

# 2022 U.S. Pacific Island Fisheries Reports Highlight Data Trends and Renewed Focus on Fishers' Perspectives



*A Hawai'i-based commercial longline vessel heads out to sea. The Port of Honolulu consistently ranks nationally in the top 10 in terms of annual value of seafood landed. Photo: Hawaiian Fresh Seafood.*

**Earlier this summer**, the Western Pacific Regional Fishery Management Council released the 2022 Annual Stock Assessment and Fishery Evaluation (SAFE) reports for the Hawai'i, American Samoa and Mariana Archipelagos, and Pacific Remote Island Areas and Pacific Pelagic fisheries. The reports represent collaboration 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 Resources and the Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife, who oversee the update and assembly of the reports each year. The reports are a complete collection of information relevant to U.S. Pacific Island fisheries for the previous year, including summaries of fishery performance (i.e., catch, effort, and participation), annual catch limit (ACL) monitoring, the results of new and current stock assessments and administrative and regulatory actions. The reports also provide information on a wide range of ecosystem considerations, such as changes in climate and oceanic variables, socioeconomic trends and protected species interactions and management. The Council uses the information to inform management decisions, ensuring the region's fisheries remain sustainable and that a consistent supply of local fish is available to communities into the future.

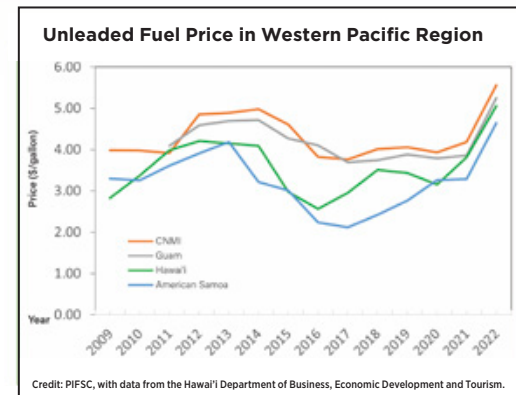
While regional fisheries have generally been viewed through the lens of impacts and recovery from the COVID-19 pandemic over the past few years, there were indicators of a return to normalcy in 2022 despite some lingering effects and considerations across the various island areas. These influences on fishery operations, market demand and data collection are especially important for U.S. Pacific Island communities that rely on fishing not only for livelihoods and food security, but also for social and cultural purposes. Stemming from initial efforts to document the substantial and widespread impacts from the pandemic, the Council and its partners at the NMFS Pacific Islands Fisheries Science Center (PIFSC) began collecting information to comprise a new "Fishers' Observations" section of the annual SAFE reports that highlighted fishers' perspectives with respect to how the pandemic impacted (and continues to impact) fishing and related industries. More recently, as effects of the pandemic have faded, the section focuses on empirical, "on-the-water" observations related to biological and environmental conditions, social and economic trends and other fishery-relevant factors.

## Key Fisher Findings

Fisher observations are collected from two sources. First, the Council records information from local fishers actively participating as part of Advisory Panels during informal quarterly meetings.

These fishers not only share their own observations, but also convey insights from their communities and fishing networks. Second, the PIFSC Social-Ecological and Economic Systems Program hosts an annual summit in each island area, inviting local fishers to share their unique perspectives. Since this started in 2020, there have been additional efforts to supplement and standardize data collection to better characterize observations and relate them to scientific data.

In 2022, there were a number of similar observations made by fishers across the various jurisdictions of the Western Pacific Region. Perhaps the most notable of these was the high cost of fuel, especially early in the year. Gas prices were reportedly above \$6/gallon, with some prices reaching \$7-10/gallon for diesel fuel in some areas. These elevated costs made it more difficult for fishers to recoup fishing expenses through the sale of their catch, as fish prices did



not keep pace with rising gas prices despite an uptick in 2022. Kaua'i fishers said the increase in fuel cost impacted fishery operations, as they became more selective and would wait to hear about favorable fishing conditions from others before deciding to take a trip themselves. While elevated fuel prices were a 2022 phenomenon, shark depredation has been an issue in the Pacific for many years. Fishers continued to report sharks impacting their catch, especially for bottomfish and pelagics, with many fishers resorting to moving to a new area if sharks continuously took their

fish. Another common thread across the U.S. Pacific Islands was the need to address aging infrastructure related to fishing, including boat ramps, docks and fish aggregating devices (FADs), some of which were missing altogether. Crowding at fishing access points such as boat ramps, possibly a remaining effect of the pandemic, also limits fishing participation. As reported by Guam fishers, the crowding has led to an uptick in theft as well, further deterring fishing.

was an influx of swordfish in Hawai‘i markets is corroborated by the good year that the Hawai‘i shallow-set longline fishery had in 2022. Focusing nearshore, there was a greater abundance and availability of insular species, with the exception of West Hawai‘i Island where abnormal currents, possibly associated with La Niña conditions or increases in easterly wind days, impacted fish aggregations. Maui fishers observed more ehu being caught than onaga, while fishers on other Hawaiian islands

non-commercial fishers. Fishers also reported difficulties related to aging infrastructure like the marina and boat ramps, and fish spoilage because of the lack of available ice. Fishing increased later in 2022, especially in the Manu‘a Islands and by the American Samoa longline fleet. While bottomfish fishing has been decreasing in recent years and few bottomfish were seen in local markets, it was a good fishing year for nearshore reef species and there were strong roadside sales reported for these species. Consistent with logbook catch data, fishers observed increases in mahimahi and marlin over 2022 alongside a good season for albacore tuna, the primary target of the pelagic fishery.

**Table 1.** 2022 catch and revenue for Western Pacific pelagic fisheries

Island Area	Fishery	2022		% Change from 2021	
		Catch (lbs)	Revenue (\$)	Catch	Revenue
Hawai‘i	Deep-set longline	24,229,375	106,362,213	-9.6	-8.5
	Shallow-set longline	1,873,350	9,679,201	+48.2	+89.0
	Main Hawaiian Islands (MHI) troll	1,762,027	7,040,286	-3.7	-0.2
	MHI handline	940,409	4,109,126	+37.3	+36.2
	Offshore handline	453,846	1,494,323	+76.6	+68.5
	Other gears	309,166	1,156,605	+71.9	+65.1
	<b>Total</b>	<b>29,565,913</b>	<b>129,841,754</b>	<b>-4.7</b>	<b>-2.4</b>
American Samoa	Longline	2,977,005	3,820,352	+13.2	+9.3
	Troll	4,543	n.d.	-75.3	-
	<b>Total</b>	<b>2,981,560</b>	<b>-</b>	<b>+12.6</b>	<b>-</b>
CNMI	Troll	237,440	721,579	-38.9	+7.1
Guam	Troll	629,837	n.d.	-26.6	-

Note: Data for 2022 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. Revenue values are adjusted. "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.

## Hawai‘i

Hawai‘i fishers observed there was a strong mango and avocado bloom early in the year, which normally correlates with good fishing, especially for ‘ahi and otaru. Fishers also reported a strong ‘ahi bite for Hawai‘i small-boat fisheries early in the year despite low longline catches. Experienced fishers observed that, though they expected to be catching wahoo early in the year, they landed ‘ahi instead. However, according to commercial fishing report data, while there was a slight uptick in landings of yellowfin tuna by Hawai‘i pelagic fisheries relative to 2021, the catch for most tuna species decreased. Regardless, fishers’ reports of a strong mahimahi season were supported by available data, and this trend seemingly held across most U.S. Pacific Islands. Similarly, the observation that there

reported large schools of ‘oama and akule. Fishers noted the COVID-19 pandemic had lingering impacts early in 2022, sometimes making it hard to find crew and possibly contributing to crowding at local fishing access points. There were also reports of older fishers exiting the fisheries and being replaced by less experienced fishers.

## American Samoa

Unlike the other island areas, American Samoa fishers were still dealing with pandemic-related lockdowns and mandates at the beginning of the year. Many people reported associated effects from the slow rollout of pandemic relief funding under the CARES Act. These issues were exacerbated later in the year by rough weather that led to reduced fishing effort from alia (traditional double-hulled catamarans) and

## CNMI

In the CNMI, fishers reported there were abundant nearshore species. For example, there was a good run of atulai (akule, or bigeye scad, *Selar crumenophthalmus*), with some suggesting it was the best in the past decade. These observations support creel survey estimates indicating that atulai was the most caught non-management unit species (MUS) in the CNMI. Fishers also observed Saipan talaya (throw net) fishers catching ti‘ao (juvenile goatfish) and mañahak (juvenile rabbitfish). However, spearfishers had trouble catching parrotfish and needed to dive deeper to find them. Fishers reported rougher weather and wind patterns impacted fishing, though there were conflicting observations about water temperatures and the associated impacts to fishing behavior. Increased military activities also interfered with fishing activity and reduced fishing effort. While challenging market conditions in the territory persisted in 2022, fishers were able to recoup some of their elevated fishing costs by making sales door-to-door.

## Guam

Observations made by Guam fishers in most cases aligned with those from the CNMI. Early in the year, fishers reported small runs of mañahak, ti‘ao and skipjack, but catches became rarer



**Table 2.** 2022 catch and revenue for Western Pacific bottomfish fisheries

Island Area	Fishery	2022		% Change from 2021	
		Catch (lbs)	Revenue (\$)	Catch	Revenue
Hawai'i	Deep-7 bottomfish stock complex	189,093	1,631,151	+15.2	+33.8
	Uku (gray jobfish)	52,966	341,529	-12.3	+9.7
American Samoa	Bottomfish	2,583	n.d.	+25.2	-
CNMI	Bottomfish	47,564	180,672	-36.2	-16.8
Guam	Bottomfish	45,071	n.d.	-11.4	-

**Note:** 2022 landings for Hawai'i fisheries are from commercial reports and do not include non-commercial catch estimates, whereas landings for the territories are from creel survey data expansions. Not all catch shown was sold. Revenue values are adjusted. "n.d." indicates that data were not disclosed due to rules regarding data confidentiality.

for these species as the year went on; this may help explain the large drop-off in catches of skipjack in the creel survey data. Other fishers corroborated the lack of skipjack, which some attributed to abnormal currents, strong winds, heavy rains and hot sun. Despite these difficulties, fishers observed large abundances of fish like atulai, mahimahi and wahoo, which is reflected in the annual SAFE report data. Fishers noted that the increase in mahimahi may be part of a typical five- to seven-year cycle and increases in atulai catch may be attributable to nighttime fishers harvesting the species under the full moon from August to September. While market conditions were challenging due to an excess of fish such as mahimahi that lowered fish prices in the face of rising fuel costs, customary exchange was still practiced throughout the community.

## Fishery Performance

There are many instances in which the fisheries data support the observations made by fishers, and vice versa, such that the observations can provide important context and valuable insight for the scientific data the Council uses for management. The data tables provided below show the percent change in fish catch and revenue across the U.S. Pacific Islands from 2021 to 2022 to highlight the variable nature of local fisheries, especially in the context of post-pandemic recovery.

### Pelagic

The pelagic fisheries of the Western Pacific Region are the largest managed by the Council in terms of catch and

revenue, and include the harvest of large 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 2021 to 2022 for each of the major pelagic fisheries. Most Hawai'i pelagic fisheries had increases in catch and revenue in 2022 relative to 2021, except for the deep-set longline and troll fisheries. Because the deep-set fishery, which targets tunas, comprises such a large proportion of the total catch, decreases in that sector resulted in a decrease in total catch across pelagic fisheries. The deep-set longline fishery decreases were driven by an ongoing decrease of bigeye tuna landings, consistent with fisher observations, though there has been an uptick in the amount of yellowfin tuna landed over the same period. A relative decrease in wahoo catches from 2021 to 2022 coincides with fisher observations that the species was absent from usual fishing areas at the beginning of the year. The shallow-set longline fishery had the highest percent increase in revenue for regional pelagic fisheries in 2022, along with substantial increases in catch for swordfish and striped marlin. But the revenue mostly benefited from an increase in average fish price from \$4.16 to \$4.75/pound from 2021 to 2022. The fishery also operated normally through its fishing season, whereas this had not been the case from 2018 through 2020 due to fishery closures associated with stipulated settlements, hard caps on sea turtle interactions and pandemic impacts.

Despite having one fewer vessel and less effort in 2022, the American Samoa

longline fishery experienced its second straight year of increased catch driven by good years for blue marlin, mahimahi and albacore. Catch rates for albacore increased above 14 fish per 1,000 hooks, known as the "break even" point, for the first time in the past decade. Despite the increase in trolling vessels, the American Samoa troll fishery had substantial decreases in catch (75%) and effort (50%) from 2021. The abrupt decline in the fishery prompted the Council to investigate whether the current design of the creel surveys is sufficient to generate catch estimates. Revenue data for the troll fishery are not able to be disclosed because there were fewer than three dealers reporting commercial sales data in 2022. Data from fewer than three sources are kept confidential to protect personal and business identifiable information.

The pelagic troll fisheries of the Mariana Archipelago had similar trends in catch and effort in 2022. Both Guam and the CNMI had slight decreases in trolling effort and participation with decreases in total estimated catch for the fisheries. The downticks in catch were driven by low landings of skipjack and yellowfin tuna, though both territories also had an influx of mahimahi and wahoo. Despite the nearly 40% decrease in pelagic catch in the CNMI, revenue increased primarily due to the larger proportion of catch sold and an increase in average fish price since 2021. Revenue data were not available for the Guam troll fishery because of data confidentiality rules, similar to the American Samoa troll fishery.

### Bottomfish

Though island fisheries are not as substantial in terms of catch or revenue as pelagic fisheries, fishing for bottomfish continues to be important to local communities economically, culturally and socially. **Table 2** provides bottomfish catch, revenue and percent change from 2021 to 2022. While increases in catch were observed for Hawai'i Deep-7 and American Samoa bottomfish, these increases come during general decreasing trends for

each since 2014 and 2015, respectively. Factors contributing to the decline in the Deep-7 fishery are likely for multiple reasons as fishers shared, including challenging weather conditions, increasing shark depredation, declining fisher participation including skilled highliners, competing fisheries, and the negative impacts of the pandemic on Hawai'i's hotel and restaurant sectors.

Similar to the pattern seen in revenue for some of the pelagic fisheries in the region, revenues for Hawai'i uku and CNMI bottomfish did not decrease to the same extent as catch values due to higher average fish prices and higher proportions of the catch being sold. The same reasoning likely explains why revenue increased more for Hawai'i Deep-7 bottomfish than catch did when comparing 2022 values to those from 2021. Also, similar to the troll fisheries of American Samoa and Guam, revenue data for the bottomfish fisheries of these two territories are not disclosed due to confidentiality rules. This is consistent with fisher observations in American Samoa that local bottomfish were not frequently seen in fish markets.

### Annual Catch Limits

To manage non-pelagic MUS fisheries like bottomfish, the Council uses ACLs (see **Table 3**) that set a level of permitted fish catch each year to ensure overfishing does not occur. To account for the high year-to-year variability in the fisheries data, average catches over the most recent three year period are usually tracked against the ACLs and presented 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 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 primarily monitored instead of actively managed. The initial estimate for the 2022 Guam bottomfish catch is still undergoing data validation. Annual

catch values are not disclosed for Hawai'i precious corals due to data confidentiality rules.

A 2019 NMFS stock assessment<sup>1</sup> indicated that American Samoa bottomfish were overfished and experiencing overfishing, while Guam bottomfish were overfished but not experiencing overfishing. The ACLs shown in **Table 3** for American Samoa and Guam bottomfish are limits meant to allow the stocks to rebuild within regulatory timeframes while permitting fishery operations to continue. A recent 2023 stock assessment for American Samoa bottomfish took a new approach in analyzing each MUS individually and indicated that the species are being harvested sustainably. The Council

situational awareness in the face of an ever changing climate. Changes such as El Niño can affect the productivity of marine ecosystems and catchability of managed fish stocks. Research is ongoing by NMFS and the Council on how climate change may impact regional fisheries.

In 2022, there were several notable improvements incorporated into the reports. For the Hawai'i report, the Council generated a new data module to track noncommercial catch estimates for bottomfish MUS and priority ECS through the Hawai'i Marine Recreational Fishing Survey. In the Hawai'i and pelagic reports, new tables were added to show bycatch species data in Hawai'i small-boat fisheries by gear type. The Council plans to add a noncommercial

**Table 3.** ACLs for Western Pacific MUS compared to 2022 catch values

Island Area	Fishery	MUS	ACL (lbs)	2022 Catch (lbs)	Portion of ACL caught (%)
Hawai'i	Bottomfish	Deep-7 bottomfish	492,000	189,093	38.4
		Uku (gray jobfish)	295,419	282,241	95.5
	Crustacean	Deep-water shrimp	250,773	13,864	5.5
		Kona crab	30,802	2,533	8.2
American Samoa	Bottomfish	Bottomfish	5,000	2,583	51.7
CNMI	Bottomfish	Bottomfish	84,000	47,564	56.6
Guam	Bottomfish	Bottomfish	31,000	*Undergoing review	

**Note:** All Hawai'i catch values are from commercial data except for uku, which includes Hawai'i Marine Recreational Fishing Survey data estimates that are known to have high uncertainty. The ACLs for American Samoa and Guam bottomfish are part of rebuilding plans for the fisheries after a recent stock assessment (Langseth et al. 2019) found both fisheries to be overfished, with the American Samoa bottomfish fishery also experiencing overfishing. The value for the Guam bottomfish fishery is preliminary and undergoing evaluation by NMFS.

anticipates specifying new ACLs for the fishery at the end of 2023. The next stock assessment for Guam bottomfish, which will reassess stock status and inform ACLs, is scheduled to be completed in 2024.

### Report Updates and Improvements

Several other sections of the Council's annual SAFE reports provide annually updated information in addition to fishery performance that is used for monitoring and management. For example, the "Climate and Oceanic Indicators" section provides data on factors related to current climate and oceanic conditions in the Pacific, which provides fishing communities, resource managers and businesses with

data module in the 2023 reports for pelagic species as well as reconfigure the American Samoa archipelagic fishery performance section to monitor the bottomfish fishery by individual species, consistent with the new bottomfish stock assessment finalized in 2023. Full reports are available on the Council's website at [www.wpcouncil.org/annual-reports](http://www.wpcouncil.org/annual-reports). Select content will soon be available through the Council's online portal ([www.wpcouncildata.org](http://www.wpcouncildata.org)), which allows readers to navigate the reports more easily and directly download the reported data. 🐟

<sup>1</sup>Langseth B, Syslo J, Yau A, Carvalho F. 2019. Stock assessments of the bottomfish management unit species of Guam, the Commonwealth of the Northern Mariana Islands, and American Samoa, 2019. NOAA Tech Memo. NMFS-PIFSC-86, 177 p. (+ supplement, 165 p.). doi:10.25923/bz8b-ng72.