Pacific Islands Fishery News

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Dedicated to the support and management of ecosystem-based fisheries in the US Pacific Islands

Data is the Backbone of Fisheries Science and Management

Robust fisheries management requires solid science that relies on accurate data. This is the backbone of science and management. If the backbone is weak, the whole science and management undertaking becomes unstable. To create a sturdy management system, data collection needs to be improved to keep up with ever-evolving fisheries management.

The Western Pacific Regional Fishery Management Council funds projects through the Western Pacific Sustainable Fisheries Fund (SFF) that aim to improve the data collection system. These projects assist in the implementation of the existing data collection as well as initiate new data collection systems in areas that are not currently surveyed. Below are a few recent projects in Hawaii and the US Pacific Island territories.

The Tinian Fishery Data Collection Pilot Project (2013-2014) aimed to initiate the shore- and boat-based creel survey on the island of Tinian. The data collection effort in the Commonwealth of Northern Mariana Islands (CNMI) is mostly focused on the island of Saipan. Tinian coasts are inhabited by myriad reef-associated fisheries resources and are favorite fishing grounds for locals who spearfish. The project showed that spearfishing is the dominant fishery on Tinian while hook and line is prominent on Saipan.

The American Samoa Creel Expansion Pilot Project (2013-2014) aimed to increase the spatial coverage of the shore- and boat-based creel surveys

Snorkel spearfishing is the dominant fishing method on the island of Tinian.

on the northern shore of the island of Tutuila. This project characterized the fisheries in these areas and compared the results with the regular creel surveys conducted to determine the extent of data that are missed by not sampling those sites. Project leaders discovered that previous creel surveys missed an estimated 25 to 38 percent of the fishing activities.

The Database Analytics Project (2016-2017) supported the CNMI Division of Fish and Wildlife (DFW) in analyzing the data in the DFW database and provided a real-time summary of

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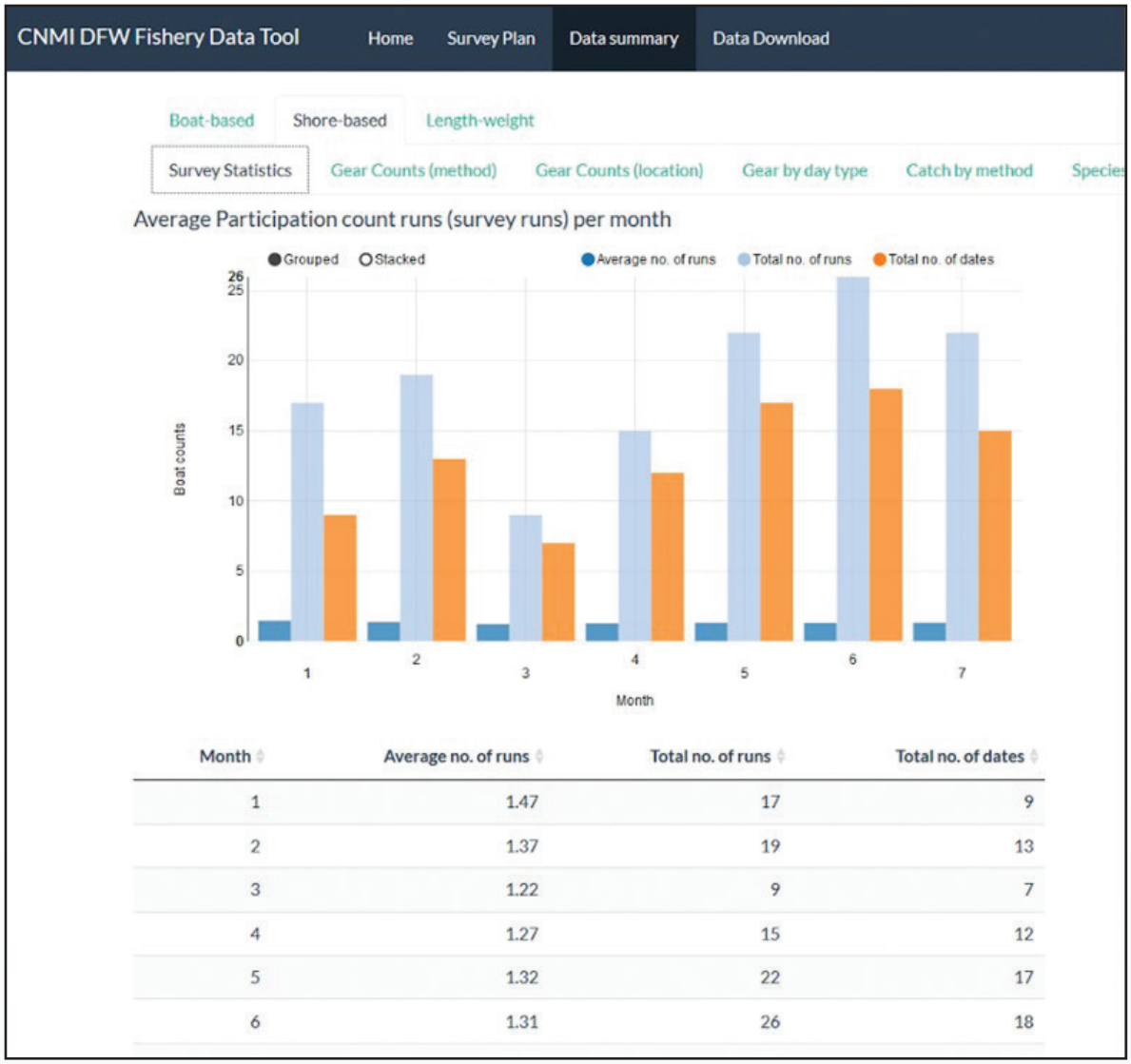
Data is the Backbone CONTINUED FROM PAGE 1



Month	Average no. of runs	Total no. of runs	Total no. of dates
1	1.47	17	9
2	1.37	19	13
3	1.22	9	7
4	1.27	15	12
5	1.32	22	17
6	1.31	26	18

Screen shot of the database analytics provided to the CNMI Division of Fish and Wildlife to support survey planning and real-time access to the data within their servers.

species and fisheries information through the software's dashboard. The project contributed to survey planning by providing the number of additional interviews that needed to be collected as soon as the data were entered into the database system. It also provided the Council access to the CNMI database system in response to the data sharing agreement.

The Pacific Islands Fisheries Research Program (2016-2019) was created to address the Council's research needs. The program funded four projects: 1) exploring alternative expansion methodologies from creel survey data; 2) fisher perception survey regarding procedural justice in establishing marine protected areas (MPAs) in the State of Hawai'i and the US Pacific Island territories; 3) bigeye tuna tagging in Hawai'i; and 4) the development of a coral reef ecosystem model for American Samoa. One of the outcomes from this research program is a Bayesian modeling framework that can produce an annual catch estimate driven by factors that influence the fishery, rather than relying on a design-based system that is sensitive to biases introduced when the design is not strictly followed. Another outcome shown by the fishing perception survey is evidence that, in general, fishermen support management measures, including MPAs, if they are consulted early in the process.

The Council supports the State and territories in their pursuit to improve the data collection used in fisheries management. While the progress on this front has been slow and has experienced fits and starts in some areas, the Council looks forward to a stronger backbone that will support the ever-growing fisheries management needs of the Western Pacific region.

CNMI Bottomfish Fishery has Development Potential

The extent of the Mariana Archipelago and the numerous deep-water pinnacles and banks make the Commonwealth of Northern Mariana Islands (CNMI) a potential hub for a bottomfish fishery. When elite fishermen venture to the northern islands, they often bring back a treasure trove of bottomfish catch, particularly *Etelis coruscans* (onaga). The stock assessment released by the NOAA Pacific Islands Fisheries Science Center (PIFSC) in 2016 shows that the stock was not overfished and the fishery was not experiencing overfishing. The annual catch limit for this fishery in 2017 was 228,000 pounds. The fishery landed on average about 52,000 pounds between 2008 and 2017. That was about 28 percent of the quota.

A new assessment released by PIFSC on Aug. 24, 2019, shows the stock is still in good condition. However, the harvest reference points show a more conservative level with the overfishing limit estimated at about 94,000 pounds. This was due to new methods used in the stock assessment as well as the quality of the data that went into it.

Under-reporting or under-estimation of catch results in a more restrictive harvest amount. It is important for fishermen to understand that the data they provide feed directly into the science used in management. The fishery is managed at a more conservative level when the data quality is uncertain. The newly release stock assessment, nonetheless, may still allow the bottomfish fishery to operate at a level similar to recent years. The potential for fishery growth is still available and could be strengthened when improved data provides a more positive stock assessment.

Bottomfish Capacity-Building in CNMI

CNMI's leased bottomfish vessel, the Kirida*—a 36-foot Radon boat which arrived in Saipan on May 9, 2019.*

The Western Pacific Regional Fishery Management Council collaborated with the Commonwealth of the Northern Mariana Islands (CNMI) Governor's Office to offer a four-day vessel maintenance and capacity-building training on Saipan from May 31-June 3, 2019. The training included hands-on experience on targeting deep-slope bottomfish, fresh fish handling and processing, and commercial fishing vessel maintenance. To enhance this training, CNMI leased a commercially outfitted vessel configured to target bottomfish after extensive solicitation and expert consultations.

Hawai'i commercial bottomfish fisherman Ed Ebisui III displays a fishing reel as he presents on types of fishing gear and their use.

Certified Volvo mechanic William Salt and vessel owner Ray Shirakawa taught local fishers about vessel maintenance and service. They provided demonstrations on removing and servicing the Volvo outdrives and propellers, changing lower leg and engine oil, electric and hydraulic configurations, generator operation and maintenance and navigation equipment operation. In addition to vessel maintenance, participants attended workshops on new deep-water bottom terminal gear confirmation and use, electronic reels, depth sounders, fish finders (Garmin, Furuno, Fathoms Plus), baiting, chumming and other aspects of bottomfishing.

Hawai'i commercial bottomfish fisherman Ed Ebisui III led the classroom training on the preparation of terminal rigs (participants provided hooks, swivels and line to assemble their own bottomfish terminal gear); bathymetry—understanding structure and preferred habitat; technology to locate, identify and target species to maximize margins for commercial fishermen; anchoring vs. drifting, day vs. night, tides, moon phases, currents; handling and storage to maximize quality; braining and bleeding techniques; and at-sea packing to minimize damage.

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Bottomfish Capacity-Building in CNMI

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Kirida *heads out for sea trial on Saipan.*

Clay Tam, the Council's Advisory Panel chair, provided information on the importance of collecting detailed fishing data that can be used to better understand the status of bottomfish stocks in CNMI. Such surveys would use specific terminal gear and bait, and fish in prespecified areas of known bottomfish habitat. They recorded data on the number of stations, duration of each fishing deployment and catch. Once fish are caught, scientists collect life history information to help determine age, growth, sex, maturity and other biological factors that help inform stock assessments. Hawai'i fishermen collected similar information, leading to a near doubling of the annual catch limit for bottomfish.

John Gourley, Council member and owner of Micronesian Environmental Services (MES), also provided a briefing to meeting participants on MES's life history program for reef fish.

Above: William Salt conducts vessel maintenance training for local fishers at the CNMI Department of Public Safety's boating safety warehouse.

CNMI's Fishery Development Plans include a two-year training program that will offer trainings on Saipan, Rota and Tinian, as well as bottomfish research and data collection within the northern Islands of the Marianas. CNMI hopes that increased opportunities to further enhance local fishermen knowledge will in turn increase local participation in the fishery and delivery of high quality, fresh bottomfish to the local markets.

Council Executive Director Kitty Simonds (3rd from left) with Lt. Gov. Lemanu Peleti Mauga (far left) and other members of the administration and Fono (legislature) at the 2013 opening of the Faga'alu Park Boat Ramp.

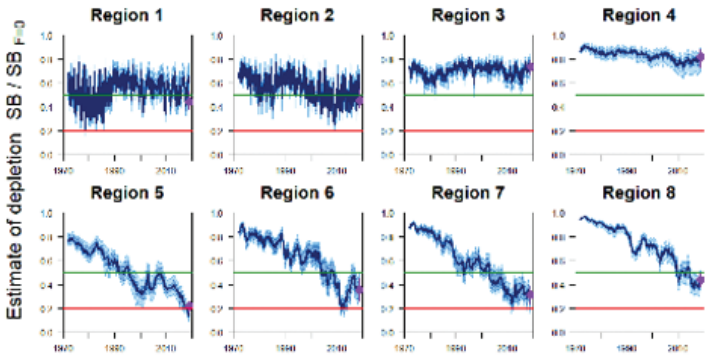
Council Supports Boat Ramp Development in American Samoa

The Western Pacific Regional Fishery Management Council assisted the American Samoa government in addressing the issue of limited boating access on Tutuila and the Manu'a Islands. Through the Sustainable Fisheries Fund, the Council supported hiring a fisheries development officer who was contracted to work within the American Samoa Department of Marine and Wildlife Resources. The contractor worked with the local government and fishermen based on Tutuila and the Manu'a Islands to identify sites to construct boat ramps for alia and recreational fishing boats. He also coordinated with the American Samoa Department of Public Works staff to design the boat ramps and select a company to construct the ramps at Faga'alu Village, Lions Park in Tafuna Village, and on Ofu Island in Manu'a.

Faga'alu Village is located on the southwestern corner of Pago Pago Harbor and a number of alia and recreational craft utilize that ramp. The boat ramp at Lions Park allows small craft such as jet skis and kayaks to enter the lagoon. On Ofu Island, the main wharf now has a boat ramp that serves all alia boats based on Ofu and Olosega Islands (sister islands, connected by a bridge). The Ofu boat ramp also serves as the main landing spot for the numerous alia that serve as transportation on an almost daily basis between the two islands and Ta'u Island, roughly 16 miles to the east. The Ofu boat ramp was also an important infrastructure improvement that allowed Ofu and Olosega to host the first ever Manu'a alia fishing tournament the week before Christmas in 2018.

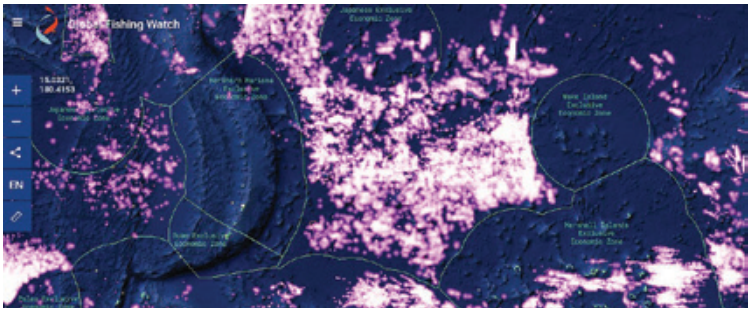
Opportunities for Skipjack in the Mariana Archipelago?

At the Western Central Pacific Fisheries Commission's 15th Scientific Committee meeting in July 2019, skipjack tuna was assessed by the scientists from the Pacific Community. According to the report, Western and Central Pacific skipjack tuna biomass is above the limit reference point of 20 percent unfished biomass, but the stock has exhibited recent declines below a target reference point of 50 percent unfished biomass. While many regions of the stock experienced declines, the new stock assessment for skipjack tuna estimated that the regions including the Mariana Archipelago (CNMI and Guam) and Hawai'i exhibited some of the greatest spawning potential of skipjack tuna. Additionally, these regions were estimated to have some of the lowest fishing mortalities of the species. The Japanese pole and line fishery is a primary fishery targeting skipjack tuna in these regions. According to maps on the Global Fishing Watch website, there is a high concentration of Japanese fishing effort around CNMI and Guam, which is likely pole and line fisheries targeting skipjack. According to the Western Pacific Regional Fishery Management Council's Stock Assessment and Fishery Evaluation Report, small boat troll fisheries in CNMI use skipjack as a leading tuna species. With the apparent high spawning potential and low fishing mortality of the skipjack stock in the region, along with a healthy foreign fishery outside its Exclusive Economic Zone (EEZ), there may be room for fishery development in the region.

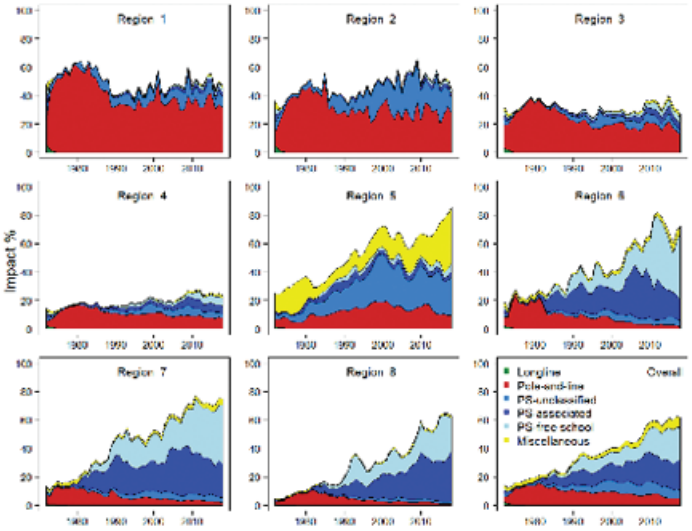


Distribution of time series depletion estimated for each region in the 2019 skipjack tuna stock assessment; regions 3 and 4 include the Mariana Archipelago and Hawai'i. The dark blue line is the median, the blue region represents the 50th percentile range, the light blue is the 80th percentile range, the purple point and error bars are the median and 80th percentile of estimated spawning biomass reduction for that region. Figure from Vincent et al., 2019.

But what about climate change impacting tuna fisheries such as skipjack tuna in the Western Pacific? Are there "winners and losers" among tuna species and tuna fisheries in the face of climate change and ecosystem regime shifts? A team of experts and scientists led by Drs. Inna Senina and Patrick Lehodey from France's Collecte Localisation Satellites and others from Australia, France, and New Caledonia came together to answer



Map of 3 months fishing effort June 7 to Sept. 7, 2019, in the waters around the Mariana Archipelago. Most effort east of the CNMI EEZ is Japanese pole and line vessels targeting skipjack tuna; other vessels include longline and purse seine vessels. Image courtesy Global Fishing Watch.

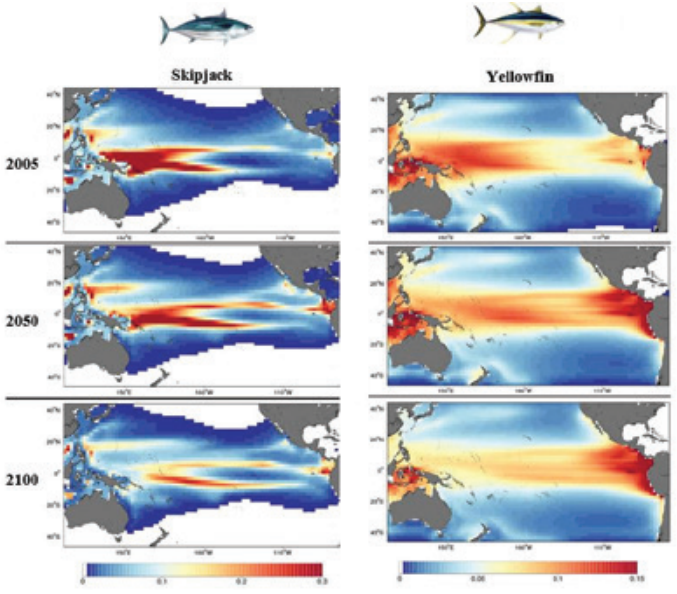


Estimates of reduction in spawning potential due to fishing (higher impact = more reduction in spawning potential) by region, and over all regions (lower right panel), attributed to various fishery groups. Regions 3 and 4 include the Mariana Archipelago and Hawai'i. Figure from Vincent et al., 2019.

these questions. A study by these authors presented at the Western Central Pacific Fisheries Commission's 14th Scientific Committee in August 2018 explored how climate change will impact tuna fishery production and opportunities within the EEZs of many islands throughout much of the Western and Central Pacific Ocean. Senina et al. (2018) used the pessimistic scenario of "business as usual" CO2 emissions from the Intergovernmental Panel on Climate Change, the resulting thermal outcomes under this scenario, and a compilation of projected data sets on oceanographic variables. These datasets or "drivers" include: temperature, primary productivity (like plankton), oxygen at depth, ocean acidification (pH), and resulting oceanographic currents. In 2008, some of the authors developed a model called SEAPODYM (Spatial Ecosystems and Population Dynamics Model) that used to project future spatial patterns and productivity of tuna species (bigeye, yellowfin, skipjack and South Pacific albacore) from the 2019 to 2100 under the group of projected

"drivers" and assumptions. The research team used the distribution of small aquatic organisms and tuna larvae to predict tuna movement and feeding, projected ocean currents that physically redistribute tuna larvae, water temperature and dissolved oxygen for tuna habitat preferences, and other variables that may cue spawning migrations. Tuna (and other fish) larvae are known to be sensitive to high temperatures and lower pH, much like corals. Oceanographic circulation often changes as a result of climate change, which impacts tuna larvae distribution patterns. Larval and adult tuna feeding conditions and habitat are impacted by the amount of dissolved oxygen at depth and primary productivity.

The researchers projected biomass through time and space and the results were compelling, clearly show a loss of fishing opportunities in some areas and an increase in opportunity in others. Notable shifts are projected for skipjack and yellowfin tuna, which comprise most of the Western and Central Pacific tuna catch. Unfished skipjack tuna biomass is expected to decline from historically productive waters east of Papua New Guinea and Indonesia and waters around the Federated States of Micronesia and the Philippines. Skipjack biomass is expected to increase in production in the equatorial band within the Central Pacific. Yellowfin tuna are expected to have a similar pattern, but with much greater overall productivity in the Eastern Pacific (in 2050 and 2100) with some high productivity persisting from the Java Sea to the West Timor region.



Projected average biomass distributions across the tropical Pacific Ocean under a "business as usual" climate scenario from 2005, projected 2050, and projected 2100; taken from the simulation groups in Senina et al. (2018).

The study showed lesser expected distributional shifts for bigeye tuna and a high level of sensitivity of projected oxygen for albacore. Several Pacific Island nations could expect significant loss of fishing opportunities while some may experience fortuitous gains. Island nations and territories west of 170°E seem to show the worst trends in terms of biomass changes. CNMI should expect a 48 percent and 8 percent increase in unfished biomass within its EEZ in 2050 and 2100, respectively, compared to biomass levels from 2001 to 2010. Unfortunately, the Federated States of Micronesia may experience a -19 percent to -55 percent loss in unfished biomass for yellowfin and skipjack tunas for this time period. East of 170°E, the trends are not so pessimistic—in fact many are extremely positive for some Pacific Island states. American Samoa may experience increases for all tuna species within its EEZ, especially for skipjack tuna which could increase in excess of 40 to 60 percent in 2050 and 2100, per these projections. South Pacific albacore are expected to see increases within most EEZs and in parts of the ocean per many scenarios, in waters close to the Eastern Pacific equatorial region, especially to the east where dissolved oxygen levels are historically depleted at depth. The authors recognized many improvements are to be made to this monumental effort to discern trends, possible opportunities, and risks in tuna fisheries in the face of climate change and future uncertainties.

Area	Virgin biomass							
	SKJ		*YFT*		*BET*		*ALB*	
	2050	2100	2050	2100	2050	2100	2050 (-SO)	2100 (-SO)
West of 170°E								
CNMI	48	8	-1	-14	4	-5	-	-
FSM	-29	-55	-19	-37	3	-6	196 (32)	188 (22)
Guam	-5	-30	-16	-30	2	-3	-	-
Marshall Islands	-17	-31	-12	-31	-3	-12	216 (20)	211 (6)
Nauru	-8	-51	-16	-44	-4	-23	170 (31)	143 (6)
New Caledonia	8	49	-9	-25	-5	-18	14 (0)	-3 (-16)
Palau	-28	-54	-12	-29	4	-6	226 (58)	209 (48)
Papua New Guinea	-43	-72	-21	-42	-4	-16	72 (35)	64 (28)
Solomon Islands	-17	-37	-9	-30	-2	-14	62 (24)	46 (8)
East of 170°E								
Vanuatu	21	82	-2	-20	-1	-13	20 (4)	2 (-14)
American Samoa	42	61	23	9	4	-7	41 (9)	36 (-2)
Cook Islands	16	29	28	18	3	-7	47 (5)	39 (-7)
Fiji	14	14	6	-14	-1	-16	21 (1)	3 (-16)
French Polynesia	97	99	43	45	7	0	60 (4)	59 (-6)
Kiribati	18	-21	7	-17	1	-15	200 (14)	181 (-7)
Niue	24	15	20	6	3	-9	31 (6)	20 (-6)
Pitcairn Islands	60	41	55	72	10	7	68 (11)	85 (11)
Samoa	39	46	20	4	3	-8	36 (7)	29 (-4)
Tokelau	-14	-24	14	-7	-1	-17	92 (11)	69 (-10)
Tonga	15	3	13	-5	1	-14	25 (4)	14 (-9)
Tuvalu	-12	-45	3	-23	-2	-21	93 (13)	66 (-10)
Wallis and Futuna	26	21	14	-5	2	-11	39 (9)	28 (-6)

Mean biomass change (percent) by EEZ for the time periods 2046-2055 (2050) and 2091-2100 (2100) relative to the 2001-2010 average for skipjack, yellowfin, bigeye, and albacore tunas. CNMI = Commonwealth of Northern Mariana Islands; FSM = Federated States of Micronesia. "(-SO)" denotes projection estimates excluding no change in dissolved oxygen. From Senina et al. (2018).

Senina, I., Lehodey, P., Calmettes, B., Dessert, M., Hampton, J., Smith, N., Gorgues, T., Aumont., O, Lengaigne, M., Menkes, C., Nicol, S., and M. Gehlen. 2018. Impact of Climate Change on Pacific tropical tunas and their fisheries in High Sea and Pacific Islands waters. 14th Session of the Scientific Committee of the WCPFC. August 8-17, Busan, Republic of Korea.

Vincent, M., G. Pilling and J. Hampton. 2019. Stock assessment of skipjack tuna in the western and central Pacific Ocean. 15th Session of the Scientific Committee of the WCPFC. August 11-20, Pohnpei, Federated States of Micronesia.

Inspiring the Next Generation of Fisheries Managers and Scientists

Hawai'i high school summer course students learn environmental stewardship through hands-on experiences with "Uncle Raymond" (Raymond Leimana Naki, upper left) at the Kahina Pōhaku loko i'a (fishpond) on the eastern shore of Moloka'i (course instructor Erron Yoshioka lower right).

In 2006, the Council saw the need to create opportunities for high school students in Hawai'i to learn about fishery resources and how they are managed. To address that need, staff developed a High School Summer Course on Fisheries and Marine Science that sought to expose students to the broad spectrum of professions that make up our fisheries. For the past 13 years, the Council has hosted this course at Moanalua High School with science teacher Erron Yoshioka as the course instructor. The class draws on representatives from numerous science, management, and enforcement agencies, fishing and seafood industries, organizations and others who volunteer their time to lecture or provide tours to support this course.

The course typically runs for five to six weeks in June and early July covering diverse topics such as Hawai'i's fisheries, ocean safety, marine resource monitoring, research and conservation, ocean ecosystems, enforcement, seafood safety, industry and marketing. Over time, the course has also allowed students who complete the course to qualify for one science credit toward their high school diploma in the Hawai'i Department of Education system. Students complete a project at the end of the course. In past years, they have coordinated and hosted keiki fishing tournaments, conducted an intercept survey and generated a report on recreational licensing (published in *Hawaii Fishing News*), conducted water quality and biological baseline assessments, and produced an ocean safety video on marine hazards and dangerous marine organisms.

After seeing the results the program provided for Hawai'i students, in 2008 the Council expanded it to American Samoa, Guam and the Northern Mariana Islands. The courses in these island areas are also taught by local educators with guest speakers and traditional practitioners providing both classroom and hands-on experiences in fishing, fisheries and marine science.

To get a better understanding of how the courses have benefitted the students, read on as they describe in their own words what they learned in summer 2019.

Hawai'i

"The WESPAC summer class opened this new set of doors, and it sparked this interest in me. I soon became intrigued because of the way and what we learned. This class is most definitely not your average class. Sure, we sat in on lectures, but we learned with a different technique. My class and I were constantly on the road and mainly hands-on. Field trips consisted of a variety of different learning experiences. From attending working labs to fishing, I have had a positive experience and took away valuable knowledge."
~ Noelani S.

"Signing up for this class, I was hoping to be introduced to a different kind of science that I could maybe be interested in studying in college. After our first field trip to the Aiea lab where we had the opportunity to view a turtle necropsy, I knew this could be a science that I would enjoy. I have done many dissections before that did not quite spark interest in me personally. The turtle necropsy, however, was somehow different. Maybe it was the fact that when they are dissecting, they are trying to find the cause of death, or maybe it was the animal itself that amazed me. Either way, after that trip, I went home with that spark, ready to educate my mom." ~ **Miki T.**

"When I was in between the ages of 8-11, I had dreamed of being a marine biologist. I soon came to find out that it is a very hard thing to do. Instead of striving for my dream, I gave up. After three years of trying to find another occupation, I was interested that my biology teacher at the time was promoting a marine science class. I had no longer wanted to be a marine biologist, but what piqued my interest was the amount of experience and different opportunities the class would provide me with….Our class was given opportunities to meet people and make connections that could maybe be useful later. I came selfishly so that I could possibly get offers for future scholarships or internships. What I got was more than I could have asked for. I learned so much about managing our resources and helping our community understand how to help." ~ **Ebonie L.**

Hawai'i high school outreach summer course, seaturtle biopsy day.

"This Marine Science class gave me the opportunity to learn about fisheries in a way that was really fun, engaging and hands-on. For the first few days, guest speakers came in and talked about their piece in a fishery. We got to learn about gyotaku, limu, economics of a fishery, how fish go from the sea to our poke, and the complications that come with fisheries. We learned Aha Moku and that fisheries are way more than just the fish, and how what we do from the highest point on land can affect the ocean." ~ **Daniel J.**

"From the necropsy to the end of our trip [to Moloka'i], we were taught so much. Many from WESPAC came and taught us about fishing regulations, rules and gear, which was an eye opener for me because now I realize why certain boats fish in certain areas. Also why they use certain gear to catch specific fish.

Students work to rebuild a traditional Hawaiian fishpond wall on Moloka'i.

Going to Moloka'i for me was such an amazing experience because it was nothing like Oahu…When we went to visit Uncle Raymond, he taught us so much about taking care of fish ponds and land. He would always say, 'You remember, I remember,' which I thought was cool. We also went to Mo'omomi which was a nice place to see many sea creatures. Picking opihi off the rocks and being able to see all of the little hermit crabs were cool…We also saw how much fishing lines, nets, floaters, etc. washed up on the sand and rocks. Seeing this much trash made me think about what I could do to help." ~ **Lehua T.**

"From going to Kualoa Ranch, Kalaeloa anchialine ponds, Kewalo [Basin Harbor], Moli'i ponds, visiting the fish auction and attending the Council meetings, this summer is the most eventful one I've ever had. From our biggest field trip to Moloka'i to our more humble but just as important visits from guest speakers, the amount of information and knowledge I am walking about with is immense and incomparable. Learning about fish? That barely scratches the surface as to what this class is really about. The biggest thing I will always remember is that it isn't really about the fish. So when we talk about management, we aren't managing marine life, but we're managing people. When we create these rules, regulations or restrictions, it's for the people and not really all about the fish." ~ **Zion D.-R.**

"At Uncle Raymond's [on Moloka'i], we were able to experience the type of stuff he does every day to preserve the fish pond. He taught us how to throw net, where we practiced on coconuts and then later he showed us how to husk it. We also got to help rebuild the fish pond by stacking rocks back on the top and making sure everything is even and flat so it's safe to walk on…I was able to see and live in a different type of perspective and lifestyle from back home and that's one of the best experiences I got." ~ **Kayley L.**

"When I leave this class today, yes I'll remember the connections I've made with the fishery I belong to, but also

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Inspiring the Next Generation CONTINUED FROM PAGE 9

the connections I've made with my classmates along the way. Four weeks may seem like such a short time to be able to make relationships, but in that time, I've made lifelong friends. Signing up for this class, I did expect to learn about fish and marine life, but not change as a person—someone who wants to involve themselves in a greater role in sustaining marine life for today and our future." ~ **Frances V.**

American Samoa High School Fisheries & Marine Resource Management Course

Course participant catches his first sailfish.

The American Samoa High School Fisheries and Marine Resource Management Summer Course was held from July 8-26, 2019. The class is an active learning experience for local high school students to be introduced to the fisheries and see first-hand how important they are to the American Samoa culture and economy. The three-week class is a combination of classroom and field activities that teach students about the various fisheries in the territory and the Magnuson-Stevens Fishery Conservation and Management Act that governs the US marine fisheries, and dictates how the Council process works. The Council's instructor, Paula McDonald, helped students understand the differences in vessels, gear type and motivation for each of the fisheries. This lesson was learned up-close and personal as the students toured both small and large fishing boats, the cannery to which many of those boats supply fish, and even were able to go fishing on a boat. For many students, that was the first time they had been fishing and some of them had previously never even set foot on a boat. This made their first catch all the more exciting. On their first fishing charter trip, the class landed a sailfish, dogtooth tuna, wahoo and mahimahi.

In addition to learning about the fisheries, students are taught how to sail and use wayfaring techniques that have been used for thousands of years.

The class also focused on the fisheries and environmental resource agencies, giving the students a better understanding of what those local and federal agencies, as well as some community groups, are doing to properly manage the resources and ensure the fisheries remain a sustainable resource for generations to come. Data collection lessons on the coral reef, in the weather station and at the atmospheric monitoring station all gave the kids a chance to learn how environmental data is collected and analyzed. Activities such as outrigger canoe paddling, sailing and navigation exposed the students to water activities that promote ocean stewardship and a fun and active way to experience the waters around American Samoa. This summer program is a great way to introduce students to the many career paths connected to the fisheries and resource management, and hopefully some of these participants will decide to choose marine science as their major when they are in college. The program is a bridge to the Council's scholarship program which supports students working toward degrees in marine-related fields.

"This summer I attended the Western Pacific Regional Fishery Management Council fisheries class. Before my parents told me about this class, I wasn't being very active, and at first, I wasn't sure I wanted to sign up. Luckily, I realized that I might learned something new and now I am happy that I participated in the class. We learned CPR and first aid, and the learned about the fisheries here in American Samoa and how important they are to us. We learned how to fish, and we got to go out on a charter fishing trip aboard the Double Hooked. To me that was the best part of the class. My friends and I worked together to reel in fish and it was a thrill because it was our first time ever catching a fish. The whole 3 weeks of the class we went on a bunch of different field trips and they were always fun and educational. Ms. Paula, our instructor, kept us in shape by putting us through exercises every morning before our lessons. She was a great instructor. I hope that this program continues in the future because this is a great opportunity for kids to explore and learn new things about the fisheries and ocean resources in American Samoa." ~ **d'Angelo Yamson (Fa'asao Marist High School, 10th grade)**

Master talayeru *Dan Narcis demonstrating how to throw the talaya.*

Guam Summer High School Course

July 29 to Aug. 17, 2019

The Council contracted the University of Guam 4-H Program to host this year's summer program, primarily because the program is part of the curriculum in almost all high schools on Guam. The course included daily classroom lectures to prepare the students for the afternoon hands-on activities. The primary goal of the program is to encourage students to follow through with what they learn and decide to pursue a career in the marine sector.

Lecturers involved included University of Guam faculty, spearfishermen, *talayeru* (fishermen that use *talaya*, or circular throw nets), *chenchulu* (surround nets) fishermen, Council staff and others.

Student focus areas and activities included:

- Fisheries conservation and management
- Fishing laws of Guam
- Fishing methods, types of fisheries, fishing gear
- Poison and venomous sea creatures
- Bridging land and sea
- Water sampling and testing
- Throw net types and methods with practical fishing
- Octopus fishing
- Coral reefs around Guam
- Guam fish stores
- Marina tours
- Rod and reel maintenance
- Rod and reel fishing
- Coastal challenges and management
- Fish management
- Small boat engine repair (inboard/outboard)
- Spearfishing gear types, safety and practical fishing
- Aquaculture tour
- Chenchulu methods
- Boat safety and lure tying
- Trolling on charter boats
- Fish recipes and cooking

The course was capped at 18 students, with several saying they would like to return again if possible because they had such a great time and learned a lot about Guam's waters and what can be done to manage our natural marine resources.

"The high school summer fisheries course was pretty fun. I learned a lot about the different kinds of fishing and marine life in general. I still do not know what exactly I want to do in the fields of marine biology, but the camp helped me to get a better understanding of the different career paths I can choose. With what I learned from the summer course, I want to be able to be out in the water more and have fun with fishing. I now know all the rules and regulations of what to do and what not to do.

From this summer camp I learned about the problems and issues with the waters surrounding Guam, along with marine life. I want to be able to

CONTINUED ON NEXT PAGE

Inspiring the Next Generation CONTINUED FROM PAGE 11

Guam participants proudly displaying reef fish from the talaya.

do something to help benefit Guam and its marine resources. I now know how important the island's surrounding waters are along with its fish to the people of Guam. Guam's waters are not only important for the locals, but tourism too. I want to come up with solutions for problems such as overfishing and pollution."
~ Andrea Torres

"Hafa Adai! My name is Michael San Nicolas and I have been attending the 4-H fisheries program for the past 6 years. I attended youth fishery and junior fishery as well. These levels of fisheries program have sparked my interest in Biology and the environment in many ways. I am glad that I attended this program, because I not only learned how to fish but it inspired me to become one of Guam's first local marine biologists. As we went out to the beaches, I discovered that our coral reefs need to be supported and treated for the next generation. This program also taught me many life skills that I will apply in my daily life like cooperation. Why I chose that life skill overall is because without cooperation life would be much more difficult. Thank you to the 4-H program for teaching me the skills and regulations I will need to become a great fisher-man and a future marine biologist."
~ Michael San Nicolas

Saipan Students Experience Fisheries in CNMI

For the past two years, Joshua Villagomez, a science teacher from Chacha Oceanview Middle School and alumnus of the University of Hawai'i at Manoa, has been the program coordinator for the Fisheries Summer Course on Marine Fisheries and Resources sponsored by the Western Pacific Regional Fishery Management Council. The main goal of the program is to teach students basic information about fishery and fishery-related careers in addition to providing supporting hands-on activities.

The course included an introduction to:

- conservation management practices, enforcement, and sanctuaries around CNMI
- the Council's roles and responsibilities
- bio-sampling of species caught within the islands, dissecting fish and identifying organs, and fish life history from Micronesian Environmental Services (MES)
- studying marine debris and environmental changes and how they affect CNMI's lagoons and marine life
- the Northern Marianas College aquaculture program
- traditional navigation with the Saipan 500 Sails canoe program, which focuses on promoting economic and social self-sufficiency
- bottom fishing in Saipan's waters
- Fish 101 - information presented by Dr. John Kaneko from the Hawaii Seafood Council, Carey Demapan from the CNMI Department of Lands and Natural Resources (and former Council scholarship recipient), Asap Ogumoro from CNMI's public school system and Lino Tenorio, a commercial bottomfish fisherman

This year's summer course had 15 students who enjoyed sharing their experiences within fisheries and traditional knowledge passed down from family members. Participants said one of the program highlights was the hands-on experience they received fishing and dissecting fish at the MES science lab. Due to the success of the summer program, course director Villagomez has created a listserv to keep students informed of future fishery-related matters and opportunities.

"As Pacific Islanders, we have a lifelong duty to protect and conserve our marine and terrestrial environments. After centuries of colonization and the desecration of sacred land, our islands continue to undergo the damaging effects inflicted upon us by powerful nations. One of the most prevalent issues affecting today's society revolves

CNMI summer course students receive safety and food handling instruction at the Northern Marianas Trade Institute, and test their skills by preparing poke.

Top: Students from Kagman High School visit Bird Island lookout, one of the Marine Protected Areas on Saipan. Below: Council Island Coordinator Floyd Masga gives students a broad overview of the Council process and website.

around the matter of climate change. It is vital that younger generations take action towards putting a halt to our current circumstances. This summer's Fishery Program has played a significant role in my understanding of sustainability and aquatic management. People like Mr. Floyd Masga have taught me the importance of sustainability and how to manage fisheries in the CNMI. He introduced us to laws which are intended to protect the abundance of fish and specific fishing techniques permitted in the CNMI. My favorite presentation was on identifying fish maturity and analyzing data to determine the abundance of that specific species. By exploring the physical features of a fish, we learned to identify various aspects of its life and relation to its surroundings. Towards the end of the program, we partook in bottom fishing activities, trolling to various sanctuaries, and traditional canoeing. All of these activities have helped solidified my identity as a Marianas native and have enhanced my understanding of our societal and cultural dependence on marine environments. I have been humbled and enriched with knowledge from our elders and the many learning opportunities this fishing program has offered us. Involving myself with other community members who are passionate about conservation and marine life has not only encouraged me to continue serving my island and its natural resources, but has also taught me the magnitude of teamwork. Positive change resembles a ripple effect; one step in the right direction can start a movement of hope." **~ D'anahlei Rodriguez**

Council Partnership with Local University Continues to Grow

Hawaii Pacific University's windward Hawai'i Loa campus. Photo courtesy of HPU.

One of the Western Pacific Regional Fishery Management Council's seven guiding principles is to "conduct education and outreach to foster good stewardship principles and broad and direct public participation in the Council's decision making process." A sizeable portion of the Council's five-year program plan is dedicated to education and outreach, which each play a fundamental role in the sound management of fisheries in the Western Pacific Region. The Council's education and outreach program supports all of the Council's other programs and provides additional services to fishing and indigenous communities; local, federal and international fishery management agencies; the Council family; the general public, NGOs, consumers and policy makers; and educators and students at local to international levels. By improving the capacity of individuals and local communities in the territories of American Samoa, Guam and the Commonwealth of the Northern Mariana Islands, the Council assists fishery agencies with improving the quality of their staffs and gains local partners with higher performance qualities and expanded scope of abilities to steward and manage fisheries.

Hawaii Pacific University (HPU), a relatively small private university on the island of O'ahu established in the 1990s from the union of two smaller liberal arts colleges, has proven to be one of the strongest partnerships the Council has made in the education field. Several students who earned their undergraduate degrees at HPU were able to find either full-time or contract work in the field of local fisheries management.

Going forward, the Council continues to propagate the strong partnerships with HPU and other local education institutions. The hope is to continue providing support and opportunities to interested students so that they gain experience in the fisheries management field, effectively preparing future fisheries managers to increase fisheries management capacity in the Western Pacific Region in the days and years to come.

Council staff share their fishery management expertise with the Asian Affairs Council's International Visitor Leadership Program participants at the Council's Honolulu office.

Council Modifies Turtle Management Measures in Response to Final Biological Opinion

Leatherback turtle hatchling on beach. Photo courtesy of NMFS.

The Western Pacific Regional Fishery Management Council at its 179th Meeting held on Aug. 8, 2019, recommended amending the Pacific Pelagic Fishery Ecosystem Plan (FEP) with revisions to the loggerhead and leatherback turtle mitigation measures for the Hawai'i shallow-set longline fishery. If approved by the Secretary of Commerce, the amendment would set an annual fleet-wide hard cap limit on the number of leatherback turtle interactions at 16. An interaction occurs whenever a sea turtle becomes hooked or entangled in longline gear. Few interactions lead to mortality of the animal, which is normally released unharmed. The Council did not recommend setting an annual fleet-wide hard cap for loggerheads in light of their improving population trends and other mitigation measures. A recent population assessment of the North Pacific loggerhead turtles showed that the population is growing at an annual rate of 2.4 percent, and the total is estimated at 340,000 individuals. The Council may set a hard cap limit in the future if needed to meet conservation goals.

To limit the impact of interactions on sea turtles and to promote year-round fishing opportunities, the Council further recommended the establishment of individual trip interaction limits of five loggerheads and two leatherback turtles. Once a vessel reaches either of these trip limits, the vessel would be required to return to port and would be prohibited from engaging in shallow-set longline fishing for five days after returning. This action is expected to allow sea turtle "hot spots" to disperse, while encouraging fishermen to take action to avoid sea turtle interactions before the trip limits are reached.

The Council also recommended additional restrictions on vessels that reach a trip limit twice in a calendar year, which was required under a new biological opinion (BiOp) issued by the National Marine Fisheries Service (NMFS) on June 26, 2019. Those vessels would be prohibited from shallow-set longline fishing for the remainder of that year. In the following calendar year, these vessels would have an annual vessel limit equivalent to a single trip limit—either five loggerheads or two leatherbacks.

Final action taken at the 179th meeting was a culmination of a nearly two-year process to improve measures for managing loggerhead and leatherback turtle interactions in the fishery that produces nearly half of the US domestic swordfish. The fishery had been managed under gear measures (required use of circle hooks and fish bait) since 2004, which reduced loggerhead and leatherback turtle interactions by about 90 percent. Hard cap limits for loggerhead and leatherback turtles were also implemented in 2004 out of an abundance of caution while the fishery gathered operational data on the effectiveness of the gear measures, which had only been tested experimentally in the Atlantic Ocean prior to implementation in the Hawai'i fishery. Sea turtle interactions had been relatively stable with no more than 17 loggerhead and 16 leatherback turtles in a year until late 2017, when the

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Council Modifies Turtle Management CONTINUED FROM PAGE 15

fishery experienced a higher number of loggerhead turtle interactions in a period of a few months.

The Council at its 179th meeting also recommended that NMFS prioritize the recovery of leatherback turtles through reduction of threats at nesting beaches and foraging areas. With almost 100 percent of the incidentally hooked turtles returning to the ocean alive, the Hawai'i swordfish fishery has had an inconsequential impact on the leatherback and loggerhead turtle populations in the Pacific Ocean, especially when considering the relative impacts from foreign fleets. Threats to loggerhead and leatherback turtles in other parts of the populations' range include bycatch in artisanal and coastal fisheries in the Western Pacific, direct harvesting of eggs and adult turtles, nest predation by feral animals, beach nesting habitat alteration, and climate change.

Species	Fleet-wide Hard Cap Limit	Individual trip limit
Leatherbacks	16	2 per trip
Loggerheads	No limit	5 per trip

New measures and limits for leatherback and loggerhead turtle interactions for the Hawaii shallow-set longline fishery recommended by the Council at its 179th meeting. Individual trip limit includes additional restrictions on vessels that reach a trip limit twice in a calendar year as required under the new biological opinion.

The Council's final recommendation on amending the Pelagic FEP will be forwarded to the Secretary of Commerce, followed by a rule-making process including a public comment period. New rules resulting from the Council action may be implemented as early as January 2020.

New Fishing Magazine Launched in Saipan

The Saipan Fishermen's Association (SFA) marked its 35th Annual Saipan International Fishing Tournament in July 2019 by launching its new quarterly magazine, the *Marianas Pond*. The *Marianas Pond*, the only magazine in CNMI that focuses on sports fishing, includes articles on fishing events, partnerships with state and federal agencies and individuals that have contributed to sport and subsistence fishing.

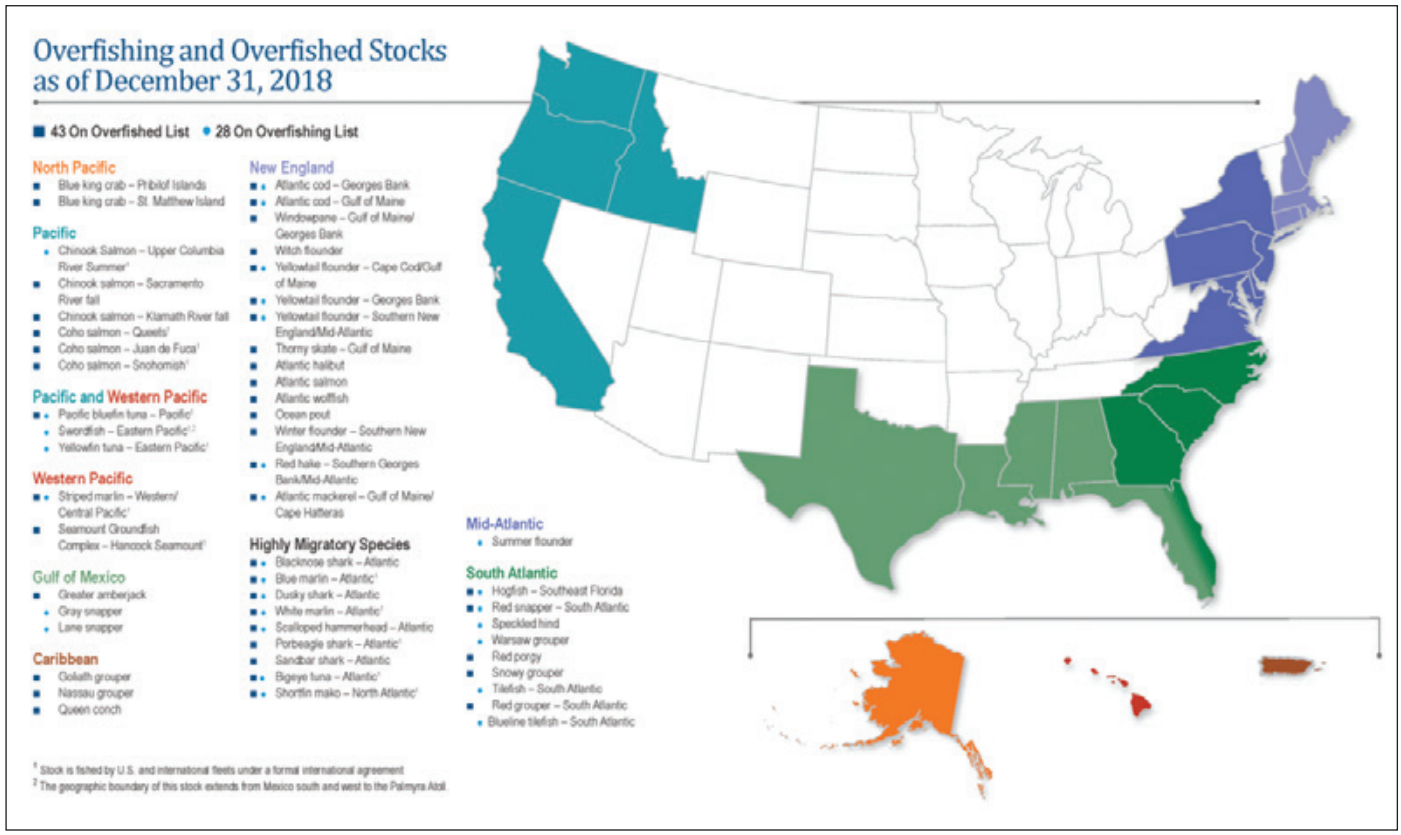
The *Marianas Pond* began with the vision of SFA members Wayne Pangelinan and Alex Castro Jr. who saw the need for an effective outreach medium to promote fishing in the Mariana Archipelago. Pangelinan and Castro Jr. thought the association needed a major publicity boost and aimed to generate opportunities for SFA as a whole.

The magazine's mission is to bring the community together by promoting fisheries to everyone in CNMI.

SFA plans to keep the magazine as a permanent addition to its outreach activities and plans to expand circulation digitally via email and social media, in addition to distributing printed copies in Saipan and Guam at fishing supply retail stores, the Guam Fishermen's Cooperative Association facility and gas stations through its partnership with Mobil.

Front cover of the inaugural issue of the Saipan Fishermen's Association's quarterly magazine, the Marianas Pond.

Science and Management 101



What is the difference between "overfishing" and "overfished?"

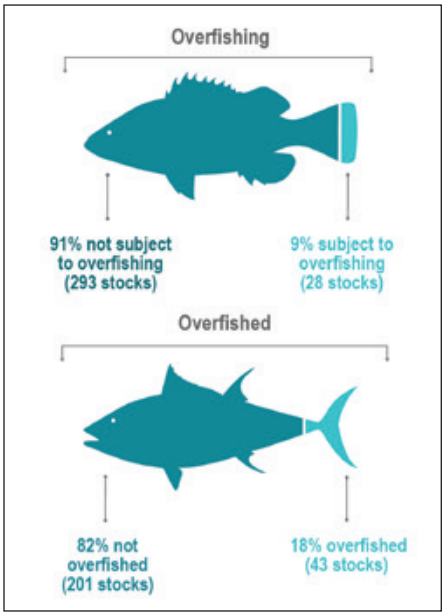
- **Maximum sustainable yield (MSY):** The largest long-term average catch that can be taken from a stock under prevailing environmental and fishery conditions. MSY is the most you can take without causing the stock to decline in the future.
- **Overfishing:** A stock having a harvest rate higher than the rate that produces its MSY, or more fish are being removed than is sustainable.
- **Overfished:** A stock having a population size that is too low and that jeopardizes the stock's ability to produce its MSY. With too few fish left in the ocean, the species may not be able to recover.
- **Rebuilt:** A stock that was previously overfished and that has increased in abundance to the target population size that supports its MSY. This is a good place to be!

As a harvest rate, overfishing is a direct result of fishing activities. Allowed to continue unchecked, overfishing is associated with many negative outcomes, including a depleted population. Current management practices—such as annual catch limits and accountability measures—reduce the likelihood of this happening.

As a population size, overfished can be the result of many factors, including overfishing, as well as habitat degradation, pollution, climate change, and disease. While overfishing is sometimes the main cause of an overfished stock, these other factors can also play a role and may affect the stock's ability to rebuild.

If a fishery is overfished, shouldn't we stop fishing it to let the population recover?

In some cases of significant depletion, fishery managers have closed a fishery to rebuild, but fishery management has multiple goals, one of which is to ensure well-being for people who depend on a fishery being open. Fortunately, fish stocks can rebuild quickly even without closing fisheries through good management.



At the end of 2018, the overfishing list included 28 stocks and the overfished list included 43 stocks. Image courtesy NOAA Fisheries.

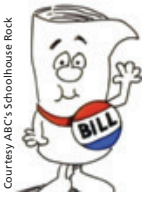
Sources:

https://sustainablefisheries-uw.org/seafood-101/overfished-overfishing-rebuilding-stocks/

https://www.fisheries.noaa.gov/national/2018-report-congress-status-us-fisheries

Congressional Corner

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



Courtesy ABC's Schoolhouse Rock

The United States Congress is in the first year of its 116th session and has proposed numerous bills in both the House of Representatives and the Senate that concern fisheries and ocean resources. Among these are bills to combat invasive lionfish (H.R. 417); preserve the United States' fishing heritage through a national program dedicated to training and assisting the next generation of commercial fishermen (H.R. 1240); and improve the management of driftnet fishing (S. 906). While not all of these bills will directly impact the Western Pacific Region, there are a few that the Council is closely monitoring.

In both the House and the Senate, bills have been introduced to prohibit the sale of shark fins. H.R. 737, H.R. 614, and S. 877 have all been introduced to eliminate the sale of shark fins. The Shark Finning Prohibition Act of 2000 passed by Congress already prohibits any person under the US jurisdiction from engaging in shark finning. The subsequent Shark Conservation Act of 2010 requires that all sharks in the US be brought to shore with their fins naturally attached. These Acts allow for the sustainable management of shark fisheries while eliminating the harmful practice of finning. In 2016, over 32 million pounds of sharks, valued at over $8 million, was landed in the US.[1] The proposed bills would eliminate these landings as well as create potential issues for fisheries that have sharks as bycatch. An additional bill, S. 1008, has also been introduced to improve shark conservation. As of this publication, H.R. 737 has had a hearing in the House Natural Resources Committee's Water, Oceans, and Wildlife Subcommittee and S. 877 was ordered to be reported without amendment by the Senate Commerce, Science, and Transportation Committee.

An important bill for the Council to track is H.R. 3697, the Strengthening Fishing Communities and Increasing Flexibility in Fisheries Management Act. The bill is similar to one passed by the House of Representatives last year, and gives fishery management councils increased flexibility for management actions such as stock rebuilding timeframes and improving data and science used in decision making. The fishery management councils, through their Council Coordination Committee, has developed a working paper on regional and consensus positions on potential changes to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and continue to provide these statements when requested. This fall, listening sessions in each of the regions will be held to find out what changes need to be made to the MSA (if any) and potentially introduce another bill based on these discussions. These sessions have not been announced, but when they are, the dates, times and location will be provided on the Council's website: www.wpcouncil.org.

[1] Source: NOAA Fisheries 2017 Shark Fining Report to Congress (https://www.fisheries.noaa.gov/resource/document/2017-shark-finning-report-congress)

New Outreach Resources

The Council will be launching its new website in October 2019, incorporating feedback and suggestions for improvement from Council staff and affiliates. The new site has an attractive, modern layout that is easy to search and has dynamic hot topics on each page. The website will be the place to search for fisheries information in the Western Pacific Region. Check it out and let us know what you think!

Below: Landing page for new Council website, which maintains the same website address, www.wpcouncil.org.

Council Family Updates


Archie T. Soliai


Monique K. Genereux


Howard T. Dunham


Lawrence Concepcion


Ray Delacruz


George Moses


Stefanie Dukes

The US Department of Commerce has appointed three new members to the Western Pacific Regional Fishery Management Council. Council members are appointed to both obligatory (state-specific) and at-large (regional) seats. Council members serve a three-year term and can get reappointed to serve three consecutive terms. The current term is from Aug. 11, 2019 to Aug. 20, 2022. The council members are:

Obligatory Seat:

- **Archie T. Soliai** (American Samoa), re-elected member

At-Large Seats:

- **Monique K. Genereux** (Guam), new member
- **Howard T. Dunham** (American Samoa), new member

At the 178th Council Meeting, the Council supported the following Advisory Body changes:

- **Lawrence Concepcion, Ray Delacruz,** and **George Moses** were appointed to the CNMI Advisory Panel as Alternates.
- **Stefanie Dukes** was appointed to the Fishery Data Collection and Research Committee—Technical Committee.

In Memoriam

Richard Shomura (age 90) of Honolulu passed away on May 20, 2019. Shomura had a rich career in fisheries that spanned nearly four decades. As director of the National Marine Fisheries Service's Honolulu Laboratory, he helped to ensure the sustainability of fisheries in Hawai'i and the US Pacific Island territories. Known as the tuna expert in the Pacific, he supported the inclusion of tuna in the Magnuson-Stevens Fishery Conservation and Management Act, documented the history of Hawai'i's tuna fishery from the turn of the 20th century and determined that Hawai'i has its own yellowfin stock. He served as the first vice chair (1977-1978) and acting chair (1979-1980) of the Scientific and Statistical Committee of the Western Pacific Regional Fishery Management Council. The eldest of six children, Shomura graduated from Kaimuki High School and the University of Hawai'i, obtaining a master's degree in marine biology with an emphasis in fisheries.

Frank Goto, president of United Fishing Agency (Honolulu fish auction) and former Council member (1976–1979), passed away on Sept. 23, 2019. Goto grew up in a Hawai'i fishing community of first-generation Japanese immigrants and became a pivotal figure in the growth of Hawai'i's fishing industry.

Recipe SMOKED HAWAIIAN OPAH TARTARE with Watercress Salad and Breadfruit & Taro Crisps

Courtesy of Chef de Cuisine Jon Matsubara, Japengo, Waikiki

Serves 4

Ingredients

1 lb opah (moonfish) fillets, cut into 4-oz cubes

¾ cup mayonnaise

1 tbsp Italian parsley, chopped

1 tsp tarragon

1 tsp chives

3 tbsp Meyer lemon juice

2 tbsp shallots, minced

Preparation

Brine fillets for 10 hours and smoke with keawe wood for 45 minutes. Cut fillets into small dice and mix all the ingredients into a bowl. Season to taste, if necessary. Serve with salad and crisps.

Watercress Salad

1 bunch watercress, (pick most tender sprigs)

1 lb cherry tomatoes cut in half

1 heirloom radish sliced thin on mandolin

½ cup Meyer lemon juice

1 cup olive oil

Mix lemon juice and olive oil with salt to taste.

Mix all ingredients in a bowl.

Breadfruit & Taro Crisps

1 sweet potato, peeled, sliced thin and soaked in water

1 breadfruit, skinned, sliced thin and soaked in water

1 taro, peeled, sliced thin and soaked in water

Dry thoroughly and fry at 350 degrees.

Featured at the Western Pacific Regional Fishery Management Council booth at the 2012 NOAA Fish Fry and in the Pacific Islands Fishery News, *Summer 2013*

2019 Council Calendar

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OCTOBER

7-12
7th Scientific Committee meeting of the South Pacific Regional Fisheries Management Organisation, Havana, Cuba*

10-11
Western and Central Pacific Fisheries Commission Permanent Advisory Committee meeting, Honolulu*

11
Hawai'i Archipelago Fishery Ecosystem Plan Advisory Panel meeting, Honolulu

15-17
134th Scientific and Statistical Committee meeting, Honolulu

16-27
North Pacific Marine Science Organization annual meeting, Victoria, B.C., Canada*

18
American Samoa Archipelago Fishery Ecosystem Plan Advisory Panel meeting, Pago Pago, American Samoa

21
Education Committee Subgroup meeting, Pago Pago, American Samoa

21-24
180th Western Pacific Regional Fishery Management Council meeting, Pago Pago, American Samoa

24-25
Our Ocean Conference, Oslo, Norway*

NOVEMBER

5-7
Council Coordination Committee meeting, Washington, D.C.*

18-21
International Symposium on Fisheries Sustainability: Strengthening the Science-Policy Nexus, Food and Agriculture Organization of the United Nations, Rome, Italy*

20-21
Fishery Data Collection and Research Committee—Technical Committee Strategic Planning Session, Honolulu

21
World Fisheries Day

DECEMBER

2-13
United Nations Climate Change Conference, Santiago, Chile*

5-11
16th Regular Session of the Western and Central Pacific Fisheries Commission, Port Moresby, Papua New Guinea*

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

UPCOMING EVENTS

134th Scientific and Statistical Committee meeting will be held Oct. 15 to 17, 2019, at the Council office, 1164 Bishop St., Suite 1400, Honolulu. Major agenda items include reviewing the benchmark stock assessment for the territory bottomfish management unit species complex, discussing the Western Pacific Stock Assessment Review (WPSAR) report, reporting on the National Standard 1 Technical Guidance on carry-over and phase-in and reviewing the terms-of-reference on the WPSAR for the main Hawaiian Islands gray job fish fishery.

The 180th meeting of the Western Pacific Regional Fishery Management Council will convene Oct. 22 to 24, 2019, at the Tauese P.F. Sunia Ocean Center in Utulei Village, American Samoa.

The Council may act upon the following three items:

- Mandatory Electronic Reporting in the Hawai'i Longline Fishery (final action)
- Benchmark Stock Assessment of the Bottomfish Management Unit Species Complex in American Samoa, Guam and CNMI
- Geographic Strategic Plan

The public is invited to provide comments for Council consideration.

FISHERS FORUM American Samoa

The Fishers Forum on "The American Samoa Palolo Harvest - Science and Tradition" is a free, family-friendly public event from 6 to 9 p.m. on Oct. 22, 2019, at the Tauese P.F. Sunia Ocean Center in Utulei Village, American Samoa. The event will feature a palolo cooking demonstration and a variety of local and federal fishery-related organizations and agencies including the Coral Reef Advisory Group, StarKist, Pago Pago Marine Charters, Island Fisheries Inc., the US Coast Guard Auxiliary, the Cook Island Fisheries Office, the Western Pacific Regional Fishery Management Council and more. There will also be a poster contest for K-12 students focusing on the American Samoa palolo harvest and its community importance. Entries to the poster contest will be judged in three separate age categories, and the winners will be awarded prizes. The Forum is part of the 180th Council meeting.

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