpakapaka were not present in large groups or at their normal areas through 2021, whereas onaga were more consistent and larger individuals of ehu were landed. Fishers also reported that La Niña trade winds were present and currents continued to be running strong and in abnormal directions, which made fishing more challenging. However, fishery performance appeared strong despite these environmental conditions, as catches of uku also increased by more than 25% in the midst of a reduction in effort, suggesting that catch rates for the species were higher in 2021 than in 2020.

In contrast, bottomfish fishery performance in American Samoa declined to its lowest levels since 2012, representing a more than 70% decrease from 2020 levels. The reduction in catch is likely attributable to a large decrease in fishing effort, perhaps associated with prolonged pandemic restrictions after the territory identified its first coronavirus cases. In the CNMI, total bottomfish catch increased substantially as pandemic restrictions eased, and revenue associated with bottomfish more than doubled. Bottomfish catches in Guam more than tripled between 2020 and 2021. Fishing effort also increased, but not to the same level. While fishers in the Mariana Archipelago reported continually increasing shark depredation during bottomfish trips, the increase in catch likely occurred due to fishers' ability to adapt by fishing deeper and in new areas.

Annual catch limits (ACLs), the primary tool to manage nonpelagic MUS fisheries in the Western Pacific Region, were used normally despite the pandemic. Average catches from the most recent 3-year period are tracked against the ACLs (i.e., to account for variability) 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 that were designated as MUS, including a large number of coral reef fish species. However, many of these species were reclassified from MUS to ecosystem component species (ECS) in 2019, and are now simply monitored as important facets of the ecosystem. Based on the most recent catch data, the ACL for Guam bottomfish was exceeded due to the relatively large total catch estimate for the fishery in 2021. No other fishery passed its implemented ACL (see **Table 3**). Annual catch values for Hawai'i precious corals are not disclosed due to data confidentiality rules prohibiting data from less than three sources being reported.



The American Samoa bottomfish fishery is a small-boat fishery that targets both shallow and deep waters, mostly nearshore. For decades, American Samoa bottomfish fishermen, including most alia fishermen, have used traditional wooden hand-cranked reels since modern fiberglass rods and electric reels are expensive and not readily available. Photo: WPRPMC.

Table 3. ACLs for Western Pacific MUS in 2021 compared to average catch from fishing years 2019 to 2021. Catch for Hawai'i Deep-7 bottomfish is shown only for the 2020–2021 fishing years.

Island Area	Fishery	MUS	ACL (lbs)	Recent Ave. Catch (lbs)	Portion of ACL caught (%)
Hawai'i	Bottomfish	Deep-7 bottomfish	492,000	164,171	33.4
		Uku (grey snapper)	127,205	66,137	52
	Crustacean	Deep-water shrimp	250,773	n.d.	—
		Kona crab	30,802	4,570	14.8
American Samoa	Bottomfish	Bottomfish	13,000	7,296	56.1
CNMI	Bottomfish	Bottomfish	84,000	47,151	56.1
Guam	Bottomfish	Bottomfish	27,000	33,351	123.5

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 an interim measure while the Council prepared a rebuilding plan for the fishery that became effective June 1, 2022. The most recent stock assessment determined the fishery to be overfished and experiencing overfishing.

Future Report Improvements

The wide variety of information presented here represents only a fraction of the data available in the Council's annual SAFE reports.



Boy holding an onaga, American Samoa.
Photo: Sofima's Mini Mart.

In addition to the fishery performance and economic data highlighted above, several other sections provide updates on metrics relevant to the region's fisheries. One such section gives data on indicators of current and changing climate and oceanic conditions in the Pacific Ocean, which provides fishing communities, resource managers and businesses with climate-related situational

awareness. Changes in these important aspects of the climate or ocean can affect marine ecosystems such that the productivity or catchability of managed fish stocks could also be impacted. Determining how changes in the ocean environment can impact fisheries continues to be an area of active research.

Newly added to the 2021 reports were improved bycatch summaries for bottomfish fisheries in Hawai'i, improved fisher observation summaries and bycatch data from the NMFS Pacific Islands Region Observer Program to augment bycatch information presented from federal logbook data. The Council plans to incorporate new sections into the 2022 SAFE reports specific to noncommercial fisheries in each island area. Full reports are available on the Council's website at www.wpcouncil.org/annual-reports. Select content is available through the Council's online portal (www.wpcouncildata.org), which allows readers to navigate the reports more easily and download the reported data.