NOAA FISHERIES

Report to the 201st Meeting of the Western Pacific Regional Fishery Management Council

Pacific Islands Fisheries Science Center

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National Marine Fisheries Service
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About this report

The Pacific Islands Fisheries Science Center (PIFSC) uses the PIFSC Special Publication series to promptly distribute informal scientific and technical information. Documents within this series reflect sound professional work and may be referenced in other literature. The information contained may also be published later in more formal scientific settings.

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List of Acronyms

Bottomfish Fishery-Independent Survey	BFISH
Bottomfish Management Unit Species	BMUS
Catch per unit effort	CPUE
Commonwealth of Northern Mariana Islands	CNMI
Ecosystem Sciences Division	ESD
Environmental Protection Agency	EPA
Fisheries Research and Monitoring Division	FRMD
Hawai‘i Department of Aquatic Resources	HDAR
Hawai‘i Department of Land and Natural Resources	HDLNR
Operations, Management, and Information Division	OMI
Hawai‘i Marine Recreational Fishing Survey	HMRFS
Pacific Islands Fisheries Science Center	PIFSC or Center
Pacific Islands Regional Office	PIRO
Papahānaumokuākea Marine Debris Program	PMDP
Papahānaumokuākea Marine National Monument	PMNM
Protected Species Division	PSD
Science and Statistical Committee	SSC
Western Pacific Regional Fishery Management Council	WPRFMC or Council
Western Pacific Stock Assessment Review	WPSAR
U.S. Fish and Wildlife Service	FWS

Executive Summary

The Pacific Islands Fisheries Science Center (PIFSC or Center) administers and conducts scientific research and monitoring programs that produce science to support the conservation and management of fisheries and living marine resources. This is achieved by conducting research on fisheries and ocean ecosystems and the communities that depend on them throughout the Pacific Islands region and by dedicating efforts to the recovery and conservation of protected species. The Center is organized into four major divisions: Operations, Management, and Information Division; Fisheries Research and Monitoring Division; Protected Species Division; and Ecosystem Sciences Division.

PIFSC continues to improve its science and operations through collaboration and integration across divisions, and increased communication, cooperation, and coordination with partners and stakeholders. This report highlights research, projects, activities, and other events that are of direct interest to the Western Pacific Regional Fishery Management Council including Guam's bottomfish management unit species data, the Western Pacific Stock Assessment Review, a new bycatch estimate interface, survey of Makapu'u precious coral bed, PIFSC details on the economic contributions of small boat fisheries in Guam and the Commonwealth of Northern Mariana Islands, and a list of our published research from this fiscal year.

Hawaiian Monk Seal and Hawaiian Green Sea Turtle Assessment and Recovery Camps 2024

Assessment and recovery camps are the foundation of NOAA's research and recovery efforts for Hawaiian monk seals and Hawaiian green sea turtles in the PMNM. Field camps were established at four sites in the PMNM by the C/V Imua during May and June (Lalo (French Frigate Shoals), Kamole (Laysan Island), Kapou (Lisianski Island), and Manawai (Pearl and Hermes Reef) to conduct population research and enhancement activities. The shared seal/turtle camp on Tern Island at Lalo included two FWS technicians who prepared for an EPA-led contaminant clean-up project in October.

This year, PIFSC expanded its effort to collaborate with external partners by deploying joint field camps at Lalo with FWS, Kamole with PMDP, and Manawai with FWS. In addition to the main field camps, surveys of Nihoa, Mokumanamana and Hōlanikū (Kure Atoll) were conducted during the at-sea camp deployment and recovery missions and we worked with FWS, HDLNR biologists, and PMDP to increase partnership for surveys at Nihoa and Kuaihelani (Midway Atoll), Hōlanikū, and Manawai, respectively.

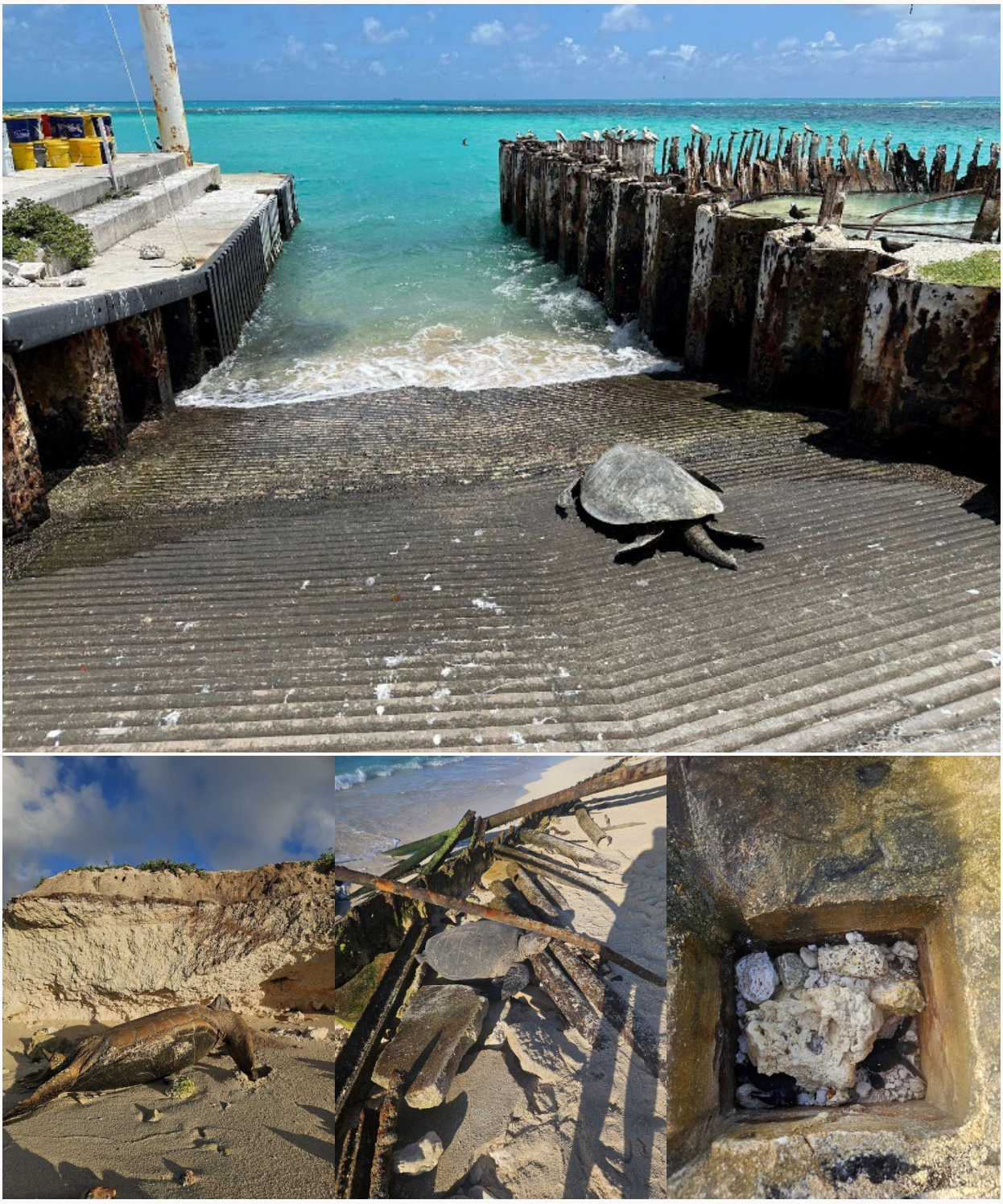
PSD field teams also freed turtles and seabirds from aging infrastructure at Tern Island, disentangled two turtles (one fully submerged) from a net mass anchored on a reef at Manawai, and supported research by other groups, including conducting Laysan Duck surveys at Kamole on behalf of FWS, and staging marine debris for pickup by PMDP.

Field camp personnel, supplies, equipment, and data were recovered in August and September aboard the C/V Kahana II, which returned to Honolulu from the last leg of the pickup cruise on September 18, 2024. This final leg of the camps pickup mission was to Lalo, and a top priority was to support reciprocal knowledge sharing with cultural practitioners (kahu manō). They were fully embedded into the mission as visiting scientists, including participating in wildlife entrapment walks, seal surveys, honu hatchling lessons, and atoll site visits to Shark Island, Gin Island, La Perouse Pinnacle, and Trig Island reef.

Their participation greatly enhanced all the work conducted and created a shared experience in observing the place and existing operations through both traditional and Western scientific lenses. We hope that this will lead to future opportunities for collaboration in designing applied conservation strategies at Lalo, especially considering the unique threat of shark predation on pups that occurs here. The NOAA Fisheries science team shared their research and recovery activities at Lalo with the cultural representatives, who in turn shared Indigenous knowledge, through observations of the environment and animal behavior. The entire mission in this regard was considered a success by all, with conversations about future collaborations already underway.

Field camp at Tern Island, Lalo, and sunrise.

Entangled weaned pup at Kapou immediately prior to disentanglement.



Green sea turtles (honu) entrapped (or being released) from various hazards throughout Tern Island.

Uku WPSAR

PIFSC's Stock Assessment Program developed the stock assessment update to the main Hawaiian Islands uku (Gray Jobfish *Aprion virescens*). The benchmark assessment was released in 2020 and provided scientific advice for fisheries management for 2020 to 2026. The peer review occurred in the NOAA Honolulu Service Center at Pier 38 from September 9 to 10, 2024. The WPSAR panel from the SSC is composed of Dr. Erik Franklin (University of Hawai'i, panel chair), Dr. Milani Chaloupka (University of Queensland), and Mr. Jason Helyer (HDAR). The WPSAR was organized and convened by the Coordinating Committee composed of Marlowe Sabater (PIFSC), Keith Kamikawa (PIRO), and Mark Fitchett (WPRFMC).

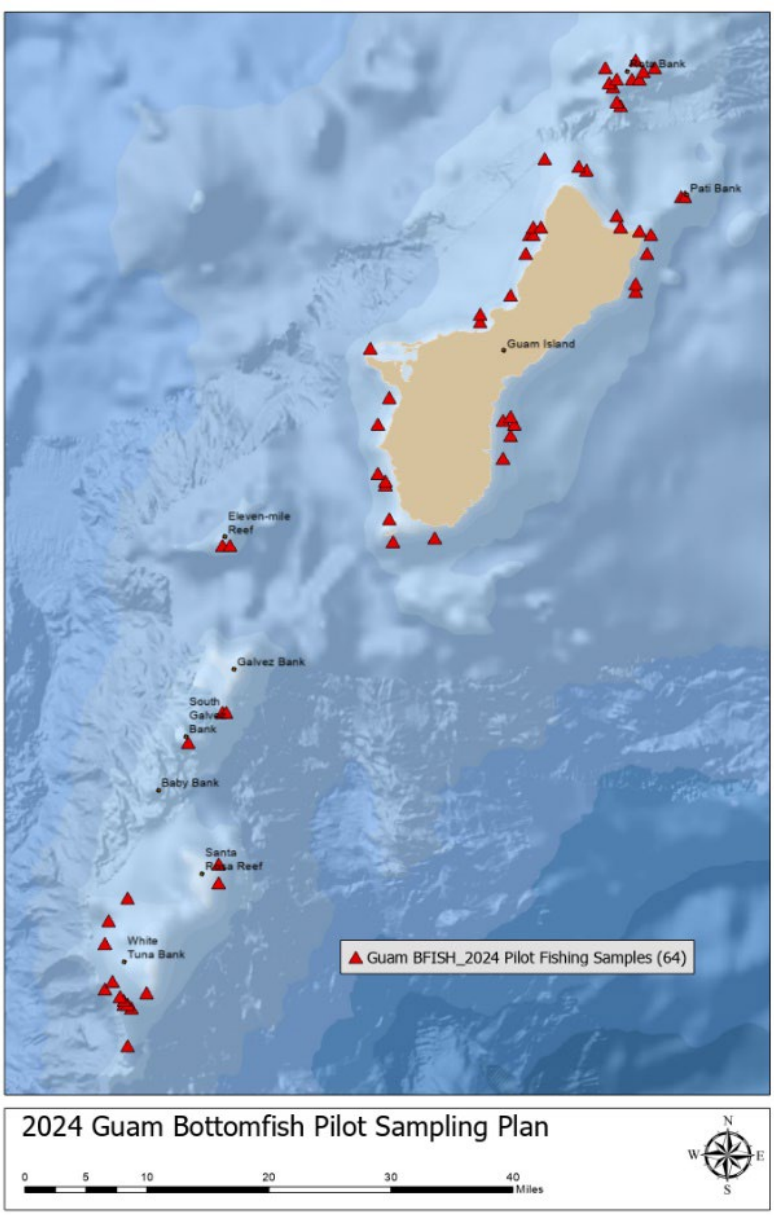
The lead assessment scientist, Dr. Marc Nadon, assisted by Dr. Felipe Carvalho, presented the data preparation, modeling, and preliminary assessment results including the stock status and the catch projections for annual catch limits. Four members of the fishing community participated in the review. Representatives from the Marine Recreational Information Program attended the review since non-commercial estimates of catch were used as an input variable in the assessment.

The assessment update added catch and CPUE data from 2019 to 2023. The modeling approach remains the same as the benchmark. The results showed the main Hawaiian Islands uku stock remains not overfished and the fishery is not subject to overfishing. The projected overfishing limit increased compared to the benchmark assessment. The panel acknowledged the Stock Assessment Program on a well-documented scientific product. The panel supported the analytical approach in estimating the non-commercial catch from HMRFS because it improves the accuracy of the non-commercial data. They agreed that the assessment update meets the terms-of-reference. The panel provided several recommendations for the future benchmark assessment like exploring other modeling approaches for CPUE standardization, incorporation of possible environmental drivers, improving the communication and collaboration with the fishing communities, and improvements to the non-commercial fisheries data. Overall, the main Hawaiian Islands uku assessment update passed the WPSAR. The SSC panel members will finalize their reports, and the outcomes will be reported to the SSC and Council at the December 2024 meetings.

Guam Fisheries Independent Survey & Biosampling

The Guam BFISH pilot study was successfully completed between June 20 and September 7, 2024, with four contracted fishing vessels sampling 65 predetermined grids around Guam and its offshore banks. The survey yielded important catch data dominated by buninas agaga‘ *Etelis carbunculus* with additional catches of buninas *Pristipomoides auricilla*, abuninas *E. coruscans*, lehi *Aphareus rutilans*, buninas rayao amariyu *P. zonatus*, and pakapaka *P. filamentosus*, and documentation of a rare Karnella's Rover *Emmelichthys karnellai* and a recently described species of Perchlet *Plectranthias clavatus*. The PIFSC jurisdictional liaison and the Guam Biosampling Program worked closely with the fishers to document all the catch and to collect biological samples (otoliths and gonads) from BMUS to be included in life history studies for the region. Preliminary life history findings from the fish sampled will be shared back with the fishers and constituents at the upcoming meeting on November 21, 2024.

Several operational challenges were identified during the pilot study that will inform future survey designs. These included significant discrepancies between chartered and actual depths at multiple grid locations, requiring frequent use of alternate sampling sites; extensive shark interactions at Rota Bank and White Tuna Bank affecting sampling efficiency; and variable environmental conditions, particularly strong currents early in the survey period. Despite these challenges, the pilot study successfully established baseline sampling protocols and demonstrated the effectiveness of a multi-vessel approach for conducting fishery-independent surveys in the Mariana Archipelago. The data collected will contribute to our understanding of bottomfish distribution and abundance in the region and support biosample collections for life history.



Completed survey grids (research fishing) showing range and coverage around Guam including offshore banks.

The FRMD Life History Program is testing fish measuring mats to support improved catch and fish length information for the jurisdictions and Hawai‘i. The mats are currently being tested in Guam with BFISH samples and proved to have accurate and precise measurements (<1 cm) for biosampling field length measurements. The hope is that these fish mats will help to further streamline the collection of fish length data. The fish mat works with Ikaseava Software (developed by the Pacific Community) that identifies the species and fish length. After measuring and weighing the fish, biological samples are collected for use in NOAA Fisheries life history studies.

Guam biosampling program using a fish mat to measure fish caught from Guam BFISH a mixed composition catch of bottomfish, including buninas agaga', buninas, and incidental catch of the Large-Head Scorpion Fish (Pontinus macrocephalus) and a rare Perchlet.

Sellit Logit training and data support in CNMI

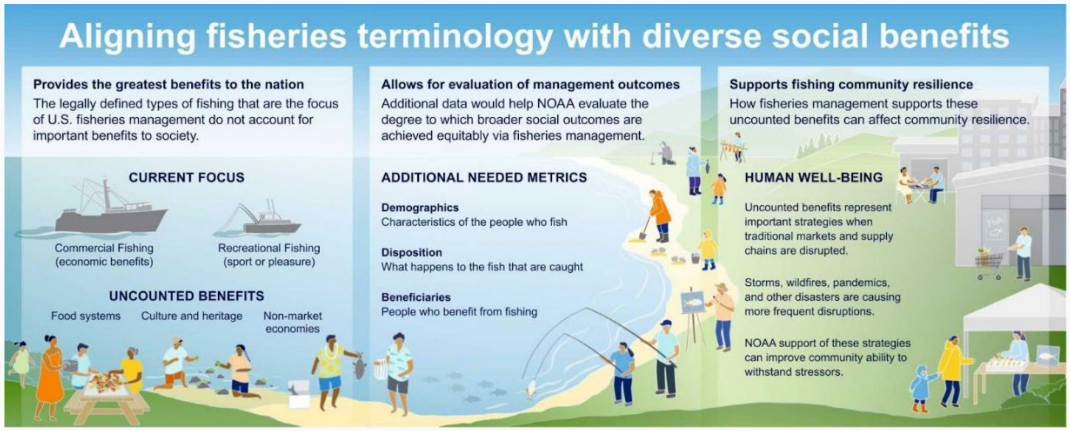
Brad Gough and TJ Loo from the FRMD Fisheries Monitoring Program traveled to CNMI to meet with the Division of Fish and Wildlife to provide training on the Sellit Logit application and to gather requirements for mandatory licensing and align timelines for CNMI's self-reporting initiative. While in CNMI, the team trained staff on the Metabase (data query) and Logit applications, improving data management and analytics capabilities of the Division of Fish and Wildlife's staff. Additionally, they discussed updates needed to support the new shore-based creel survey route that circles the island now that the east side road is fully paved. Another key success was the recovery of one year's worth of fish import data from a crashed computer, ensuring no data loss occurred. They concluded their time with the Division of Fish and Wildlife's team by shadowing them on an opportunistic survey around the entire island.

They also met with the biosampling team in CNMI, where they finalized the details necessary to upgrade the existing data system to support the use of fish mat photos (see above description) to ensure efficient data collection.

On the return trip, they stopped in Guam, where they met with partners at the Department of Agriculture and Wildlife Resources, the Bureau of Statistics and Plans, and the ARC BioSampling team to discuss ongoing projects and potential improvements.

PIFSC research promotes recognition of diverse benefits that fisheries provide society

Globally, marine fisheries provide many societal benefits that are not reflected in the way that fisheries are categorized for management and reporting. Led by PIFSC, Leong, et al. (2024) provides a systematic review of U.S. policy documents and peer-reviewed literature to identify potentially underrepresented fishing practices and communities associated with non-commercial fishing, i.e., fishing that is not clearly commercial or recreational. The review identified three classes of uncounted benefits which are related to fishing community resilience: food systems, culture and heritage, and non-market economies.



A diagram of the relationship between fisheries terminology and diverse social benefits.

The relationships between fishing and food systems, culture and heritage, and non-market economies have been under-represented in agency management. Improved accounting of these areas will be crucial to ensure fisheries provide the greatest benefits to the nation, evaluate the degree to which management goals and distribution of benefits are achieved equitably, and support resilience of fisheries and fishing communities in the face of climate change. NOAA Fisheries would benefit from additional data for demographics, disposition, and beneficiaries of fishing to more fully acknowledge the diversity of ways that people fish and benefit from fishing and assess the degree to which these benefits are equitably distributed.

It will be important to further examine how fishery managers may better acknowledge and affect the uncounted benefits to ensure fisheries are managed to provide optimum benefits to the nation, especially food production. The paper also identifies implications of fishing terms that have been suggested for MSA reauthorization. Next steps are to work with fishing communities, managers, and Council to identify specific priority objectives within these themes and develop ongoing social and cultural monitoring to determine the degree to which they are achieved.

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