

Chronicles of Trial, Error and Improvement in Pacific Island Bottomfish Stock Assessments



Today in Hawai‘i, we can enjoy bottomfish like ‘ōpakapaka or onaga at our favorite restaurant or auntie’s kitchen with no worry whether it is from a healthy stock or not. The latest assessment, published in December 2023, informed us that the fish populations in the main Hawaiian Islands (MHI) are far from being overfished, and their numbers are healthy and sustainable. However, that hasn’t always been the case. Not because fishermen have been overexploiting this resource, but because the science and data used to assess these stocks were not reflective of what was actually happening in the water. Over the last two decades, the Western Pacific Regional Fishery Management Council has consistently pushed the need to formally review data used to assess bottomfish stocks. This longstanding effort is finally coming to fruition.

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Hawai'i fishermen Dave Itano (left) and Ed Watamura hook a good-sized onaga in time for the holidays. Photo: Ed Watamura.

Fisheries are dynamic and assessing the status of fish stocks is not an exact science. Monitoring and assessing stocks is an iterative process that relies heavily on data and information collected from the fishermen. This data helps fishery managers at the State and the Council to monitor the fishery, which has been chronicled in the Council's bottomfish annual reports. The better the information, the better the stock assessment.

Over the past 15 years, the NOAA Pacific Islands Fisheries Science Center (PIFSC) has produced several assessments of the MHI deep-seven bottomfish fishery. With each new assessment, the quality of information used has improved, leading us to better assessments which are used to establish the annual catch limits (ACLs) for the fishery.

History of MHI Stock Assessments

- September 2006 - Martell, S. et al. Status and Trends of the Hawaiian Bottomfish Stocks: 1948-2004
- July 2007 - Brodziak, J. An Investigation of Alternative Production Models to Assess the Hawaiian Bottomfish Complex

- March 2009 - Brodziak, J. et al. Hawaiian Bottomfish Assessment Update for 2008
- October 2011 - Brodziak, J. et al. Stock Assessment of the Main Hawaiian Islands Deep 7 Bottomfish Complex through 2010
- May 2014 - Brodziak, J. et al. Stock Assessment Update for the Main Hawaiian Islands Deep 7 Bottomfish Complex Through 2013 With Projected Annual Catch Limits Through 2016
- February 2018 - Langseth, B. et al. Stock Assessment for the Main Hawaiian Islands Deep 7 Bottomfish Complex in 2018, with Catch Projections through 2022
- May 2021 - Syslo J. et al. Stock Assessment Update for the Main Hawaiian Islands Deep 7 Bottomfish Complex in 2021, with Catch Projections Through 2025

Steady review and improvements to the data used to produce these assessments have allowed fishery managers to establish better MHI bottomfish catch limits. Prior to 2011, total allowable catch limits (TACs) were used, but the 2006 reauthorization of the Magnuson-Stevens Act (MSA) required the Council to transition annual quotas to ACLs for all federally managed species.

| Fishing Year | Fleet-wide Quota | Management Regime | Closure Date | Total Landings | Overage/Underage |
|--------------|--------------------|---|-----------------------------|----------------|------------------|
| 2007 | N/A | Interim closure to reduce effort by 24% | May 15, 2007 – Oct. 1, 2007 | N/A | N/A |
| 2007-08 | 178,000 | Total Allowable Catch (TAC) 25% Percentile on Prior landings | April 16, 2008 | 196,147 | 18,147 |
| 2008-09 | 241,000 | TAC 25% Percentile on Prior landings | July 6, 2009 | 259,194 | 18,194 |
| 2009-10 | 254,050 | TAC 25% Percentile on Prior landings | April 20, 2010 | 208,412 | -45,638 |
| 2010-11 | 254,050 | TAC 25% Percentile on Prior landings | March 12, 2011 | 270,880 | 16,830 |
| 2011-12 | 325,000 346,000 | Annual Catch Target (ACT) Annual Catch Limit (ACL) | No closure | 228,388 | -96,612 |
| 2012-13 | 325,000 346,000 | ACT ACL | No closure | 237,434 | -88,509 |
| 2013-14 | 346,000 346,000 | ACT ACL | No closure | 308,865 | -37,135 |
| 2014-15 | 346,000 346,000 | ACT ACL | No closure | 303,738 | -42,262 |
| 2015-16 | 326,000 326,000 | ACT ACL | No closure | 259,530 | -66,650 |
| 2016-17 | 318,000 318,000 | ACT ACL | No closure | 231,381 | |

Data Uncertainty in Territorial Assessments

Insights learned from Hawai'i have carried over to stock assessments produced for territorial bottomfish fisheries. The 2019 PIFSC territorial bottomfish stock assessments of

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Fresh caught ehu. Photo: Sandy Tsukiyama.

independent complexes in American Samoa, Guam and the Commonwealth of the Northern Mariana Islands (CNMI) took the fishing communities by surprise. The assessments found bottomfish populations in Guam and American Samoa to be overfished, and American Samoa's bottomfish fishery experiencing overfishing. The Council and territories developed plans to rebuild the stocks in American Samoa and Guam. However, the stock assessments still had a high degree of uncertainty for estimates of fishing pressure and the amount of fish compared to sustainable levels. CNMI bottomfish stocks were deemed likely not overfished or experiencing overfishing, but the level of uncertainty was also overwhelming.

When scientists talk about uncertainty, they are referring to the amount of error in the data. No measurement can be completely accurate so uncertainty is used to provide a measure of that error. It is common to hear about uncertainty in hurricane trajectories when forecasters refer to "a cone of uncertainty" to describe its possible future path. In essence, uncertainty can give fishery scientists an idea of how likely the fishery is actually overfished or if overfishing is occurring. In the case of the territorial bottomfish fisheries, that uncertainty was large.

Much of the uncertainty can be due to user error in data inputs, interpretation of data inputs, factors related to fishery operations and simply just a lack of data. For the territories, data related to fishing effort and catch is contingent on reporting frequency and where data collectors are sampling. Scientists then

analyze these data to come up with more accurate and precise estimates of fishing effort, catch and other metrics related to the make-up of fish stocks. These estimates can include number of fishery participants, trips, hours on the water and catch composition by species and size. Understanding changes in the fishery through time, or even the protocols for how data were collected,



Young Guam fisher Isaiah Topasna proudly shows off his bottomfish catch. Photo: Al Topasna.

can influence how accurate and precise estimates may be. In the case of the territories, data collection and its continuity is contingent on limited budgets and resources. Bottomfish stock assessments in Hawai'i and the territories have been improving, thanks to the collaborative efforts of fishermen and Council advisors who have been guiding fishery scientists to better understand the context in which the data was collected. Recent assessments have included both fishery-dependent and fishery-independent data to improve information for life history, as well as researching the history of the fishery to note changes in species selection and gear use. Fishermen also noted external factors impacting fishing such as fuel costs, weather and a loss of fishery participants. This "deep dive" with fishermen has led to PIFSC producing benchmark stock assessments revealing the healthy status

of bottomfish stocks in Hawai'i and American Samoa. While these are two examples of how fishers and scientists working together can improve fishery science and management, there is still more work that can be done to reduce uncertainty and more accurately portray the bottomfish fisheries.

Looking Ahead

Starting in 2024, NOAA PIFSC, the NOAA Pacific Islands Regional Office and the Council will hold a Western Pacific Stock Assessment Review (WPSAR) to look at all of the factors affecting the data being used in stock assessments. The Council will also formulate its regional research priorities for the next five years (2025-2029), as mandated by the MSA. Central to these priorities will be the inclusion of life history information for bottomfish species. The absence of such data for species found in American Samoa was underscored during the recent data review. Fishermen and Council members have consistently emphasized the need for updated biological parameters, so these concerns will continue to be prioritized in the coming years. The additional work to understand the data, and more importantly understand the fishermen and how the fishery operates, has fishermen feeling like their data and the science is finally working for them. 🐟

For more information:

www.fisheries.noaa.gov/species/main-hawaiian-islands-deep-7-bottomfish

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



197th Council Meeting Highlights, December 12-13, 2023

Council Members Recollect December WCPFC Meeting Decisions

Outcomes from the 20th annual meeting of the Western and Central Pacific Fisheries Commission (WCPFC) dominated Council discussion at its December meeting. The WCPFC, that met in the Cook Islands, increased the U.S. Hawai'i-based longline fishery bigeye tuna catch limit from 3,554 to 6,554 metric tons after considering the healthy stock status and the highly monitored and compliant nature of the fishery.

However, the United States was unsuccessful in preserving a key provision in the tropical tuna conservation and management measure allowing for the transfer of catch to the Hawai'i longline fishery. The funds derived from these specified fishing agreements have supported fishery development initiatives in the U.S. Pacific Territories described in Marine Conservation Plans (MCPs) in alignment with the Council's Fishery Ecosystem Plans.

Council members, the Chair, the heads of delegation for American Samoa and the Commonwealth of the Northern Mariana Islands, and the Executive Director were alarmed and frustrated about the lack of communications during the negotiations within the U.S. delegation. Subsequently, the U.S. government was highly restrictive on all communications with other delegations and the WCPFC Scientific Services Provider.

Both the CNMI and American Samoa heads of delegation were shocked by a U.S. intervention that stated the U.S. territories have no longline fleets or aspirations for fishery development in the foreseeable future. Guam, the CNMI and American Samoa are Participating Territories that have similar rights and aspirations as other Pacific Island Small Island Developing States.

"I wanted to speak up, but didn't out of concern that it would affect all that we tried to get done," Archie Soliai, Council member and American Samoa head of delegation. He added, "The loss of fisheries development funding was disappointing, to say the least, but we expect the U.S. federal government to replace these funds." In addition to NOAA, other federal agencies will be asked to support the territories.

"Hawai'i won, but the territories lost," said Council Chair Will Sword. "We appreciate the funding received from the Hawaii Longline Association over the past 10 years, but the funding gap needs to be filled immediately."

NMFS Pacific Islands Acting Regional Administrator Sarah Malloy said support for fishery development in the territories does not go away because Paragraph 9* went away, but rather the opposite. She said she now gets to redouble her efforts to get funding for the territories because there is no other source of funding, and she now has a reason to go back and advocate for the territories.

** Paragraph 9 is a provision that allowed the territories to work with the U.S. longline fishery to exchange catch for territorial development funds.*

"The U.S. government had at least a dozen bilateral meetings with other delegations, yet they never reported specifics, nor were the Commissioners or delegates invited," said Sylvan Igisomar, Council member and CNMI head of delegation.

The Council will convey to NOAA the shortcomings of the United States Government to include the U.S. Participating Territories and other delegation members at WCPFC20.

Another funding source for MCP projects

is fishing agreements with foreign countries. The Council will coordinate with the U.S. Pacific Territories, NMFS and NOAA General Counsel to continue exploring the feasibility of using Pacific Insular Area Fishing Agreements (PIAFAs).

For more information on PIAFAs, visit www.wpcouncil.org/international-fishing.

Council Says Existing Fishing Rules Sufficient for Proposed Pacific Remote Islands Sanctuary

At its December meeting, the Council emphasized its solid position on fishing regulations in the proposed Pacific Remote Islands (PRI) National Marine Sanctuary. The Council determined the existing fishing regulations under the current structure meet the goals and objectives of the proposed sanctuary and recommended to NOAA that additional fishing regulations are not necessary.

The Council's existing regulations under the Magnuson-Stevens Act (MSA) established comprehensive protection since the 1980s and continues to provide long-lasting conservation and management for the PRI fishery ecosystem, habitat and resources.¹ Pelagic fisheries in the PRI are vital to the economy and culture of American Samoa, as well as other pelagic fisheries including the Hawai'i longline fishery.

"We know that the impacts to those fisheries would be devastating to Fa'a Samoa [the Samoan way of life]," said Council Chair Sword. The economic analysis conducted by the NOAA Pacific Islands Fisheries Science Center shows a direct correlation to these benefits.² A reduction in fish landings due to restricted access will result in reduced economic benefits.

Soliai, Council vice chair for American Samoa, stressed that the MSA National Standards require the Council to manage for optimum yield, best scientific information available and avoid unnecessary duplication. He said, "There is nothing optimum about closing the entire exclusive economic zone to fishing by adding additional layers of bureaucracy, when the best science says there is no impact to the stock."

Council member Soliai said there is a Hawaiian expression "Ua mau ke ea o ka 'āina i ka pono," which translates to "The life of the land is perpetuated in righteousness." The equivalent saying in Samoan is "O tatou fanua ma le siosiomaga, ole tatou faasinomaga. O mea sina ia a Samoa." (Our lands and our surroundings are our heritage. These are sacred gifts of Samoa.) He said that same concept applies in what the Council is recommending with respect to the proposed PRI National Marine Sanctuary because it is the Council's responsibility to do what is right based on the information provided.

Council members expressed their frustration with the sanctuary designation process, and the difficulties in making a decision when there was insufficient clarity. "I think there is



Council members Archie Soliai (right) and Will Sword (back middle), and Council Executive Director Kitty Simonds at the WCPFC annual meeting in Rarotonga, Cook Islands.

a misunderstanding that all of the fisheries in this area are not already protected," said Roger Dang, Council vice chair for Hawai'i. "Is there a need for more regulations when the current management under the MSA already aligns with the proposed sanctuary's goals?"

Council member Manny Dueñas said frontloading was used in previous engagements where issues were worked out and resolved early. He said Fagatele Bay in American Samoa is a good example of how the sanctuary program fixed broken things and restored an area from heavy, destructive uses. However the sanctuary does not need to fix things that are not broken. He said there needs to be a cohesive approach and to develop a program where everyone can be winners.

The Council's Pacific Remote Island Areas and Pacific Pelagic Fishery Ecosystem Plans comprehensively conserve and manage these fisheries, the marine biodiversity and ecosystem services they provide. These management plans have been in place for decades to prevent negative impacts to fish stocks, habitat, bycatch and protected species.

Clay Tam, Hawai'i fisherman, provided public comment that there is an injustice and inequality for the people and a total slap in the face to propose a sanctuary without a scientific or biological basis. National initiatives coming out for equity and environmental justice and the National Seafood Strategy are conflicting rather than providing synergy. He said it is difficult to promote seafood security when a sanctuary is being proposed that would potentially prohibit fishing.

The Council sent its decision to the Office of National Marine Sanctuaries Dec. 13, 2023, and sent the final document with the analysis, rationale and justification for the determination Jan. 19, 2024. 🐟

¹See the Council's Fall 2023 *Pacific Islands Fishery News* newsletter for a table summarizing the evolution of U.S. EEZ regulated fishing areas in the Western Pacific Region through the MSA, or by Presidential Proclamation through the Antiquities Act. www.wpcouncil.org/wp-council-newsletters

²Hing Ling Chan. 2023. Economic Contributions of U.S. Commercial Fisheries in American Samoa. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-PIFSC-151, 35 p. doi:10.25923/x904-a830. Available online at: <https://repository.library.noaa.gov/view/noaa/55943>

NMFS Issues Revised Coral Critical Habitat Proposed Rule for American Samoa, Guam and CNMI



Public hearings in Saipan (left) and Tinian (right). Photos: Floyd Masga.

Three years after publishing the original proposed rule, the National Marine Fisheries Service (NMFS) issued a revised proposed rule Nov. 30, 2023, to designate critical habitat for coral species listed under the Endangered Species Act (ESA). NMFS held a number of in-person hearings in Guam, the Commonwealth of the Northern Mariana Islands (CNMI) and American Samoa between Jan. 16-23, 2024, and accepted public comments through Feb. 28, 2024. The revised proposed rule significantly reduces the amount of area to be designated as critical habitat (from 230 to 97 square miles), based on substantive new information received during the first public comment period in 2020.

When NMFS issued its original critical habitat proposal in 2020, it was met with significant criticism¹ due to the broad designation areas and the lack of coordination with the territorial government agencies prior to its publication. The areas included most nearshore waters between 0 to 20 meters or 0 to 40-meters depth around the islands of American Samoa, Guam and the CNMI. In response to multiple requests from the Western Pacific Regional fishery Management Council and the three territorial governors, NMFS scheduled hearings and extended the original 60-day public comment period twice, ultimately keeping it open for a full six months through May 2021.

Critical habitat is defined as an area that contains habitat features that are essential for the conservation of a species. It is a tool used in the ESA consultation process to ensure that federally funded, authorized or permitted activities do not destroy or severely modify the species' habitat. It does not, by itself, create a protected area or restrict access, and does not stop development or directly impact activities that do not have a federal nexus. However, many projects and activities conducted in the marine environment by territorial governments are either federally funded or require federal permits or authorizations. This raises concerns about the potential impacts of the designation on local infrastructure, research and resource management activities.

During the extended public comment period for the original proposed rule, a working group of Council members from American Samoa, the CNMI and Guam collaborated to update nearshore area maps using their on-the-ground expertise. They identified noncritical areas such as sandy substrate, commercial waterways and sewer outfalls to provide a more realistic identification of essential habitat areas for listed coral species. The Council, each of the territorial resource management agencies and the governors submitted extensive comments presenting information NMFS did not consider in its original proposed rule, and requested closer coordination with the territorial agencies in the future.

In response to the public comments received in 2020, NMFS updated the scientific information used as the basis for the designation and compiled it into a Critical Habitat Information Report in 2023. NMFS determined:

- Two listed coral species (*Acropora jacquelineae* and *Seriatopora aculeate*) are no longer considered to have occupied areas within U.S. jurisdiction at the time of the listing in 2014, thereby making them ineligible for critical habitat designation. This reduced the number of Indo-Pacific coral species included in the critical habitat designation from seven to five species.
- Depth ranges for each of the listed coral species were updated by island area, whereas the original proposed rule assumed that the depth ranges of a given species was the same in all areas. This revised the depth ranges for the proposed critical habitat designation.
- New information on habitat preferences indicated that the listed coral species are found entirely or predominantly on certain types of hard substrates, but not others. As a result, NMFS refined boundaries of the specific areas containing the essential feature of critical habitat for a listed coral species, removing much of the coastal areas that are soft or artificial substrate from the proposed designation map.



The revised proposed rule issued November 2023 significantly refined the designations. For Guam and the CNMI, only one species (*A. globiceps*) remains in the proposal, while the original proposal included two others (*S. aculeate* and *A. retusa*). The revised proposed designation is now limited to 0 to 12-meters depth, with the maps clearly excluding coastal areas that contain sandy substrate or other habitat not essential to the species (see Figure 1).

The proposed designation for American Samoa has also been refined, but is more complex than for Guam and the CNMI. Although the original proposal defined a depth range for each island based on the deepest occurring species, the revised proposal includes a critical habitat map for each of the five listed species confirmed to occur, with each map tailored to that species' depth range. For example, three of the species (*A. globiceps*, *A. retusa* and *Isopora crateriformis*) around Tutuila show a proposed designation map with 0 to 20-meters depth, while depth ranges of 20 to 50 meters are included in the proposed designations of the remaining two species (*A. speciosa* and *Euphyllia paradivisa*). Similar to Guam and the CNMI, the maps for American Samoa clearly excludes areas that contain sandy substrate or other habitat not essential to the species, removing much of the waters adjacent to the coastline from the proposed designation.

At the public hearing on Saipan, former CNMI Council member John Gourley expressed his appreciation to the NMFS Pacific Islands Regional Office staff for incorporating the comments from the territories and removing harbor areas from the proposed designation. "I've seen the federal government come out here and walk all over us," said Gourley. "This is the first case that I've seen where [the federal government] was listening." He urged NMFS to work with the U.S. Fish and Wildlife Service

to follow a similar process for the critical habitat for green sea turtles,² which the two federal agencies proposed in July 2023. Despite similar calls to extend the public comment period to provide greater involvement of the territorial agencies in the designation process, NMFS and the U.S. Fish and Wildlife Service have not announced an extension of the green turtle critical habitat comment period that closed in October 2023.

Notwithstanding the improvements made to the proposed coral critical habitat, local leaders attending the public hearings in American Samoa, the CNMI and Guam expressed many concerns regarding potential impacts to local infrastructure projects. NMFS staff members explained that existing ESA consultations with the Army Corps of Engineers indicate that existing and routine infrastructure projects are not likely to be affected by the designation. They have also coordinated with the Army Corps of Engineers to streamline processes to expedite consultation times. NMFS staff also encouraged attendees to submit information on planned and potential future projects during the public comment period so they can be considered in the rulemaking process. ➡

Additional Information

NMFS proposed rule and supplemental materials for coral critical habitat:

www.fisheries.noaa.gov/action/proposed-rule-designate-critical-habitat-indo-pacific-corals

¹See the Council's Spring 2021 *Pacific Islands Fishery News* newsletter article "Region-Wide Request to Collaborate on Coral Critical Habitat Designation." and the ²Summer 2023 article "Federal Government Seeks Public Comments on Proposed Green Sea Turtle Critical Habitat in Western Pacific Region." www.wpcouncil.org/wp-council-newsletters

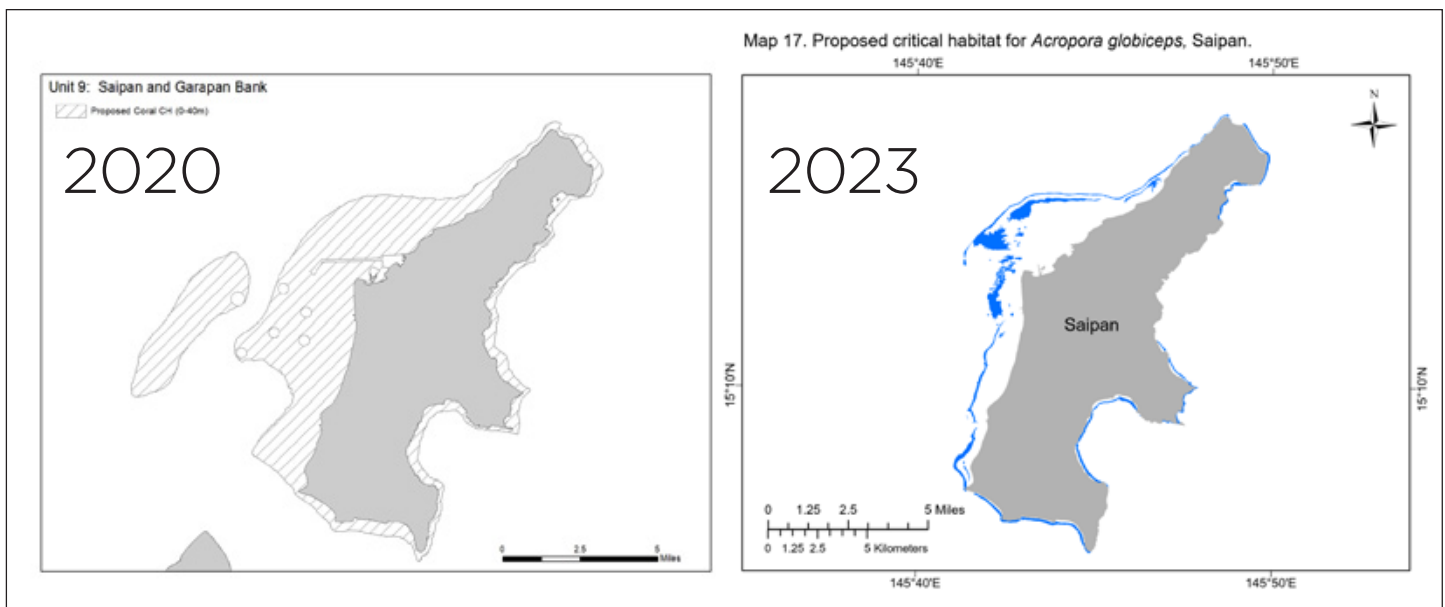


Figure 1: Map of original 2020 (left) and revised 2023 (right) proposed coral critical habitat designation for the island of Saipan, CNMI.

State of Hawai'i's Strategic Evolution to Strengthen Local Fisheries



Heather Ylitalo Ward



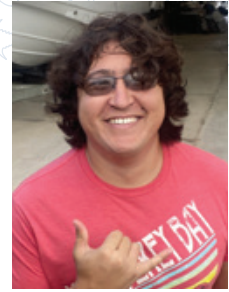
Kimberly Fuller



Russel Sparks



Ryan Okano



Chris Teague

After more than a decade of reorganization, the Hawai'i Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) announced the selection of five new district biologists: Heather Ylitalo-Ward (Kaua'i and Ni'ihau), Kimberly Fuller (O'ahu), Russel Sparks (Maui, Moloka'i, Lana'i and Kaho'olawe), Ryan Okano (East Hawai'i) and Chris Teague (West Hawai'i). In 2021, DAR received legislative support to create these new positions. During an interview with Brian Neilson, DAR administrator, he said, "One of the big things that staff asked for was more autonomy in the neighbor islands." These new positions empower the biologists to assume vital supervisory roles for local island staff.

In their new roles, the district biologists will be taking on administrative responsibilities, managing budgets and facilities, and seeking new funds through grants together with new and existing collaborators. They will be the primary contact points for emergency events and lead initiatives in DAR's management regime to enhance the agency's capacity. They will also take on the development of fishery management plans for each island area, involving stakeholders through comprehensive engagement. By collecting more data through surveys, DAR aims to improve communication with the community and stakeholders, producing annual reports on fish populations and fishing efforts, and ultimately strengthening fisheries management in Hawai'i.

Looking into 2024, DAR envisions continued collaboration with the Western Pacific Regional Fishery Management Council on co-managed fisheries, stock assessments and improvements to noncommercial data collection. A notable improvement to the agency's regulations includes the changes to the Kona crab regulations. At previous meetings of the Council's advisors and working groups, fishermen expressed concerns that the closed season does not allow for Kona crab to complete their spawning cycles and that removing only large males from the population were impacting the population. Those recommendations were made to DAR, who addressed the concerns through the proposal of new regulations including the repeal of the prohibition of taking non-berried female crabs and extending the closed season an additional month. The new rules have been approved by the Board of Land and Natural Resources and were sent to the Governor for final approval.

DAR remains committed to advancing its Holomua Marine Initiative, working with communities to manage fisheries around each of the main Hawaiian Islands. The planning process was launched on Maui first as a pilot in October 2022, where the community nominated members to be included on the Navigation Team to draft management priorities and a management plan for nearshore resources. Unfortunately, due to the devastation of the Lahaina fire, planning was put on pause until spring to respond and assist the community in rebuilding.

As part of DAR's reorganization, the agency hopes to be included as a member of the Pacific States Marine Fisheries Commission. The commission is an interstate agency that helps state resource management agencies and the fishing industry manage Pacific Ocean resources in California, Oregon, Washington, Alaska and Idaho. DAR's proposal requests the commission include three members from the State of Hawai'i, including an ex-officio agency member and two fishing community representatives. The commission and DLNR's missions are aligned to work with the public to manage, conserve and restore aquatic resources and ecosystems for present and future generations. 🐟



Community Members Across the Pacific Love their 2024 Calendars



Left: Candide Krieger shares information from the Hawai'i lunar calendar with her class at Thomas Jefferson Elementary School. Students can see it next to the school's new drill press where they make kukui nut (Candlenut tree) spinning tops, part of a traditional Hawaiian game.

"I would like to thank you for the beautiful lunar calendar that was sent to me, along with information about our local fisheries. My staff also appreciates the calendar and commented on how visually striking it is!"

~ Tommy Waters, Honolulu City Council Chair and Presiding Officer



Guam fishermen use their calendars to help predict the best times for fishing. Lunar cycles affect the tides and influence fish feeding activity and movement. Photos: Felix Reyes.



BIGEYE SCAD

The Importance of a Seasonal Fish in Our Culture

Known as *akule* in Hawai'i, *atulai* in the Mariana Islands and *atule* in American Samoa, bigeye scad is a small silvery, seasonal fish with great cultural importance and a delicious feast at dinner tables in the Western Pacific Region.



Fagasa atule harvest. Photos: Travis Tua.

In the waters surrounding American Samoa, atule brings together villagers to fellowship and share in the bountifulness of their most prized catch. Atule is a source of sustenance and it is deeply rooted within the culture of the indigenous population to harvest them in great quantities to be shared among friends and family.

Atule, with their distinctive big eyes, are commonly found outside the bays in American Samoa. However, during their annual spawning migrations, these fish venture inside the bays, becoming the target of a traditional fishing technique known as *lauloa*, or ring-fence fishing. While some Pacific Islanders have transitioned to using modern materials to weave nets, Samoans still use traditional fishing materials found locally. Villagers utilize palm tree fronds

joined together to create a barrier that is used to effectively corral the atule. The custom of maintaining such time-honored techniques adds a cultural dimension to the harvest, connecting the islanders with their ancestral practices of more than 100 years.

During the harvest, a set of rules is strictly observed. Swimming, fishing or boating of any kind is prohibited within the village. To preserve traditional practices, the use of modern fishing equipment such as rods, nets or any other contemporary fishing methods is strictly prohibited. A dress code is also followed during the harvest and the distribution ceremony led by the village chiefs. Villagers are to wear an *ie lavalava*, or a rectangular-shaped piece of fabric used to wrap around the waist covering your lower body. In some cases, other species of fish are caught in the barrier, and they are often gifted to the highest ranking village chief or to the head of the clergy.

Many locals believe that the migrating dolphins drive the atule into the bays. In folklore, the Polynesian navigator Liava'a embarked on a journey to Tutuila in pursuit of the pristine waters of Fagasa. In an unfortunate twist, his boat departed without his daughter, Sina, who was still ashore collecting fresh water. Enraged upon

realizing this, Liava'a cast his entire crew into the sea, instructing them to return to Fagasa, find Sina and protect her forever. To expedite their return, the men were transformed into dolphins, herding a school of atule to shore to ensure Sina's caretakers would be well-fed. Adopted by the family of High Chief Lilio in Fagasa Village, Sina found solace, yet Liava'a continued his relentless search.

The village of Fagasa has celebrated since then, an annual atule harvest, maintaining a tradition that remains an important part of their cultural heritage.



In 2023, the village of Fagasa yielded more than 2,500 atule. One rule of the atule harvest is that it is not meant for sale; instead, the catch is distributed equally among families within the village and shared with visitors who join the harvest festivities. This guideline is followed by most villages that participate in atule harvests.



Villagers weaving tapa'au mats in preparation for the atule harvest. Photos: Maunatele Worldwide Community.

On the opposite side of Tutuila island, the villagers of Leone also took part in their annual atule harvest in 2023 and experienced another abundant harvest. In recent years, the reduction of number of atule harvested in this village was believed to be due to the effects of climate change. However in 2021, the village recorded its largest catch in more than 20 years, yielding approximately 13,000 atule. The high ranking village chiefs regard their catches as *fa'amanuiga*, or blessings from God. It is believed that if the rules of the harvest are not followed, the atule would stop coming.

In the outer islands of Manu'a, on the coasts of Olosega, villagers weave *tapa'au* mats from coconut palm leaves. These mats are used as a *lau*, or large fishing net to harvest atule, a practice similar to that on Tutuila. However, particularly in the harbors of Faleasao and Ta'u, residents have a different approach. Dark spots in the harbor indicate schools of atule, prompting the villagers to use fishing rods and buckets. The harbor waters are deep so traditional methods make it impractical.

Bigeye scad represents more than just fish in the waters of American Samoa. It is a symbol that connects future and past generations through cultural traditional practices. It allows the indigenous people of these islands to remain resilient to the changing tides and changing times. Most importantly it highlights the value of atule as a sustainable resource that the people of American Samoa are committed to preserving for generations to come.



In the Mariana Islands, communities up and down the archipelago anticipate the arrival of atulai, which are a much sought after delicacy that enter the lagoons in large quantities. In earlier times, communities would weave long *chenchulu* (surround nets) from coconut fronds or

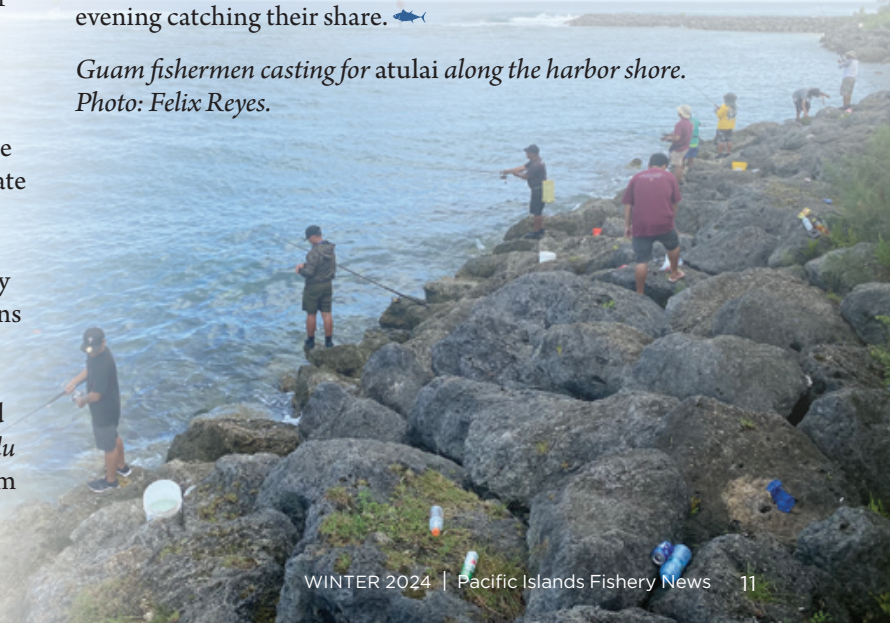
pandanus leaves to corral the fish closer to shore. Once near the shore, they used woven coconut leaf *guagua* (basket) to scoop up the fish. Adults, children and sometimes entire families or villages would then gather at the beach, where the fish were known to enter the lagoons, working together to handle the *chenchulu* and harvest great quantities of fish. When the harvest was plentiful, they would *patte*, or share, the catch among those who helped haul in the nets. If the bounty was large enough, it would be shared with everyone in the village. Modern monofilament nets are now commonly used.

In Guam, atulai fishing families like the Tedtaotao, Ningu/Mansapit, Topasna and the ubiquitous Johnny "Atulai" Taitano clans, are regularly seen at or on the water with their fishing gear harvesting the fish, which are then sold along the roadside across the island.

For the past couple of years, shorecasters along the Agaña boat channel in Guam report catching atulai year-round from shore using rod and reel. This shift is attributed to enforcement on the use of nets at the boat basin, which is illegal. In the Northern Marianas, net usage is restricted to special permits for cultural or noncommercial consumption purposes. While nets can haul in large quantities of fish at once, fishermen feel they can catch more fish using rod and reel due to these restrictions. Atulai is also caught in great quantities in Pago Bay, Humatac Bay and Cocos Lagoon, where nets are legal.

In Rota and Tinian, fishing for atulai remains seasonal. Fishermen are often spotted along the shoreline and inner harbors, casting with hook and line. In Saipan, hook and line fishing remains the method of choice, but fishermen can also be seen in their tiny modified boats along the outer lagoon in the evening catching their share. 🐟

Guam fishermen casting for atulai along the harbor shore. Photo: Felix Reyes.



Guam fishermen selling their catch roadside. Photo: Felix Reyes.





The 118th Congress continues in its second year and will look to make progress on some of the bills introduced last year as the 2024 election cycle heats up. This is the last year that any bill introduced during this Congress will have a chance to become law; otherwise it will need to be re-introduced in the next two-year session. With many bills still to receive hearings, the Senate introduced two bills in December that have potential impacts to fisheries.

Senator Edward J. Markey (D-MA) introduced S. 3389, the Fishing Industry Safety, Health and Wellness Improvement Act of 2023, and the Senate referred the bill to the Committee on Commerce, Science and Transportation Dec. 4, 2023. The FISH Wellness Act would authorize safety and prevention training programs for fishing vessel operators and crewmembers. Current safety standards in the United States allow the Secretary of Health and Human Services to provide fishing safety training grants to municipalities, port authorities or other appropriate public or not-for-profit entities to deliver commercial fishing safety training. This bill would also enable this training to encompass safety and prevention measures, addressing both behavioral and physical health risks. This includes tackling challenges such as substance use disorder and worker fatigue facing fishing vessel operators and crewmembers.



The second bill, S. 3417, the Ban China's Forbidden Operations in the Ocean Domain (Ban C-FOOD) Act, was introduced by Senator Tom Cotton (R-AR) Dec. 6, 2023. This bill would prohibit the importation of seafood and aquaculture products from the People's Republic of China, as well as sanction companies importing Chinese seafood and impose tariffs on countries facilitating the shipment of such seafood. Senator Cotton aims to stop the imports of illicit seafood from a fishery that uses slave labor and to impose costs on the companies that aid them. The intent is to provide an advantage to U.S. seafood and uphold U.S. trade laws.

In February 2024, Senator Lisa Murkowski (R-AK) introduced the Working Waterfronts Act (S. 3785) that provides grants for marine infrastructure and mariculture, resources for fishermen to convert boats to hybrid or electric engines and improve research on ocean acidification. The bill aims to boost the maritime workforce, provide for shoreside infrastructure and mitigate the impacts of climate change on coastal communities.

Proposed laws that continue to move through Congress include a bill to require origin and location disclosure for new products of foreign origin offered for sale on the internet (S. 1421); a bill that authorizes the U.S. Department of the Interior to work with partner agencies to enhance coastal landscapes (S. 1381/H.R. 2950); a bill to restore the ability of the people of American Samoa to approve amendments to the territorial constitution based on majority rule in a democratic act of self-determination (H.R. 6062); and a bill introduced by Representative Amata Radewagen (R-AS) that would amend the South Pacific Tuna Treaty Act of 1988 (H.R. 1792). Other bills that have been introduced that may also be considered this year include acts to regulate offshore aquaculture, combat illegal, unregulated and unreported fisheries, and amend existing legislation such as the Endangered Species Act.

All eyes will be on the election during this Congress so action on these and other bills will likely happen later in the year, but as always, bills can be passed at any time. 🐟

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

Science and Management 101: Regional Fishery Management Organizations

International fisheries management organizations use some comparable management strategies to those the Western Pacific Regional Fishery Management Council applies to domestic fisheries. Regional fishery management organizations (RFMOs) are groups of countries with shared fisheries that work together to manage and protect fish stocks in a specific region. They set rules like catch limits, gear limits and fishing seasons to ensure everyone plays fair and that fish populations are sustainable.

Similar to the Council’s bottom-up decision-making process that includes a Scientific and Statistical Committee and other advisory groups, RFMOs have subcommittees that annually review issues from science to compliance. By cooperating and sharing information, these organizations help prevent overfishing, protect the marine environment and ensure that fishing benefits everyone in the region.

There are two RFMOs that conserve and manage tuna and tuna-like species in the Pacific Region:

- Western and Central Pacific Fisheries Commission (WCPFC, often confused with the Western Pacific Council’s acronym, WPRFMC)
- Inter-American Tropical Tuna Commission (IATTC)

While tuna are the key species for our Council’s fisheries, there are two RFMOs that conserve and manage non-tuna species on the high seas surrounding the Council’s area of responsibility*:

- North Pacific Fisheries Commission (NPFC)
- South Pacific Regional Fisheries Management Organization (SPRFMO)

The Council’s Fishery Ecosystem Plans establish criteria to assessing the health of fisheries, similar to how RFMOs set limit reference points. These standards are agreed upon and adjusted as needed. The Council manages its fisheries by aiming for maximum sustainable yield (MSY), aiming to harvest fish in a way that keeps the population stable over time. RFMOs may use MSY or other indicators to determine fishing limits, considering available scientific information and practical considerations.

If a fish stock is overfished,** a rebuilding plan is created to increase the population size within a certain time period. Management actions to accomplish this can include harvest control rules (HCRs) or reductions in catch limits. The following management tools are used by both RFMOs and councils:

Harvest Control Rules: Preset guidelines or strategies used to adjust fishing effort or catch based on the status of fish stocks relative to benchmarks, ensuring sustainable management. HCRs use scientific assessments of fish population and adjust fishing levels relative to those outputs. These assessments look at factors like how many fish there are, their ability to reproduce and the conditions in their environment. Over the next few years, the WCPFC will develop strategies to harvest tuna, which implement rules known as “management procedures.”

Total Allowable Catch (TAC): Overall limit set by an RFMO on the total amount of fish that can be caught in a specific region during a given time period. However, instead of a TAC, catch or effort limits can be

assigned to fishing vessels from particular countries.

For example, bigeye tuna under the WCPFC is managed by setting catch limits for longline fisheries from certain countries (see table). Purse seine fisheries that target other species but also catch bigeye tuna are limited by the number of fishing sets they can do and have seasonal closures on using fish aggregating devices. 🐟

*The Council is responsible for managing marine resources in federal waters 3 to 200 miles from shore around Hawai’i, American Samoa, Guam, the Northern Mariana Islands and the U.S. Pacific Remote Island Areas.

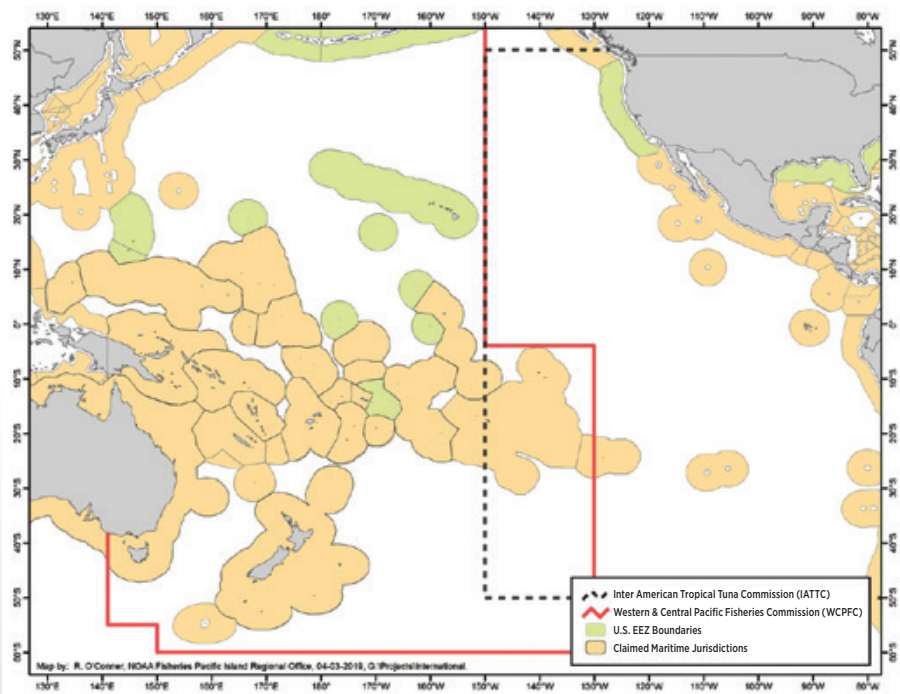
****Overfished:** A stock having a population size that is too low and that jeopardizes the stock’s ability to produce its MSY. With too few fish left in the ocean, the species may not be able to recover.

Western & Central Pacific Bigeye Tuna Longline Fishery Limits

Commission Country Member: 2024 Annual Catch Limit in metric tons

| | |
|------------------------|--|
| Japan: 18,265 | <i>Adopted by the WCPFC in 2023. If the limit is exceeded, any average is deducted from the next year’s limit.</i> |
| Korea: 13,942 | |
| Chinese Taipei: 10,481 | |
| China: 8,224 | |
| USA: 6,554 | |
| Indonesia: 5,889 | |

Source: WCPFC20-CMM 2023-01



Council Family Updates

At the 197th Council meeting, the Council supported the following advisory body changes:

- **Emily Crigler**, NOAA Pacific Islands Fisheries Science Center (PIFSC), as chair to the Pelagic Plan Team.
- **Carl Dela Cruz** and **Matthew Orot** on the Guam Advisory Panel (AP) (alternates).
- **Edwin Ebisui III** on the Hawai'i AP (alternate).
- **Edgar Feliciano** and **Gene Pan** on the American Samoa AP.
- **David Field**, Hawai'i Pacific University, on the Education Committee.

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Joanne Iose joined the Council staff in January 2024 as its administrative financial assistant. Iose brings seven years of administrative experience and an educational background in the legal field. Her primary responsibilities



for the Council will be managing documents, databases and financial records, and providing office support. She holds a master's degree in criminal justice administration from Chaminade University of Honolulu and a double major bachelor's degree in law and justice, and philosophy from Central Washington University. Born in American Samoa and bilingual in Samoan and English, Iose strives to become an inspiration within the Polynesian community, and was inducted into the Alpha Phi Sigma – Iota Gamma Chapter of Hawai'i in 2021.

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Reality TV star Captain **Dave Marciano**, of "Wicked Tuna" fame, recently visited Kaua'i for both vacation and to revitalize a project connecting local fishermen and marine scientists, interrupted by COVID-19. The Ahi Satellite Tagging

Project, where fishermen attach \$4,000 satellite tags to 'ahi, revealed in a 2020 study, that these tuna travel vast distances. The study was co-led by **Chi Hin Lam**, **Clay Tam** and **Molly Lutcavage**, Pacific Islands Fisheries Group, and **Don Kobayashi**, NOAA PIFSC. Marciano emphasized the importance of collaboration between scientists and fishermen for successful fisheries management. Read more at <http://tinyurl.com/TunaTaggingStudy>.

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For the first time in 40 years, the United States is releasing an updated National Aquaculture Development plan, which strengthens the U.S. commitment to food security, climate resilience and the protection of threatened and endangered species in marine and freshwater environments. The 45-day comment period for the draft plans is open through Friday, April 5, 2024. To learn more, visit <http://tinyurl.com/NatlAquaculturePlan>. ➡

A New Name for the Pacific Remote Islands Marine National Monument

On March 24, 2023, President Joe Biden issued a Memorandum on Conserving the Natural and Cultural Heritage of the Pacific Remote Islands. The memo directed The U.S. Fish and Wildlife Service (USFWS) and the NOAA Pacific Islands Regional Office to conduct a process to rename the Pacific Remote Islands Marine National Monument “in recognition of the deep and enduring cultural significance of this region to the ocean cultures of the Pacific.” NOAA and USFWS requested the Udall Foundation, an independent federal agency established by Congress in 1992 to support other federal agencies, to gather information and provide a report.

Western Pacific Regional Fishery Management Council members and staff shared their comments on the Monument renaming process, including how ocean voyaging history, traditions and cultural practices might be appropriately honored. One main point was that it should not be a Hawaiian name—it should be culturally appropriate for all island areas. The Udall Foundation compiled feedback from the Council and many others into an assessment report, capturing a range of perspectives. A draft report was circulated among contributors in March 2024 and a final report will be available later this year.



2024 Council Calendar

Check the Council website for in-person and remote public participation options for meetings hosted by the Council.

MARCH

12-14

151st Scientific and Statistical Committee (SSC) meeting, Honolulu

15

Executive & Budget Standing Committee meeting

18-20

198th Council meeting, Honolulu

19

Joint Advisory Panel, Fishing Industry Advisory Committee and Non-Commercial Fishing Advisory Committee meeting

MAY

13-17

Marine Fisheries Advisory Committee meeting, Juneau, AK*

13-17

Joint Plan Team Meeting

21-23

Council Coordination Committee meeting, Puerto Rico*

JUNE

3-7

2nd Marine Socio-Ecological Symposium, Yokohama, Japan*

10-13

152nd SSC meeting (tentative)

10-14

1 Inter-American Tropical Tuna Commission Science Advisory Committee meeting, La Jolla, CA*

24-28

199th Council meeting (tentative)

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

Upcoming Events

The **151st Scientific & Statistical Committee (SSC)** meeting will be held March 12 to 14, 2024, at the Council office, 1164 Bishop St., Ste. 1400, Honolulu, HI. The meeting will be in a hybrid format, with in-person participation available for SSC members and the public, or remote participation via Webex: <https://tinyurl.com/151SSCMtg>.

Major agenda items include: Main Hawaiian Islands (MHI) deep-seven bottomfish and Guam bottomfish stock assessment updates; False killer whale survey and working group updates; Council 2025-2028 program plan and research priorities updates; and 2024-2026 SSC plan review.

The **198th meeting of the Western Pacific Regional Fishery Management Council** will be held March 18 to 20, 2024, at the Ala Moana Hotel, Hibiscus Ballroom, 410 Atkinson Dr., Honolulu, HI. The meeting will be in a hybrid format, with in-person participation available for Council members and the public, or remote participation via Webex: <https://tinyurl.com/198CouncilMtg>.

Major agenda items include: Council 2025-2028 program plan and research priorities updates; 2024-2026 SSC plan review; Equity and environmental justice national, regional and local plan review; Inflation Reduction Act proposal review; MHI deep-seven bottomfish and Guam bottomfish stock assessment updates; HI small-boat fisheries project update; and 2023 HI and American Samoa longline fishery report review.

March 19 (T) 8:30 a.m. to 4:30 p.m. – Council/Advisory Bodies will have breakout sessions on IRA priority areas and EEJ: Implement, Fund, Empower, Advocate (in-person only).

For more information on the Webex connections, and complete agendas and meeting documents, go to www.wpcouncil.org/meetings-calendars.



The **Fishers Forum on “Fish ID 101: Know Your Catch”** will take place from 6 to 9 p.m. March 18, 2024, at the Ala Moana Hotel, Hibiscus Ballroom, 410 Atkinson Dr., Honolulu, HI.

Accurate fishery data collection is important to make good management decisions—but what happens when some fish look alike? Come learn about how to distinguish between similar species and small-boat fishery data collection efforts in Hawai'i at this FREE, family friendly event. See ad on back page. ➡

YouTube youtube.com/wpcouncil

Facebook facebook.com/wpcouncil

Instagram [@wp_council](https://instagram.com/wp_council)



FREE & FAMILY FRIENDLY PUBLIC EVENT

Photo: David Itano

Accurate fishery data collection is important for management decisions—but what happens when some fish look alike? Check out the Forum for Informational Tables, Presentations, Participation Recognitions, and More!

Monday, March 18, 2024, 6 - 9 p.m.

Ala Moana Hotel – Hibiscus Ballroom, 410 Atkinson Dr., Honolulu

This event is part of the 198th Western Pacific Fishery Management Council meeting, March 18-20 at the Ala Moana Hotel – Hibiscus Ballroom.

Questions?
808-522-8220
info@wpcouncil.org
www.wpcouncil.org

Mahalo to our sponsors:



Fish ID 101: Know Your Catch

Recipe: Nenuë (Chub) Katsu *Recipe provided by Jon Kanno*

Taken from: "Hawai'i's Reef Fish: Food, Science and Tradition"

<http://poseidonfisheriesresearch.org/research>

Ingredients

- 1 pound Nenuë, fileted and skinned
- 3 tbsp shoyu
- 1 tbsp sugar
- ¼ cup flour
- ¼ cup cornstarch
- 1 egg, beaten
- 1–2 packages of panko
- Vegetable oil

Sauce ingredients

- ½ cup mayonnaise
- 1 tbsp shoyu
- Unagi sauce, to taste

Preparation

1. Debone Nenuë filets and cut into strips.

2. Combine the shoyu and brown sugar in a bowl, then marinate the fish strips for at least an hour or overnight. Reserve the marinade.

3. Preheat oil over medium-high heat. A deep fryer is ideal, but a high-sided pot is fine.

4. For the batter: Combine and mix the flour, egg, and cornstarch in a large mixing bowl. Mix in the liquid from the marinated fish into the batter. The batter should be thick.

5. Add all the marinated fish to the batter and gently mix by hand.



Photo: Craig Omori

6. Take the coated fish pieces out of the batter and dredge them in the panko till fully coated.

7. Drop the breaded fish into the oil and let fry until golden brown.

8. For the sauce: Mix the mayonnaise and shoyu and drizzle over cooked fish. Finally, drizzle unagi sauce over the fish and serve.