



NOAA FISHERIES

Pacific Islands Region Fisheries and COVID-19: Impacts and Adaptations

Danika Kleiber

Mia Iwane

Keith Kamikawa

Kirsten Leong

Justin Hospital



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Pacific Islands Fisheries Science Center

NOAA Technical Memorandum NMFS-PIFSC-130
<https://doi.org/10.25923/2fpm-c128>

August 2022

Pacific Islands Region Fisheries and COVID-19: Impacts and Adaptations

Danika Kleiber¹, Mia Iwane², Keith Kamikawa³, Kirsten Leong¹
Justin Hospital¹

¹ Pacific Islands Fisheries Science Center
National Marine Fisheries Service
1845 Wasp Boulevard
Honolulu, Hawaii 96818

² Joint Institute for Marine and Atmospheric Research
University of Hawaii
1000 Pope Road
Honolulu, Hawaii 96822

³ Pacific Islands Fisheries Regional Office
National Marine Fisheries Service
1845 Wasp Boulevard
Honolulu, Hawaii 96818

NOAA Technical Memorandum NMFS-PIFSC-130

August 2022



U.S. Department of Commerce
Gina Raimondo, Secretary

National Oceanic and Atmospheric Administration
Richard W. Spinrad, Ph.D., NOAA Administrator

National Marine Fisheries Service
Janet Coit, Assistant Administrator for Fisheries

About this report

The Pacific Islands Fisheries Science Center of NOAA's National Marine Fisheries Service uses the NOAA Technical Memorandum NMFS-PIFSC series to disseminate scientific and technical information that has been scientifically reviewed and edited. Documents within this series reflect sound professional work and may be referenced in the formal scientific and technical literature.

Recommended citation

Kleiber D, Iwane M, Kamikawa K, Leong K, Hospital J. 202X. Pacific islands region fisheries and COVID-19: impacts and adaptations. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-PIFSC-130, 36 p. doi:10.25923/2fpm-c128

Copies of this report are available from

Pacific Islands Fisheries Science Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1845 Wasp Boulevard, Building #176
Honolulu, Hawaii 96818

Or online at

<https://repository.library.noaa.gov/>

Table of Contents

List of Figures	ii
Executive Summary	1
Introduction.....	2
Research Questions.....	2
Study Area	2
Data Collection	4
Oral History Interviews.....	4
Other Information Sources.....	4
Qualitative Data Analysis	5
Respondent Categories	7
Shore-based Fisheries	7
Small-boat Fisheries.....	7
Longline Fisheries.....	8
Charter Fisheries	8
Purse Seine Fisheries	8
Fish Sellers.....	8
Gear Sellers.....	9
Fish Processors.....	9
Fish Consumers.....	9
Codes and Quotes	9
Results.....	9
Community Changes Under COVID.....	9
COVID-19 Cases	9
Measures to Restrict Arrival of COVID.....	10
Measures to Restrict Community Spread	13
Fisheries Changes and Adaptations Under COVID-19	15
Drop in Demand for Fresh Seafood	16
Drop in Tourist Demand for Fishing Experiences.....	19
Restrictions on the Movement of Labor	20
Limited Access to Fishing	20
Limited Access to Fishing Markets	22

The Ever Looming threat of COVID-19.....	23
Food Security, Sustaining Community	24
Value of Fish, Value of Fishing.....	27
Looking Back, Planning Ahead	28
Discussion.....	29
Acknowledgments.....	30
Literature Cited	31

List of Figures

Figure 1. Map of the Pacific Islands Region.Methods.....	3
Figure 2. Distribution of 50 oral history interviews by island.....	6
Figure 3. Fisheries roles of 50 oral history interviews. Each interviewee can have more than one role. Interviewees included their own experience (primary) and observations of other fisheries sectors (secondary).	7
Figure 4. Timeline of COVID-19 in the PIR (January 2020–March 2021).....	10
Figure 5. Timeline change in flights to four major airports in the PIR (2020).....	11
Figure 6. Timeline of change in passengers to four major airports in the PIR (2020).	11

Executive Summary

The Pacific Islands Region has experienced a number of unique risks from COVID-19, and the measures put in place to stop its spread. In this report, we detail the impacts of COVID-19 on the Pacific Islands Region fisheries from March 2020 to February 2021, and highlight the adaptations made by the diverse fishers, marketers, and fishing communities of this region. We gathered information from different sources, including publicly available statistics, news reports, government rules, as well as short open-ended phone interviews.

While the number of COVID-19 cases in the Pacific Islands Region in the first year of the pandemic were comparatively few, restrictions on travel, and local restrictions on gathering and commerce had profound effects on local economies, livelihoods, and human well-being. In March 2020, airlines significantly limited flights across the Pacific Islands Region, affecting the ability of people to see their loved ones, travel off island for medical treatments, as well as reshaping economies heavily reliant on tourism. These travel restrictions also limited the availability of fisheries labor and materials. Measures to limit community spread such as curfews, limitations on gatherings, and stay-at-home orders also had a heavy impact on local businesses, and often shifted subsistence practices. The largest effect on commercial fishing was the loss of tourism and the market for fresh seafood products due to restaurant closures. The steep drop in market demand subsequently affected the price of fish and the commercial viability of certain types of fishing. The loss of tourism also has a direct negative affect on charter fishers' business.

The fisheries of the Pacific Islands Region adapted to the rapid contraction, localization, and isolation of their economies and fisheries. Within commercial fisheries, initial adaptations limiting fishing effort and catch to not flood the market with seafood that was no longer in demand. In some cases, boats tied up all together, but others adapted by shifting to local demand by catching less, and in some cases, different species. Other fishers adapted by conducting their own sales and marketing through social networks. Marketers similarly adapted by moving from an export to retail sales strategy, or from a tourism to local market. The limitation on travel, particularly of fisheries labor, led to increasing focus on finding local labor sources. Beyond the fishers, the community wide effects of COVID-19 on livelihood and food security led to an observed increase in people fishing from shore for subsistence and recreation. Many fishers also donated their catch to their communities to meet the increased need.

Not all fisheries actors were affected in the same way. Larger boats with higher operation costs tied up rather than operate at a loss due to a significant decrease in fish price. By contrast those entities that already had a localized business model were better able to weather the changes brought on by COVID; and in some cases, they thrived. For example, an O'ahu-based community-supported fishing business was able to increase its capacity, and the amount of fish they bought and sold.

All island groups also contended with shifting regulations that affected access to fishing, and fishing markets. While many of these regulations were relaxed as COVID-19 numbers declined toward the end of 2020, COVID-19 has persisted and returned stronger than ever in 2021 despite the introduction of vaccinations. The possible return of regulations and restrictions could create a dynamic situation, making it hard for businesses to plan for the future.

Through it all, fisheries communities in the Pacific Islands Region have played a vital role in supporting local food systems, nutrition, food security, and community social cohesion. COVID-19 has amplified these critical roles of fishing in island communities, and there is a shared hope for an increased understanding and value of all local fisheries to island communities, economy, and food security for the future.

Introduction

The novel coronavirus (COVID-19) has had untold global impacts. It emerged in late 2019, and quickly spread globally. In March 2020, many countries began to enact travel bans and other localized measures to stop the spread of the disease. However, efforts to stem the spread of the virus have also had profound effects on society, as well as on the fishing sector. Reportedly, there have been widespread drops in demand for seafood, disruption of seafood distribution and markets, and increase health risks to fisheries workers and fishing communities (Sorensen et al. 2020, Ruiz-Salmon et al. 2021, Mangubhai et al. 2021, Bennet et al. 2021, Campbell et al. 2021).

The Pacific Islands Region COVID-19 experience has included unique risks, both from the virus and the measures put in place to stop its spread. While the number of COVID-19 cases in the Pacific Islands Region in the first year of the pandemic has been comparatively few, restrictions on travel and local restrictions on gathering and commerce have had profound effects on local economies, livelihoods, and human well-being. Since March 2020, airlines have significantly limited flights across the Pacific Islands Region, affecting the ability of people to see their loved ones, travel off island for medical treatments, as well as reshaping economies heavily reliant on tourism. Measures to limit community spread such as curfews, limitations on gatherings, and stay-at-home orders have also had a heavy impact on local businesses, and often shifted subsistence practices.

The purpose of this project is to understand and share how people have adapted to the changes brought by COVID-19 on Pacific Islands Region fisheries in an effort to learn how to better prepare for future disasters with similar social disruptions. This will include fishers, marketers, and fisheries managers from Hawai'i, Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and American Samoa. Our aim is to bring these voices from the fisheries together as a record of the present, and ideas for the future.

Research Questions

1. What have the impacts of COVID been on Pacific Islands Region fisheries?
2. What adaptations have fisheries participants made?
3. What are people's expectations of fisheries going forward?

Study Area

The US Pacific Islands Region (PIR) includes four groups of islands: the State of Hawai'i, the unincorporated territories of Guam, the CNMI, and American Samoa (Figure 1). Each of these island groups has distinct historical, cultural, and political attributes, although they share many

biogeographic attributes common to large ocean states found throughout the Pacific¹. All communities within the US PIR are designated as fishing communities, and fisheries are economically, socially, and culturally significant throughout the region.

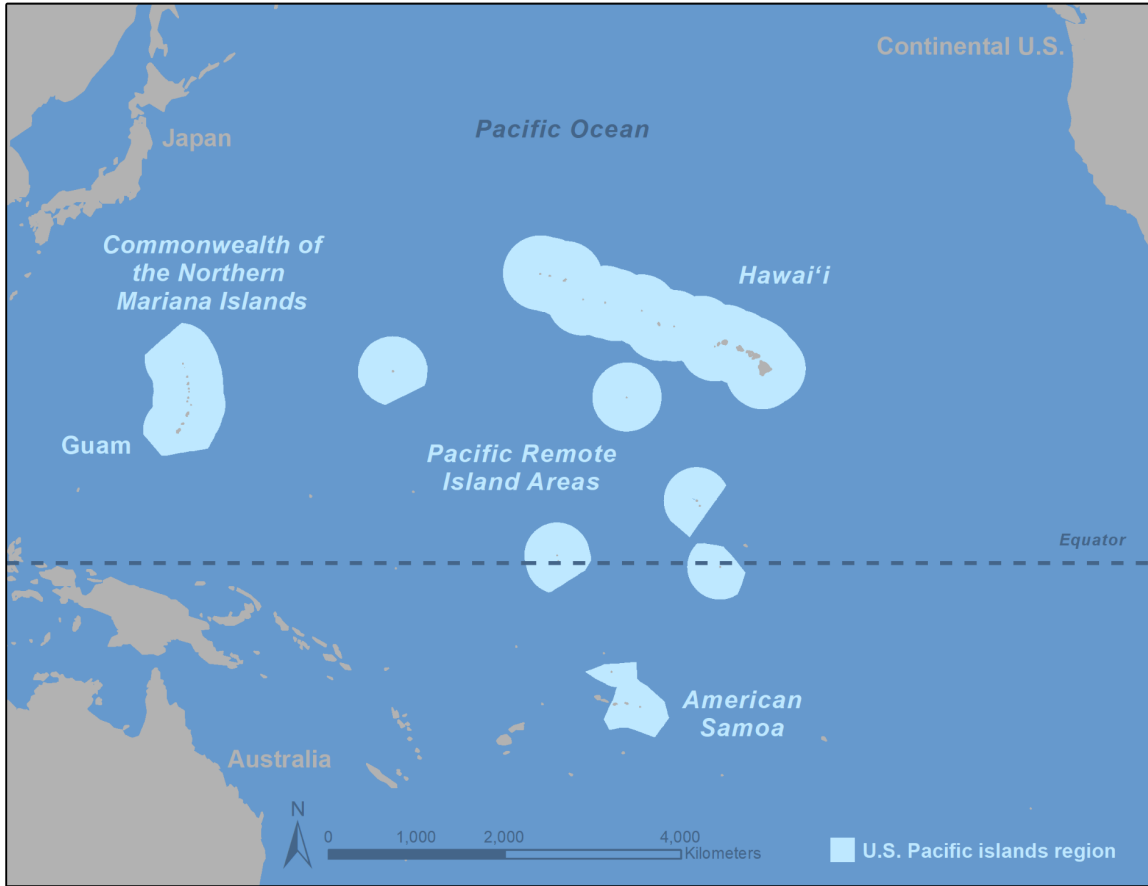


Figure 1. Map of the Pacific Islands Region.Methods

¹ Archipelagic Annual SAFE Reports (<https://www.wpcouncildata.org/archipelagicsafereport/>)

Data Collection

We used multiple data sources to understand the impact of COVID-19 on Pacific Islands Region fisheries.

Oral History Interviews

We collected primary data through short oral history interviews with people connected to Pacific Islands Region fisheries (n=68). We conducted interviewee selection through snowball sampling, starting with relationships established through other projects and contacts made through the Western Pacific Fisheries Management Council. We aimed for perspectives from women and men, different islands, as well as a diversity of fisheries perspectives.

The interviews were conducted by researchers from the Pacific Island Fisheries Science Center, the Pacific Islands Regional Office and in collaboration with the Cooperative Institute for Marine and Atmospheric Research. The first round of interviews were conducted between May and October 2020, then additional and follow-up interviews were conducted in February 2021. Most interviews were with one person, but in two cases two people were interviewed together. All interviews were conducted via phone or virtual meetings, in line with COVID restrictions on in person research. Recordings of the interviews were transcribed, with the exception of one case in which the audio was not available and notes of the meeting were used, and another case where the interviewee sent written responses. The interviews consisted of three open-ended questions:

1. Changes they experienced or witnessed during COVID-19
2. Adaptations the fishery sector made to those changes
3. Their expectations, hopes or worries for the future

In five cases, people who were interviewed earlier in 2020 were interviewed again about 6 months later. The second interview included questions tailored to follow up on information provided in the first interview. The total number of interviews conducted was 68.

Other Information Sources

To create a timeline of regulations, we used information on declarations from government websites as well as local news reports and publicly available statistics from the Bureau of Transportation Statistics and The COVID Tracking Project. Additionally, we cite fisheries data sources presented in the NMFS fisheries snapshot reports², which includes commercial fishing landing and revenue trends for commercial fishing (Hawai'i and American Samoa) and trip trends for charter fishing (Hawai'i). The Western Pacific Fisheries Management Council conducted focus group interviews with fishers, which included discussion of COVID. We cite the summary documents of those discussions.

² Updated Impact Assessment of the COVID-19 Crisis on the U.S. Commercial Seafood and Recreational For-Hire/Charter Industries January–July 2020. NMFS.

<https://www.fisheries.noaa.gov/resource/document/updated-impact-assessment-covid-19-crisis-us-commercial-seafood-and-recreational>

Qualitative Data Analysis

Transcripts of the oral history interviews were qualitatively analyzed by coding interview transcripts, notes, and written responses using MaxQDA software. We took an inductive approach to coding (Glaser and Strauss 1967). The analysis includes coded interviews with 50 people. Of the remaining 13 interviews, in three cases permission for analysis was not given by the interviewees, and 10 more were left out due to a saturation of perspectives from O‘ahu shoreline and small boat fishers due to oversampling of those groups, and the additional interviews did not provide new perspectives.

The analysis began with identifying the demographic and fisheries perspectives represented by the interviewees. This identification allowed for geographic and fisheries subgrouping of interviewee perspectives during the analysis of trends. For example, being able to report the occurrence of coding trends across all interviewees, but also more specific trends within subgroups such as shoreline fishers, who have very different experiences than, for example, people representing the longline fisheries. It also allowed us to identify gaps in perspectives provided by the interviewees.

Among the coded interviews, women (n=9) and men (n=41) were represented. We made extra efforts to interview women; however, they were still underrepresented in our sample. This gender imbalance may also point to potential gaps in the fisheries perspectives included in the interviewees, such as gleaners or limu (seaweed) gatherers, fish processor workers, or restaurant employees.

The coded interviews represented perspectives from four archipelagos across the Pacific Islands Region (Figure 2). Within these four archipelagos, interviews came from 10 different islands (Figure 2). While the greatest concentration of perspectives came from O‘ahu (where all three interviewers were stationed), efforts were made to include the perspectives from American Samoa, Guam, CNMI, as well as other Hawaiian Islands, recognizing that while O‘ahu is by far the most populated of all the islands, each island would have experienced the impacts of COVID differently. This does speak to a gap in the data and reflects the limitation of data collection when in-person interviews are not possible.

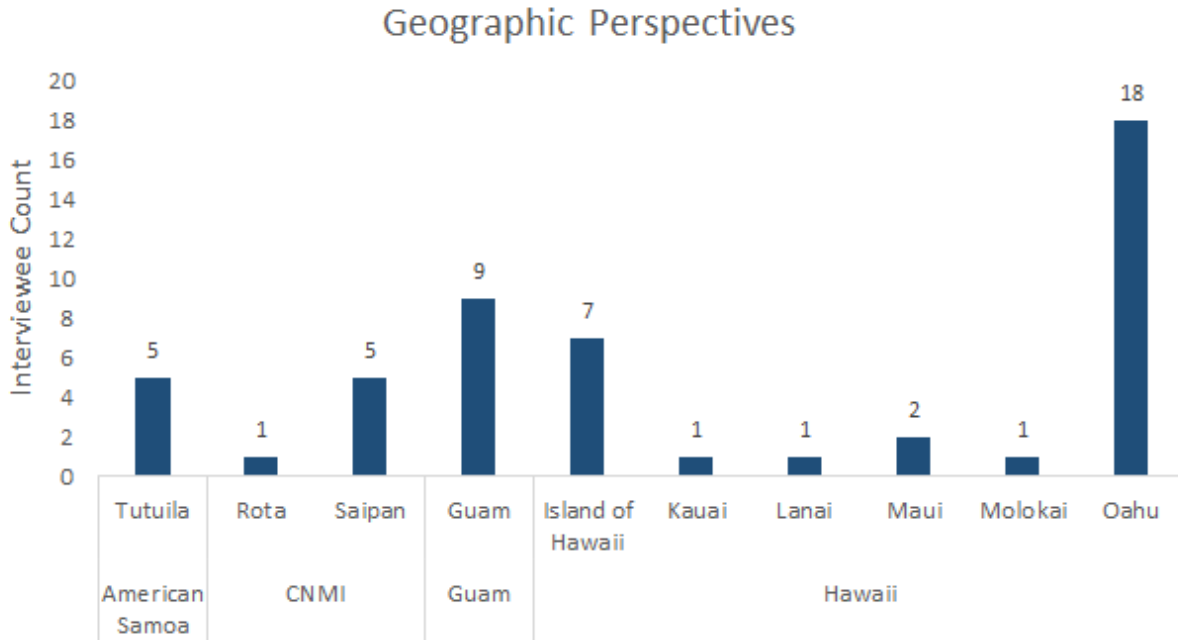


Figure 2. Distribution of 50 oral history interviews by island.

Finally, we categorized the respondents by their role in fisheries of each interviewee. We identified five types of fishing and five other roles within various aspects of fisheries industry and management (Figure 3). The five different types of fishing included: shoreline (including diving, or fishing that did not require a boat), small boat (including a diversity of methods and gears such as troll and bottom fishing), longline, charter fishers, and purse seine. As the fisheries are not just fishing we also spoke to people involved in other aspects of the fisheries value chain, and identified perspectives of those who sell fish (such as wholesale, or retail, directly to the public, or through restaurants), fishing gear sellers, fish processors (such as a cannery, or small scale operations), and consumers. Finally, we identified those in decision-making roles. This included employees or volunteers of governing institutions such as the Pacific Island Fisheries Science Center or the Western Pacific Fisheries Management Council. This category also included those who were leaders in local groups such as fishing co-ops or groups. These groups are not mutually exclusive. Among the 50 coded interviews, 42% represented one perspective, 44% represented two perspectives, and the remaining 14% represented three perspectives.

We distinguished between primary and secondary reporting. Primary reporting come from those directly connected to and describing their own experience of the fisheries. For example, we interviewed 20 people who were themselves active small boat fishers. However, many interviewees also described observations of other fisheries sectors. For example, a small boat fisher describing his observations of the longline fleet, or a fisheries manager describing her observed changes to the sale of fish. In the reporting, and particularly use of direct quotes, primary perspectives were prioritized, although in some cases, such as the purse seine fishery in American Samoa, only secondary reports are available (Figure 3).

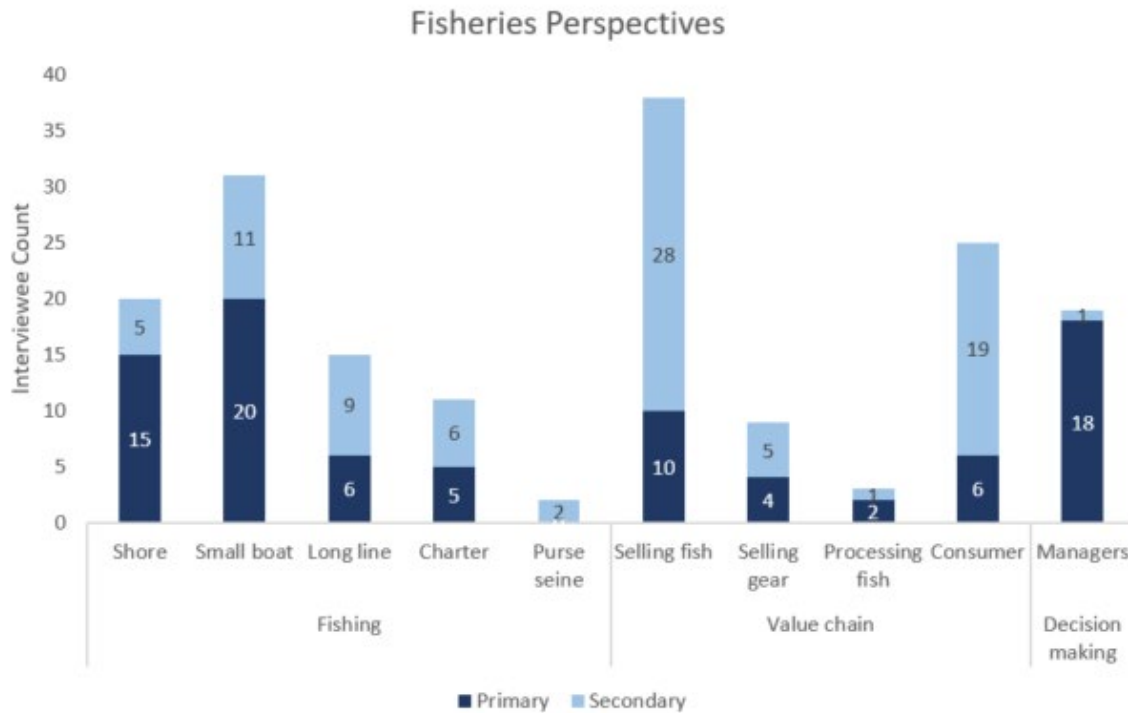


Figure 3. Fisheries roles of 50 oral history interviews. Each interviewee can have more than one role. Interviewees included their own experience (primary) and observations of other fisheries sectors (secondary).

Respondent Categories

Shore-based Fisheries

Shore-based fisheries occur without a boat and often require less gear, and less expensive gear than other fishing methods (see below). Of the 15 shore fishers interviewed, 80% came from one of the islands of Hawai‘i. Most shore fishers we interviewed only did shore fishing, while a small number also did boat fishing or charter fishing. Shore fishers often fish by using poles and lines, or by diving. Our sample did not include gleaners or limu (seaweed) gatherers. For most, shore fishing was done for recreation or subsistence.

Small-boat Fisheries

Small boat fisheries occur throughout the PIR. They use a variety of fishing methods and gear, including trolling and bottomfishing, as well as diving. They can target highly migratory species, as well as bottomfish and reef fish species (Hospital et al. 2021).

Of the 20 small boat fishers interviewed, there was even representation across the islands of Hawai‘i, Guam, and CNMI, with a smaller number from American Samoa. Of the Hawai‘i interviews, about half were based in O‘ahu, and the other half coming from the other Hawaiian Islands. For most of the small boat fishers we interviewed, this was the only type of fishing they did, although a smaller number also did shore-based fishing, and others did charter fishing. Just more than half of small boat fishers did so for recreation or subsistence, although some did sell to

recoup the cost of their fishing, most of them did not fish for profit. Those that fished for profit either sold their catch or participated in a charter fishing business.

Longline Fisheries

Two longline fisheries in the PIR are based out of Honolulu, Hawai‘i, and Pago Pago, American Samoa. In Hawai‘i, the longline fishery is responsible for 85% of the state’s fishery revenue. They primarily target bigeye tuna for the fresh seafood market sold out of the Honolulu based United Fishing Agency (UFA) auction. In American Samoa, the longline fleet targets albacore tuna destined primarily for the StarKist Samoa canning plant.

Our six interviews with people with primary longline experience included boat owners and those closely involved in the sale of longline catch. Unfortunately, we were unable to interview captains or crewmembers, and people with direct longline experience from American Samoa. For those narratives, we will rely on secondary sources.

Charter Fisheries

Charter fisheries are for-profit recreational fisheries. Hawai‘i has a reputation as a destination for big-game fishing trips, including trophy billfish and marlin. Hawai‘i charter operations rely mostly on out-of-state visitors (Hospital et al. 2021). The charter fisheries provides a significant economic contribution to the state, both directly and through supporting industries (Rollins & Lovell 2019). In Guam, the charter fishing industry also caters to tourists and to military personnel.

The five interviews with primary charter fishing experience originated mostly from the Hawaiian Islands with one example from Guam. Secondary information was also drawn from small-boat fishers and managers from Hawai‘i and Guam.

Purse Seine Fisheries

U.S.-flagged purse seine vessels deliver fish to the StarKist Samoa cannery in Pago Pago, American Samoa. They are the largest contributor to commercial fisheries landing in American Samoa (Hospital et al. 2021). We did not interview anyone from the purse seine fishery and only two interviewees provided secondary information.

Fish Sellers

A variety of seafood market pathways occur within the PIR. These pathways are perhaps the most diverse on O‘ahu and include wholesale, retail, and restaurants that supply both local and continental US markets. There are also more localized market pathways through local cooperatives, and fishers selling directly at farmer’s markets and roadsides. In Guam, the Guam Fishermen’s Cooperative Association is an important market hub, although fishers also sell directly to restaurants and hotels, while distribution through roadside vendors is also common in Guam and CNMI.

We interviewed 10 people directly involved in the marketing of seafood, including 2 restaurant owners. Most of the interviews occurred with people based in Hawai‘i, and a smaller sample from Guam. We were only able to obtain secondary data from American Samoa and CNMI.

Gear Sellers

All primary account of gear sales was from interviewees based on O‘ahu, with one secondary account from Maui and one from Guam. Gear sellers targeted the longline, small-boat or shore based fisheries.

Fish Processors

The major processing plant is the Starkist Samoa cannery in Pago Pago, American Samoa. Other small-scale processing as part of a vertical market strategy was also captured in interviews in Hawai‘i. This was a major gap in our interviewee perspectives.

Fish Consumers

Among our interviewees, 6 described the availability and consumption of seafood from a personal perspective, and in one case, this was their sole connection to the fishery. Another 19 described secondarily observed trends, often relating to changes in food security.

Codes and Quotes

The code structure largely followed the question structure, starting with changes to the community and the fishery, followed by adaptations made, and ending with expectations for the future. Here we report on the major codes but combine the major impacts and the adaptations to those impacts, followed by a discussion of key takeaways. Where possible, we drew on quotes describing primary experiences to have the story of the impact of COVID-19, told in the voices from the fisheries.

Results

Community Changes Under COVID

COVID-19 Cases

COVID-19 cases were first detected in Honolulu on March 6, 2020, and later found in Guam in mid-March, and then the first two confirmed cases occurred in CNMI on March 29, 2020. One of the early cases included a commercial fisher traveling from the Philippines, which led to the death of a member of the fisheries community from COVID-19. On November 9, 2020, the first three cases of COVID-19 were reported in three crewmembers of a container ship in the port of Pago Pago, American Samoa. However, steps were taken to contain the cases and there was no community spread³.

While the total number of cases were comparatively few when compared to other areas in the United States, the isolation of these island populations make them particularly vulnerable. Both Hawai‘i and Guam experienced multiple peaks of community spread of the virus throughout 2020 and into 2021 (Figure 4). Different island groups enacted measures to restrict cases coming to the islands, but also to control community spread.

³ [Samoa News Staff. 2020.](#)

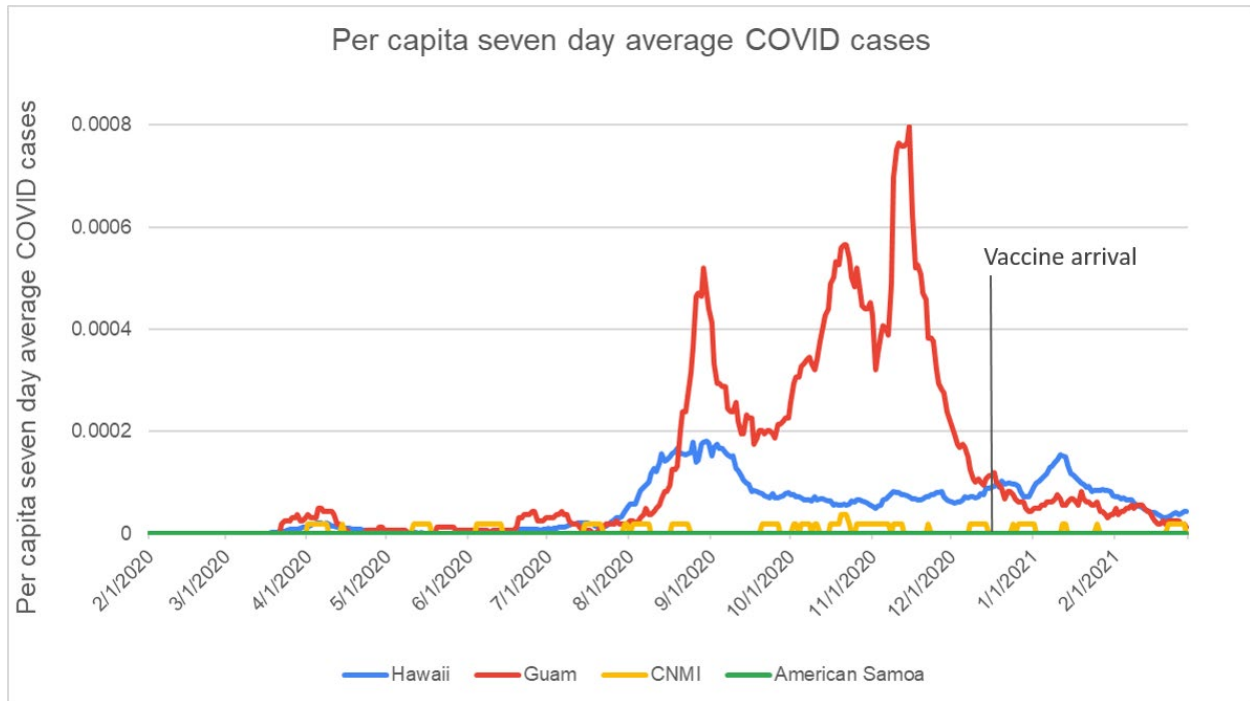


Figure 4. Timeline of COVID-19 in the PIR (January 2020–March 2021).

Measures to Restrict Arrival of COVID

In the first year of the pandemic (March 2020–February 2021), airlines significantly limited flights across the Pacific Islands Region (Figure 5) impacting the ability of people to fly home, travel off island for medical treatments, as well as reshaping economies heavily reliant on tourism, as well as import and export routes. Each island group saw a massive decline in the overall flights beginning in March 2020 (Figure 5), and with that a steep decline in passengers (Figure 6). While some flights were suspended by order of the government,⁴ other losses were due to airlines reducing their flights in response to low occupancy numbers.⁵

⁴ [Office of the Governor, ASG, Second Amended declaration of continued public health Emergency](#)

⁵ [Marianas Variety, 02/26/2020](#)

% Change in flights to major airports (2020)

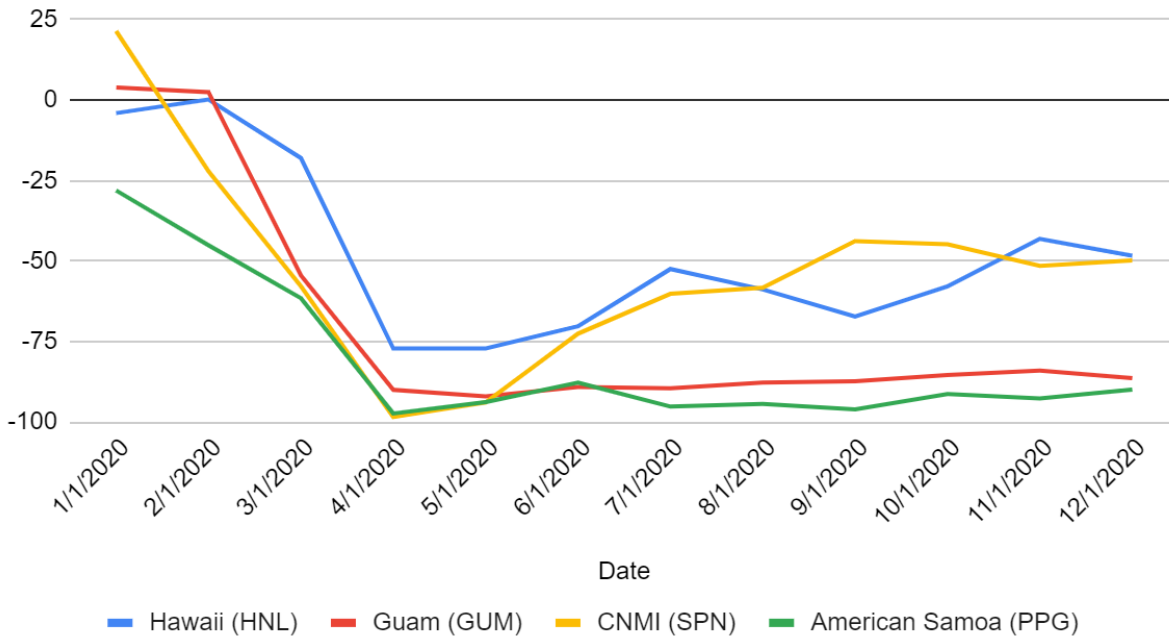


Figure 5. Timeline change in flights to four major airports in the PIR (2020).

% Change in passengers to major airports (2020)

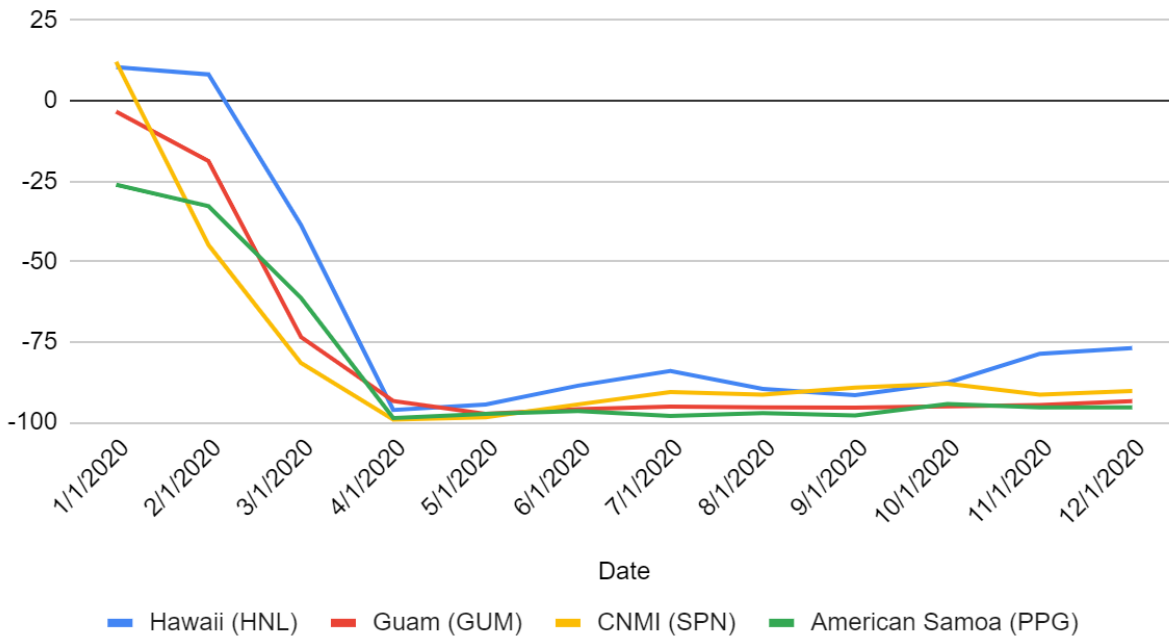


Figure 6. Timeline of change in passengers to four major airports in the PIR (2020).

Hawai'i

Hawai'i is the hub of considerable visitor, military, and cargo traffic by air and water and saw the earliest arrival of COVID-19 in the region. Passengers to Honolulu fell by almost 100% in March, 2021, and while they increased over the year they were still well below 2019 numbers (Figure 6). This was due in large part to travel global and national travel restrictions, and a requirement that all persons entering Hawai'i (visitors and returning residents) to self-quarantine for 14 days or for the duration of their stay in Hawai'i, whichever is shorter, all of which were put in place on March 26, 2020⁶. Additionally, there were quarantine restrictions on inter island air passengers, which were meant to limit the spread of COVID from O'ahu to the outer islands.

Surges in US domestic COVID cases in June and July precluded the state from relaxing quarantine restrictions further. Initial plans were to launch a program called "Safe Travels" on August 1 that would allow travelers with pre-travel negative test results to bypass quarantine. This program was delayed because local case counts spiked in August and September; in mid-October the "Safe Travels" program was finally initiated.⁷

Guam

Guam suspended international travel on March 20, 2020. This led to a steep drop in flights and passengers to the island (Figure 5, Figure 6). The suspension of travel to Guam from the countries of Japan, South Korea, and Taiwan (originally scheduled to be lifted July 1, 2020)⁸ continued throughout 2020. This created a major drop in tourism. As one interviewee explained:

"Where all the tourists stay...it's just a ghost town. It's been a ghost town since March. (September 2020, #15, Guam)"

On March 26, the naval ship USS Theodore Roosevelt docked in the Guam Naval Base due to a COVID outbreak on board.⁹ The movement of the military personnel off base, including their patronage of restaurants and bars, was intermittently restricted throughout 2020¹⁰ in an attempt to limit the spread of COVID into the community.

CNMI

International flights to Saipan, primarily from Korea, Japan, and Hong Kong began cancellation as early as February 2020 due to low occupancy numbers¹¹. In response to the rising COVID cases in Guam and the United States, CNMI put in place a 14-day quarantine requirement on all incoming passengers on March 23, 2020.¹² All direct international flights to the CNMI were suspended on March 27, 2020,¹³ and a few days and later flights between Guam and Saipan were suspended on April 6, 2020¹⁴. The flights between Guam and Saipan resumed May 2, 2020,¹⁵

⁶ [Department of Health. 2020.](#)

⁷ [Honolulu Star Advertiser.](#)

⁸ [The Guam Daily Post 10/20/2020](#)

⁹ [NBC News 03/26/2020](#)

¹⁰ [Pacific News Center 06/24/2020](#)

¹¹ [Marianas Variety, 02/26/2020](#)

¹² [Marianas Variety Staff. 2020.](#)

¹³ [Marianas Variety, 03/19/2020](#)

¹⁴ [The Guam Daily Post, 04/01/2020](#)

¹⁵ [Marianas Variety, 04/29/2020](#)

and while this increased the number of flights (Figure 5), the number of passengers to Saipan remained low throughout the remainder of 2020 (Figure 6).

After COVID-19 cases were confirmed in Saipan in late March 2020, neighboring island Tinian also created guidance for boating activities, meant to limit the contact between Tinian boat operators and the Saipan population.¹⁶

American Samoa

American Samoa took the most drastic measures in terms of suspending passenger flights on March 30, 2020. That suspension continued throughout 2020. This left American Samoans off island, either in Western Samoa, or in the United States, unable to come home, which led to tension.¹⁷ American Samoans in need of medical care not available on-island also faced difficulties getting to Honolulu.¹⁸ Repatriation flights between Western and American Samoa first occurred mid-June 2020,¹⁹ but repatriation from the United States was delayed until February 2021 due to concerns of the spread of the COVID virus.²⁰

American Samoa also imposed rules at the port to limit the spread of COVID from the crew of container ships or purse seine vessels. The American Samoa government imposed a 15-day quarantine on foreign vessels that had visited other ports, met up with another vessel, or fueled via a tanker²¹. These vessels supply the StarKist Samoa cannery. Cannery staff and stevedores were allowed onboard to offload product, but the crew were not allowed to depart vessels. The Department of Health has maintained diligence to ensure crew are safe and limiting exposure to local populations. Given ongoing travel restrictions, many skippers and crews were not able to return home during 2020.

Measures to Restrict Community Spread

In addition to measures meant to restrict the arrival of COVID-19, each island group took further steps to reduce community spread under the assumption, or reality that COVID-19 was present. Regulations came through government office directives^{22,23,24,25} and included rules that limited movement within the community such as stay-at-home orders, curfews, business hour restrictions, and closures of public spaces, as well as restrictions on the number of people that could be in one place or in close contact such as limitation of business capacity, the number or people allowed to gather together, and social distancing and masking rules. Government offices and schools were also often closed.

¹⁶ [Marianas Variety, 04/06/2020](#)

¹⁷ [Samoa News, 09/20/2020](#)

¹⁸ [Samoa News, 09/16/2020](#)

¹⁹ [Samoa News, 06/18/2020](#)

²⁰ [Samoa News, 02/92/2020](#)

²¹ [Office of the Governor, ASG, Fourth Amended Declaration of Continued Public Health Emergency](#)

²² [Hawai'i State COVID-19 Emergency Proclamations](#)

²³ [Guam Office of the Governor Executive Orders](#)

²⁴ [CNMI Office of the Governor Executive Actions](#)

²⁵ [Office of the Governor, ASG, Second Amended declaration of continued public health Emergency](#)

Hawai‘i

The state of Hawai‘i implemented numerous protective measures to prevent the spread of the novel coronavirus beginning in mid-March 2020, including social distancing (March 13), cancellation of public gatherings (March 15), and a statewide stay-at-home work-at-home order (March 25). Along with many other states, these restrictions were slowly relaxed in 2020 between the months of May to July, as the islands staged an incremental reopening strategy. However, due to a surge of cases in August 2020 (Figure 4), the islands returned to a strict lockdown with renewed statewide stay-at-home orders for a 4-week period (August 27 – September 23).²⁶

Guam

Guam implemented strict protective measures to prevent the spread of the novel coronavirus including, social distancing, cancellation of public gatherings, a public emergency declaration (March 14), island-wide stay-at-home work-at-home order and closure of non-essential businesses (March 19).²⁷ These restrictions were relaxed, and then re-established in reaction to a surge in COVID cases in September, and lasted to the end of the year (Figure 4).

CNMI

The CNMI implemented strict protective measures in March 2020 to prevent the spread of COVID-19, including a public emergency declaration that ordered social distancing and cancellation of public gatherings coupled with a stay-at-home, work-at-home order (March 17).²⁸ A few days later this was followed up by a curfew from 7 pm to 6 am,²⁹ and business hour restrictions from 6 am to 1 pm, and March 24.³⁰ Just more than a month later, curfew hours were relaxed to 10 pm – 5 am (May 3),³¹ and then further narrowed from 2 am to 4 am in September.

In Saipan on March 30, there were also closures of the marinas and all but one boat ramp, and fishing boats were not allowed to travel past the reef. These restrictions were short-lived and lifted on April 4, due in part to the overall small number of COVID cases.³²

American Samoa

American Samoa implemented strict protective measures to prevent the spread of the novel coronavirus including social distancing and cancellation of public gatherings associated with a public emergency declaration (March 18), and island-wide, stay-at-home work-at-home order (March 24). Additionally, businesses were subject to a curfew of 6 am – 6 pm, and restaurants, bars, and nightclubs could serve only 10 or fewer customers.³³ By June 1, 2020, the business

²⁶ [Honolulu Star Advertiser. 09/09/2020](#)

²⁷ [Guam Office of the Governor. 2020. JOINT RELEASE: GovGuam to Close for 14-Day Period; Updated Information on Confirmed Cases.](#)

²⁸ [Marianas Variety Staff 03/16/2020](#)

²⁹ [Mariana Variety 03/24/2020](#)

³⁰ [Mariana Variety 03/24/2020](#)

³¹ [Mariana Variety 05/03/2020](#)

³² [CNMI Office of the Governor - Amendment to the Second Amended Executive Order 2020-04 to rescind Directive 17 – Boating Restriction](#)

³³ [Office of the Governor, ASG, Second Amended declaration of continued public health Emergency](#)

hour curfew was expanded to 5 am – 9 pm at 50% capacity, and gatherings of up to 150 were allowed,³⁴ and further eased a month later.

Fisheries Changes and Adaptations Under COVID-19

The impact of COVID-19 on PIR fisheries was multifaceted and interconnected. Interviewees often described how the government regulations put in place to limit arrival and spread of COVID-19 also affected their fisheries. Some of the biggest impacts were felt by the fisheries economies in the region that were built on tourism. The fresh seafood market and the charter fishing industry had to contend with an abrupt and dramatic loss of tourists. Other impacts of the loss of easy air and ship travel meant disruptions to export routes and the flow of fisheries labor and materials. At a local level, access to fishing and fisheries markets were also impeded by government decrees such as curfews, social distancing, and business capacity restrictions, which often impeded the flow of fish through commercial and non-commercial channels.

When assessing the interviews it was often hard to isolate the drivers of change, since there were often interacting reasons for the changes and adaptations people made to the fishing and fisheries. Many of the impacts were a combination of specific restrictions, and shifts in the market. For example, while charter fishing was not allowed early on in the pandemic due to COVID transmission concerns on board, even after the ban was lifted, the lack of tourists still kept many charter fishing businesses closed. In other cases, lack of access to fishing or markets were due to stay-at-home or curfew regulations; but in some cases, it was people self-regulating in fear of contracting or spreading COVID. This is exemplified by one fisher who explained:

“I lessened going out in the water to catch just for personal consumption due to stricter curfew time and all movement either be store, gas station, etc. I believe that in time of crisis sometimes we have to [sacrifice] practices over safety until everything settles down. (February 2021, #5, Rota)”

The fisheries of the Pacific Islands Region adapted to the rapid contraction, localization, and isolation of their economies and fisheries. Within commercial fisheries, initial adaptations limiting fishing effort and catch to not flood the market with seafood that was no longer in demand. In some cases boats tied up all together, but others adapted by shifting to local demand by catching less, and in some cases, different species. Other fishers adapted by doing their own sales and marketing through social networks. Marketers similarly adapted by moving from an export to retail sales strategy, or from a tourism to local market. The limitation on travel, particularly of fisheries labor, led to increasing focus on finding local labor sources. Beyond the fishers, the community wide effects of COVID-19 on livelihood and food security led to an observed increase in people fishing from shore for subsistence and recreation. Many fishers also donated their catch to their communities to meet the increased need.

Not all fisheries actors were affected in the same way. Larger boats with higher operation costs tied up rather than operate at a loss. By contrast, those entities that already had a localized business model were better able to weather the changes brought on by COVID, and in some

³⁴ [Office of the Governor, ASG, Fifth Amended declaration of continued public health Emergency](#)

cases, they thrived. For example, an O‘ahu-based community-supported fishing business was able to increase its capacity, and the amount of fish it bought and sold.

The type and extent of the impacts varied by fisheries perspectives, and by island. In this section, we will describe some of the major impacts described by the interviewee groups, drawing on examples from across the fisheries sector, and across the region. We will also describe the adaptations made by those in the fisheries to these new realities. We will focus first on the impacts that were a result of the drop in air travel and freight, and then examine the major impacts of localized regulations meant to stop community spread. Finally, we will explore indirect impacts on food security widely shared by interviewees, and cite additional information from available fisheries data in the region (Hospital et al. 2021).

Drop in Demand for Fresh Seafood

For the fresh seafood commercial fisheries, the biggest impact came from the dramatic decrease in tourism, which rolled through the island economies of Hawai‘i, Guam, and CNMI. The tourism industry is a major player in the demand for fresh seafood, which is supplied by both the longline industry operating out of O‘ahu, and the smaller boat fisheries found throughout the islands of Hawai‘i, Guam, and CNMI.

O‘ahu Longline Fishery

The Hawai‘i longline fleet suffered an estimated 40 million dollar revenue loss in 2020 (Hospital et al. 2021), and interviewees from the O‘ahu longline attributed the drop in market demand primarily to the loss of tourism. As one longline interviewee explained:

“[T]he lack of visitors would probably be the number one issue that we contended with. (February 2021, #35, O‘ahu)”

The change came quickly in mid-March and had an immediate impact on Honolulu’s seafood market. One longline fish marketer described:

“It was Saturday, March 14th when the market for longline landed, longline caught seafood crash... the market actually did crash. (June 2020, #37, O‘ahu)”

While the quarantine restrictions on tourists didn’t go into effect until March 26, 2020, The number of flights and passengers had already dropped by early March (Figure 5, Figure 6), thereby creating an oversupply of longline fish catch. One boat owner described being caught in that rapid change, including the drop in the price of fish:

“Really at the vessel production level, when COVID first happened and the governor almost abrupt announcement of the closure of tourism and tourism-related industries in Hawai‘i including the food service sector, we had vessels actually still on the water, you know, intending to land over the next few weeks back in March 2020. And so, you know, a huge issue. A lot of supply coming in with no place to go. Restaurants closed. Hotels closed. And then and so the impacts there were almost immediate. Price crashed at the block from, you know, averages of three or four bucks (\$3-\$4) all the way down to under a dollar (\$1.00). Backlogs of almost two (2) weeks before vessels could get unloaded” (February 2021, #34, O‘ahu)”

Other factors that contracted and localized the market O‘ahu longline catch was the drop in the market demand from the continental United States, combined with the loss of export routes. As one longline marketer explained, in an ideal scenario:

“Planes have to come in with tourists and have to leave with fish product.” (June 2020, #37, O‘ahu)

However, with the drop in flights in and out of O‘ahu (Figure 5), one interviewee described the subsequent impact on cargo space:

“[W]ith the restriction on the visitor market, we also lost a lot of air cargo space to get some of our products to the Mainland market. (September 2020, #49, O‘ahu)”

Four different longline interviewees noted that the loss of direct export routes increased the time and cost to the transport of fresh seafood products to the continental United States.

While there was an increased demand from the continental United States in May and June (Hospital et al. 2021), the rise in COVID cases later in the summer and matching restrictions led to instability in demand throughout the rest of the year. The drop and fluctuation in demand and fish prices, along with rising fuel and bait costs, meant that making a return on investment for fishing trips was precarious, particularly for the larger vessels.

Throughout 2020, the O‘ahu-based longline fishery made several adaptations in response to the dramatic change in market conditions. The first step was to limit the flood of fish on the market in an attempt to match smaller and more localized demand. Vessels were asked to limit their catch per trip to 15,000 lb, and the UFA limited its daily sale of catch to 60,000 lb, in effect limiting incoming boats to 4 per day. This restriction was later dropped in July when there was a seasonal decrease in catch rates, and it was not reinstated because the demand had slowly increased to meet supply during the peak season at the end of the year.

A few vessels tied up in March and did not fish throughout 2020, but most of the fleet continued to fish with only small reductions in the number of trips compared to the previous year (Hospital et al. 2021). The cost of not fishing (\$10,000–\$15,000 per month) may have been one factor in the decision to keep fishing, although the importance of the longline fleet to the food security of the island was also highlighted by many in the longline fishery (see the section on Food Security).

Small-boat Fisheries

When the supply of fish from the longline fisheries outpaced demand, the subsequent drop in prices also had the effect of edging out the small-boat fishing product from the auction. One small-boat fisher explained:

“Whatever happens to the longline fishery, has a trickle-down immediate effect on the small boat fishery, because they have the higher-grade tuna. And, when their price goes down or the supply gets over-supplied, there’s really not much desire for the locally caught fish.” (June 20.20, #36, O‘ahu)

The drop in tourism was also felt by the commercial and quasi-commercial small boat fisheries in Guam and CNMI. Half of the small boat fishers interviewed from Guam and CNMI discussed the drop of tourism and the impact on the fishery. One Saipan fisher explained:

“Before the COVID, we were able to go fishing regularly because there are lots of customers—tourists, restaurants and hotels are open. But, when the COVID-19 started, we hardly go out anymore. So, we don’t have any consumers... or customers, or buyers for the fish. Right now we just rely on the local market...Because the tourism is... until now it’s shut down. No tourists on our island. And then... that has a domino effect on the economy of our island. It’s a small island, you know? And without the tourists, all of us fishermen are just competing with the local market. So, it’s hard...We just catch small and sell small for the community, that’s it.” (February 2021, #7, Saipan)

Similar to the O‘ahu longline fleet, adaptations made by small boat commercial fishers included limiting their fishing and their catch so as not to flood the market. In Guam, a fishermen’s co-op member explained:

“[A]s a responsible [Co-op] member, you don’t want to flood your market and you don’t want your market to be affected. So just because we didn’t have a decrease in opportunities to fish, I can vouch for myself and other members that we still felt for the association and we limited the amount that we would sell to the Co-op and we would just give more to our family and friends in the community than we would normally give.” (September 2020, #16, Guam)

Other than reducing catch, small boat fishers also described taking shorter trips to reduce costs, or shifting gear and target species to focus on fish better suited for the local market. One small boat fisher from O‘ahu described his strategy:

“So, ‘ōpaka and onaga prices were still strong for farmers’ market related-type catch. Especially... even though restaurants were closed and demand was low, still those bottomfish held their value. So, I did less trolling, less ‘uku and more bottomfish effort, personally.” (September 2020, #48, O‘ahu)

The loss of markets, and in some cases vendors, also led many small-boat fishers to market their own catch, either by using social media, or on the side of the road, while others relied on personal networks to sell their fish. While some fishers described the increasing prevalence of fishers doing their own marketing, they also were not very excited by the innovation:

“[Y]ou know, for me, I’m more of the fisherman. I just want to go out and catch and basically sell my fish to one store or one outlet and then go fishing the next day. I don’t want to sell fish, I just want to catch it.” (September 2020, #17, Guam)

Fisheries Markets

The loss of the tourism industry also had a profound effect on fisheries marketers and restaurant owners. Loss of revenue was a common theme, and marketers and restaurant owners have responded by reducing staff (Hospital et al. 2021). In other cases, wholesale marketers, designed

to cater to the large volume tourism and export markets, have had to shift to the localized retail market. One interviewee explained why that shift was a difficult one:

“[T]he wholesale fish market is typically selling to large accounts, like restaurants, restaurant groups, other wholesale distributors. And, when the pandemic basically slashed the hospitality industry via the lockdowns all these fish houses were unable to move the quantities of fish that their business models are based on. And so what I’ve seen throughout the industry is a rapid exploration—and, in a lot of cases—adoption of retail models. So, fish houses that before were just moving large quantities of fresh fish to restaurants, restaurant groups, other wholesalers, instead they were trying to sell direct to the consumer. And this is a really hard thing to do because... [in wholesale] one customer is taking maybe a couple hundred pounds a couple times a week, and then you know maybe some other customers are taking even more than that. You know, thousands of pounds. So then a shift to retail... now you’re selling one pound quantities, three (3) pound quantities. So, that’s the shift I’ve seen.” (February 2021, #33, O‘ahu)

By contrast, companies that were already focused on the local, rather than tourist, market fared better. One restaurant owner explained:

“We’re very fortunate we still have our loyal customer base to keep us afloat and the businesses around our area, like a bunch of us, we’re really fortunate for that.” (July 2020, #43, O‘ahu)

In another case, local buyers working directly with small boat fishers were able to expand their business.

Drop in Tourist Demand for Fishing Experiences

The loss of tourism also had an immediate and dramatic impact on the charter fisheries. The five charter fishers we interviewed from, O‘ahu, Moloka‘i, the Island of Hawai‘i, and Guam, all shared the loss of clients in 2020. One fisher described it:

“The last two weeks of March were looking really good. Even this whole summer, June, July... I had so many people booked. And, after the pandemic and the COVID-19, it’s just like every single one cancelled. I was like... every email I’m looking I was getting depressed, like looking at emails like: ‘Ah!’ Because every single email I got was all cancels. It just got cancelled down the whole board from like all kind of trips to like nothing. Nothing at all.” (June 2020, #41, O‘ahu)

Tournaments were also cancelled due to concerns over COVID-19. While the “Safe Travels” program in mid-October in Hawai‘i and military clients in Guam provided some business later in the year, overall it was a devastating year for the charter fishing industry in the PIR (Hospital et al. 2021).

Some charter fishers described decreasing prices and attempting to market to the local population, while one explained that he used the charter boat to do commercial fishing:

“[W]e’ve been taking out [our boat] just about once a week or once every other week just to keep her running. You know, so, we take her out commercial fishing.” (June 2020, #39, O‘ahu)

Restrictions on the Movement of Labor

While the loss of tourist markets had a profound impact on Hawai‘i, Guam, and CNMI commercial fisheries, the impacts of COVID to American Samoa were quite different. These impacts were due mostly to restrictions in the movement of fisheries labor and materials due to severe restrictions on air travel, and in some cases container ships.

These travel restrictions affected the purse seine and longline fishery, as well as the Starkist Samoa cannery. For the purse seine fishery, the port restrictions meant they could not leave their vessels. As one resident in American Samoa explained:

“These seiners go out for months at a time. One (1), to two (2), to three (3) months and you can’t go home—it’s tough...[C]rews and freighters that come in—same as the fishing boats—have to stay onboard. They can’t leave. It’s really tough for these seiners, but somehow they make sure it works.” (February 2021, #3, Tutuila)

And while the observer program has been paused due to an inability to get observers into American Samoa, a great deal of effort has been expended on getting the observers that were stuck there back home.

For the longline fishery, the border restrictions have made it much harder to find crew. Many of the fishing crew originate from Apia, in Samoa, and travel restrictions prevented international workers from returning to American Samoa. This has put increased pressure on the longline fishery that is already under considerable strain (WPFMC 2018). Some longline boats adapted by sharing crew members or hiring locally. In August, travel exceptions were made for specialized workers, including fishing crew, to travel from Samoa.

Limited Access to Fishing

While the drop in tourism was precipitated by loss of air traffic, localized efforts to stop the community spread of COVID also had an impact on people’s ability to fish, and to buy and sell fish through access to markets, stores, and restaurants.

Access barriers to fishing were reported by charter, small boat, and shoreline fishers, but the specific barrier differed by fisheries, and by location. Several interviewees reported that charter fishing, in Hawai‘i and Guam, was suspended when the first stay-at-home orders were enacted due to safety concerns on board. Small boat fisheries were curtailed, particularly on Saipan, through the closure of access points in the marina and all but one boat ramp (the final boat ramp being closely monitored). Additionally interviewees from Saipan and Tutuila described how curfews limited night fishing. One interviewee explained:

“[O]n March the 30th, we had a curfew implemented from seven o’clock p.m. to six o’clock a.m. [T]hat curfew basically stopped all nighttime spearfishing. It also pretty much put the kibosh on bottomfishing.” (September 2020, #10, Saipan)

Finally, interviewees from Saipan, the Island of Hawai‘i, Maui, and O‘ahu described the closure of public beaches and beach parks limiting shoreline fishing. On O‘ahu, while fishing was allowed, sitting on the beach was not, which led some people to decrease their fishing for a time:

“When the no sitting on the beach thing came up with all of this COVID restrictions... That’s when I first noticed the decrease in my father and I going because we don’t necessarily whip, we mostly dunk. So, it was a little bit more difficult because we didn’t want to get in trouble for sitting on the beach or doing something that was deemed illegal at the time.” (June 2020, #42, O‘ahu)

Several interviewees from Hawai‘i and Guam described confusion over the rules, particularly as it related to their ability to fish. One small boat fisher for the Island of Hawai‘i explained:

“[W]hen the charter boats were suspended... initially, mistakenly, a lot of the small boats thought: ‘Oh, well, we can’t go out either.’ So, actually I didn’t go out. And, it took me two, three weeks to figure out that there was no restriction on small boats other than, I guess, the restriction at that time was you cannot have more than a certain number of people if the number of people were from the same household, in which case—my case, I fish alone or I fish with my wife—so, that rule allowed me fish but I didn’t know that.” (June 2020, #20, Island of Hawai‘i)

Some of the strictest access restriction rules came from Saipan. These included the boat ramp closures, spatial restrictions not to fish outside the lagoon, and later strict curfews shutting down the beaches from 7 pm to 6 am. One small boat fisher explained the impact of the curfew:

“[T]here was a limited fishing... only daytime. Nothing happened at night. And there was... was like heavy monitor and heavy penalty if, you know, you come in after the hour or if you... if they find you on the road before seven (7:00) o’clock in the morning. So it was really bad for the fishermen. Because you have a time limit to hit the fishing ground and head back. So we’d just have to fish closer to the land or in the lagoon and it was kind of crowded because everybody wanted to go fishing but nobody wanted to go far because of the time.” (February 2021, #8, Saipan)

These strict measures in Saipan were perceived to be a response to one of the earliest COVID cases and deaths occurring in the fishing community:

“So when they [the government] found out that it’s... from a fishermen... then there were more strict... to the fishermen again... So they shut down all the fishing markets.” (February 2021, #8, Saipan)

In response to these restrictions, fishers adapted their fishing. In Saipan, some people avoided being on the road during curfew by camping out:

“[I]f you were caught on the road driving during the curfew you were fined... I knew people that would go to Lau Lau Bay. They’d take their tent, they’d go out fishing, cooler and ice, and they’d just spend the night and come in after the curfew. Where there’s a will there’s a way. Right?” (September 2020, #10, Saipan)

However, in Saipan in particular, fishers petitioned the government to have severe restrictions on fishing lifted, as it was limiting access to an essential food source.

“[W]hen they closed everything to fishing, the community got together and submitted a petition to the governor requesting that the governor relax some of the restrictions that prohibited fishing activities. And, he did respond by relaxing, I believe, the curfew.” (February 2021, #8, Saipan)

Limited Access to Fishing Markets

Just more than half of the 30 interviewees who discussed impacts on fishing markets and restaurants described some type of limitation to market access. The two most common limitations were markets, stores, and restaurants being closed, or opened but with limited capacity or limited hours.

In some cases, the market closures limited people ability to buy fish:

“So, the markets closed and there was basically no fish available, except for those fish that went out fishing for their own benefit and own consumption.” (February 2021, #8, Saipan)

Even in cases where the drop in tourism was not an issue, small boat fishers were still having trouble selling to restaurants catering to the local population due to capacity and hour restrictions on restaurants and other business. In American Samoa, one interviewee observed:

“As far as the small boat fishermen, the restrictions on the COVID Emergency Declarations, you know, impacted business hours for restaurants and what have you. So, you know, sales to the restaurants were impacted. And that mainly affected the small boat commercial fishermen. But, late last year, I think it was in the fourth (4th) quarter, the business hours were extended, so, fortunately, it helped the small boat fishermen in selling some of their catch.” (February 2021, #50, Tutuila)

The government restrictions meant to lower the community spread of COVID had profound effects on business. Changing rules and regulations in this dynamic situation made it harder to plan and lead to frustration:

“They buy fish, or they buy commodities that are perishable to prepare for the next day and then they are told to shut down. So, everybody is weary and cautious and worried about, you know, they could get tapped again. We don’t know what the government is going to tell us tomorrow.” (September 2020, #13, Guam)

In the case of the Honolulu Fish auction, limitations have been seen by both sellers and buyers. When there was a surplus of fish on the market, small boat fishers were not able to sell their product through the auction. Additionally, restrictions on the number of buyers allowed on the auction floor meant some smaller businesses no longer had access.

The Ever Looming threat of COVID-19

COVID is a present threat in the PIR. Even with the introduction of the vaccine in late 2020, island communities and aspects of fisheries are particularly vulnerable to the spread of COVID:

“The number of South Pacific island countries are still COVID-free, so they’ve closed their borders and eventually they’re going to have to start opening up and situations like fishing vessels, canneries, they’re just potential COVID hotspots. So, I don’t think the fisheries are ever going to be the same. They’re going to be operating kind of with this hammer over their heads looking to deal with outbreaks as they might occur.” (June 2020, #36, O‘ahu)

Fisheries folks across the PIR have taken precautions to mitigate the risks of contracting or spreading COVID. Early in the pandemic, many decided to stay at home. One gear seller explained:

“I closed the shop voluntarily. Fishing stores are considered essential, so while that was considered an option, again, my particular part of the fishing involves a lot of tourists and tours and visitors. And, at that time I didn’t really want to expose my guys and myself to whole lot of people who may have been infected. So, we closed from the time when the mandated closure of non-essential business and then we re-opened at the beginning of May once the caseload went down.” (July 2020, #44, O‘ahu)

In another case a fisher explained how he worked hard to convince the younger generation to take the stay-at-home order seriously:

“[W]hen it first started, this COVID started, you know, everybody said: ‘The younger generation was far more safer, but they were the spreaders,’ trying to get that across to them that they needed to think about their grandmother here and the other elders within our family.” (February 2021, #11, Guam)

Still, others have decreased their fishing, specifically because of the community contact needed in preparation for the trip, and the possibility of spreading it amongst the crew:

“We’re thinking twice about it. If the positive cases are high, me and the crew, we just look at it and be like: ‘Hey is it worth it to go?’ Because even though fishing is one (1) or two (2) or three (3) people on the boat which is stuck in a small area, all the pre-fishing things you have to do like food, drinks, bait, tackle, all the running around takes... if we feel that there’s an added stress then we won’t do it. So that’s why now we pretty much go fishing every other or maybe once a month.” (September 2020, #14, Guam)

In light of potential spread while on board, several small boat fishers mentioned fishing by themselves, or only with the same limited number of people:

“[B]efore COVID... when someone was interested in fishing, someone needed fish, we’d always invite them. We would always be open to anyone wanting to see what we do. But now we just stick with it ourselves.” (September 2020 #14, Guam)

Other have appreciated fishing methods that allow for isolation such as diving:

“I’ve been doing a lot of diving lately. So, lots of diving, which is a great way to minimize contact with like people on the shoreline and stuff because basically you walk into water, right? And you’re not interacting with any tourists.” (July 2020, #23, Island of Hawai‘i)

In other cases fishers and marketers take advantage of strategies to social distance, or minimize contact. One shore fisher observed:

“I noticed that all the fishermen themselves were all maintaining distancing, so, you kind of just throw shaka at the guys but you never actually interact with people on the shoreline.” (July 2020, #23, Island of Hawai‘i)

Small-scale marketers have also adapted by using outdoor venues, non-cash transactions, as well as socially distancing and wearing masks during sales.

Food Security, Sustaining Community

Interviewees from each island group described some type of food security disruption, or increase in the demand for food assistance. Many interviewees also mentioned the importance of fisheries to the food security of the islands. One interviewee explained:

“[T]he wild capture fishing as a food system in Hawai‘i is very, very, very important to us. It’s a natural island food. I mean, we’re surrounded by water, ocean, and, limited by land, land space. So, it’s a natural thing for us to be doing.” (September 2020, #49, O‘ahu)

The O‘ahu longline fleet was also highlighted as a key source, not just of food, but as the primary producer of protein in the State of Hawai‘i. One longline owner explained:

“You know when the container ships were out of beef and chicken and people were scrambling to bacon and canned goods and everything... the shelves were just empty. And here we were, you know, the fishing industry as a collective unit telling all of our retailers, tell our community: ‘Hey, we’ve got fresh fish. And we’ve got a lot of it. So, do not worry about food security in that sense. We’ve got fresh protein for you guys.’” (February 2021, #34, O‘ahu)

The importance of the small boat fisheries on O‘ahu and Guam were also shared, as was the role of the local subsistence fisheries in American Samoa:

“[M]en and women that have small boats and fish for recreation expense, recreation or part-time commercial, they are likely to be very successful in this time period because they are catching food for themselves, their families. And, fortunately, you know, our grocery stores are staying open right now, but, you know, if things get really, really deep with a really serious pandemic, you know, those people will come out still providing food for their communities and their families.” (September 2020, #48, O‘ahu)

“On Guam, you know, tourism was our thing, just [Hawai‘i]. And million-dollar businesses shut down. And the fish markets that supply the community have been there. They’ve been running as an essential business. Fishermen have been going, fishermen have been around before any of these big businesses and now, fishermen, you know, lived through this COVID thing so far.” (September 2020, #14, Guam)

“[W]e need to make sure that we don’t do anything to shut down [local subsistence fishers] access to the huge amounts of the protein that we have in the Islands.” (January 2021, #2, Tutuila)

Interviewees also shared adaptations that people made to increase food security for themselves, their families and their island communities. For example, many interviewees observed an increasing number of people fishing. One Maui fisher described the increase:

“The difference I see fishing right now, probably the most I’ve ever seen in growing up in Lahaina. Everybody is fishing now.” (June 2020, #30, Maui)

This was especially true of low cost fisheries such as shoreline fisheries. One fisher explained:

“You just drive up to the shoreline, you walk out on the pier, sit on your bucket, maybe you’ll catch dinner. So, the input cost is almost zero (0). And, that kind of thing is becoming more popular.” (June 2020, #20, Island of Hawai‘i)

Increasing food insecurity was often given a reason for the influx, although it was also interlinked with unemployment, and people having more time. Fishers from Lāna‘i, the Island of Hawai‘i, and Guam described this influx of fishers:

“But, what I have seen with COVID and how it affected the tourism industry and how the resorts was heavily affected by it and being shut down... a lot of the people because they weren’t going to work is they went fishing. So, a lot of our town went fishing.” (June 2020, #28, Lāna‘i)

“I think sometimes with the extra time people have they are actually fishing more, whether it be out of recreational fun or out of, you know, economical need.” (June 2020, #22, Island of Hawai‘i)

“[B]ecause of the situation [COVID], more people turned to fishing to survive.” (February 2021, #11, Guam)

This influx of new fishers was also captured in the increased demand for fishing gear. One tackle shop store owner shared the following:

“There was a reasonable amount of traffic and sales within the store to accommodate what might be considered an increase in recreational and small-scale commercial fishermen activity related to people being out of work and feeding their families.” (February 2020, #35, O‘ahu)

For others, fishing was simply described as a safe outdoor activity. In some areas fishing was the only activity allowed, and so fishing is what people did!

“A lot of people that I didn’t never see in my life down here, they’re holding up pole just to get out of the house and they can’t get bothered by the DLNR or the cops because they’re fishing. They’re allowing fishing, yeah.” (July 2020, #24, Island of Hawai‘i)

“The difference I see fishing right now, probably the most I’ve ever seen in growing up in Lahaina. Everybody is fishing now.” (June 2020, #30, Maui)

In some cases, the fishing effort didn’t change, but what happened to the fish did. Several commercial fishers described keeping more of their catch and filling their own freezer because it couldn’t be sold. One fisher from Saipan shared:

“Subsistence fishing has increased. Increased for personal use, giving to the neighbors, giving to friends...Having birthday parties, they want fish on their tables, wedding parties, they want fish on the tables. That’s basically the norm now that most fishermens are going out and I’m seeing a new faces of fishermens with small boat, just for subsistence fishing.” (February 2021, #9, Saipan)

A few fishers who typically fish for recreation, or as part of a charter outfit also described a shift to subsistence fishing. One shoreline fisher explained:

“[B]efore things got a little weird...if I would go out and fish and catch, say, a five (5) pound omilu, I would probably ninety-five (95) percent of the time let that fish go. Since this has happened, I would say, I’ve probably doubled or tripled the amount of fish that I’ve kept to eat at home.” (June 2020, #21, Island of Hawai‘i)

In one case a small boat fisher explained that he would take different people out fishing so that they had a chance to bring food home to their family:

“Pre-COVID with people having to work their regular hours, finding fishing partners was hard sometimes. But now that it’s COVID, everybody wants to go fishing with you, so you find yourself in the predicament of having a lot of people that want to go fishing. One, because they have time, but two, because they know that if they go fishing with you they get a portion of the catch. So, it’s an opportunity for them to get fish for their household. So, through the COVID months, I’ve had various opportunities to bring different people onboard and give them the opportunity to partake in a share of the catch, much more than I would normally have done pre-COVID.” (September 2020, #16, Guam)

Many interviewees also described an increase in sharing fish with the community. In some cases this was through partnerships with food banks. In April, the Hawai‘i seafood industry donated around 2,000 lb. Hawai‘i Foodbank, and later that summer a “fish-to-dish” program was established and donated about 350,000 servings of fresh fish to those in need (Hospital et al. 2021). One longline owner explained:

“We donated a lot of fish and still continue to donate a lot of fresh fish to, you know, nonprofits that serve food to our kūpuna, to our neighbors, to those in need, to those who are facing hunger crises. And so, you know, maybe 2020 wasn’t a profitable year in terms of the bottomline, but it’s allowed us to really focus on what we can do, you know, as a food producing partner in the community.” (February 2021, #34, O‘ahu)

There were also fish donation programs, such as Sustainable Moloka‘i, on other islands. One small boat fisher from Moloka‘i described why he participated:

“I mean, I’m not making very much money, but I’m doing it more as... it’s kind of a labor of love if you may. To help my community. But I feel good about it. It’s not like I’m sittin’ here, twiddling my thumbs doing nothing, you know, at least I’m being productive and helping out the community and feeding... I’m not saying feeding the poor, but, feeding the hungry, you know what I mean?” (June 2020, #31, Moloka‘i)

At a smaller scale, interviewees also described sharing and bartering fish amongst their community, often with an emphasis on community building and increasing resilience. Three fishers from Hawai‘i shared their experiences:

“[T]hat’s been another impact of the pandemic is definitely more trading with friends. Sharing different fish. And, I think from a sustainability perspective it’s great that people are more open to cooking their own fish at home because it’s a lesson in using the whole fish rather than going to the market and maybe getting a filet that’s already cut up for you.” (September 2020, #45, O‘ahu)

“In the beginning, the panic mentality ‘wen kick-in for a lot of people, yeah? ‘Oh no more a dis, no more a dat, what could happen?’ And, for me, it’s like: I keep telling everybody that be glad we live on Lāna‘i because our community’s small so we gonna help take care of whoever needs help with whatever stuff they do no more. It’s like—we might not have a lot of it, but we have some that we can share at any given time.” (June 2020, #28, Lāna‘i)

Value of Fish, Value of Fishing

One clear theme from many interviewees was the hope that the pandemic would highlight the value of the region’s fisheries to the local communities and governments. The value of fishing was closely tied to their role as a source of food security. A small boat fisher from Guam expressed:

“I just really hope that our leaders can see how fishing has lasted. On Guam, you know, tourism was our thing, just like you guys. And million-dollar businesses shut down. And the fish markets that supply the community have been there. They’ve been running as an essential business. Fishermen have been going, fishermen have been around before any of these big businesses and now, fishermen, you know, lived through this COVID thing so far. And it would be really nice to get taken seriously on the island.” (September 2020, #14, Guam)

This sentiment was shared by a fisheries research in Kaua‘i:

“[O]ur fresh fish and seafood...is finally getting attention as important for Hawai‘i’s food security...you don’t see fish and seafood...being mentioned at the same time as agriculture, as far as that food security concern. And, hopefully that is going to change as everybody now understands that fishermen are now providing food to our islands during COVID shutdown times.” (August 2020, #27, Kaua‘i)

There was also an expectation that the value of fishing would increase:

“I have expectation that fishing, fish value and the importance of eating fish and catching fish will maintain. And, if anything, I think it will increase because it’s one of those really valuable skills that you can do by yourself or just one or two other people and you provide a food resource where you are catching and supplying a healthy, sustainable protein even when COVID could possibly really limit shipping and processing.” (September 2020, #48, O‘ahu)

Looking Back, Planning Ahead

While some people were eager for things to return to the way they were pre-COVID, others saw this as an opportunity for change. Many respondents, particularly those whose livelihood were connected to the tourist industry, wanted things to return to a pre-COVID “normal”:

“I really hope that everything gets going again. Because a lot of boats, a lot of the charter businesses won’t be able to hold out for another I don’t know... few months or something. Definitely need to open back up the tourism aspect of Hawai‘i. I think that kind of goes for all of the industries here in Hawai‘i almost.” (August 2020, #25, Island of Hawai‘i)

In contrast, others described it as an opportunity to showcase the resilience and importance of the fisheries and the PIR island communities. One fisher explained the transformation:

“[E]verybody was in shock. They didn’t know what to do. Everybody went to the grocery store, but then it took a little while and it settled down and they figured out: ‘Wow, I can do this.’ So they stayed at home, they farmed, and then they started going to the beach and they started fishing. Because they can.” (June 2020, #29, Maui)

Others still expressed desire for deeper changes to bring about long-term resiliency. This was often expressed as a desire to continue the localization of value chains, and move away from a dependence on a tourist economy. A business owner in Guam explained:

“I think that this more than anything has taught us that we have to take care of our local community. Not just fishermen, but our farmers, local businesses period. Because we have to take care of each other. The tourists aren’t going to do it, you know?” (September 2020, #15, Guam)

Discussion

COVID-19 affected fisheries around the world, with similar themes of market disruption, shifts in fishing and marketing strategies towards smaller localized economies, and increased focus on the value of fisheries as a source of local food security (Bennett 2020, Campbell 2021, Havice 2020, Ruiz-Salmón 2021). The diverse fisheries of the Pacific Islands Region adapted to COVID-19, primarily as a shift from a national and global economy, to a local one. The demand for fresh seafood by visiting tourists and the continental restaurants was rocked by the restrictions of COVID-19. Similarly, the demand for fishing experiences evaporated as tourists cancelled their charter fishing adventures. Fishers caught less, marketers shifted to retail or social media, labor shortages met with local labor, and the island community went fishing to feed themselves and their families, and their communities in a time of need.

All island groups also contended with shifting regulations that impacted access to fishing, and fishing markets. While many of these regulations were relaxed as COVID numbers declined, COVID has persisted and returned stronger than ever despite the introduction of vaccinations. The possibility that the regulations and restrictions could return creates a dynamic situation, making it difficult for businesses to plan ahead. We have highlighted the changes and adaptations brought about by COVID-19 to the PIR fisheries. By bringing in the experience and voices of the people on the ground, the human impact of these changes is clear and personal. While this report has focused on COVID specific impacts, it sits within a larger consideration of the ability of the fisheries to be resilient to rapid changes such as the climate change events.

Acknowledgments

We express deep gratitude to all the members of the fishing communities of American Samoa, Guam, CNMI, and Hawai'i who took the time to speak with us. Thank you for sharing your experience and knowledge with us.

Literature Cited

- Bennett NJ et al. 2020. The COVID-19 Pandemic, Small-Scale Fisheries and Coastal Fishing Communities. *Coast Manage.* 48(4): 336–347.
- Campbell SJ et al. 2021. Immediate impact of COVID-19 across tropical small-scale fishing communities. *Ocean Coast Manage.* 200.
- Glaser B, Strauss A. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research.* Mill Valley, CA: Sociology Press.
- Havice E et al. 2020. Industrial seafood systems in the immobilizing COVID-19 moment. *Agric Human Values:* 1–2.
- Hospital J et al. 2021. Updated Impact Assessment of the COVID-19 Crisis on the U.S. Commercial Seafood and Recreational For-Hire/Charter Industries January–December 2020.
- Mangubhai S et al. 2021. Politics of vulnerability: Impacts of COVID-19 and Cyclone Harold on Indo-Fijians engaged in small-scale fisheries. *Environ Sci Policy.* 120: 195–203.
- Rollins E, Lovell S. 2019. Charter fishing in Hawaii: A multi-region analysis of the economic linkages and contributions within and outside Hawaii. *Mar Policy.* 100, 277–287.
<https://doi.org/10.1016/j.marpol.2018.11.032>,
- Ruiz-Salmón I et al. 2021. The fishing and seafood sector in the time of COVID-19: Considerations for local and global opportunities and responses. *Current Opinion in J Environ Sci.* 23.
- Sorensen J et al. 2020. From Bad to Worse: The Impact of COVID-19 on Commercial Fisheries Workers. *J Agromedicine.* 25(4): 388–391.
- Western Pacific Fishery Management Council. WPFMC. 2018. Annual Stock Assessment and Fishery Evaluation Report for U.S. Pacific Island Pelagic Fisheries Ecosystem Plan 2017. WPFMC. Available at: <http://www.wpcouncil.org/wp-content/uploads/2019/05/Pelagic-FEP-SAFE-Report-2017-Final-Revision-1.pdf>
<http://www.wpcouncil.org/wp-content/uploads/2019/05/Pelagic-FEP-SAFE-Report-2017-Final-Revision-1.pdf>