Pacific Islands Fishery News *Newsletter of the Western Pacific Regional Fishery Management Council / Winter 2016*

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Hawai'i Bigeye Tuna Fishery Survives Two-Month Closure

Hawai'i longline vessels remained tied up for two months as they waited for NMFS to approve a fishing agreement to transfer part of the bigeye tuna quota from the US Pacific Territories to the Hawai'i fishery.

"It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair."

This quote from Charles Dickens seems profoundly appropriate for the events leading up to the longest closure experienced by the Hawai'i longline fishery for bigeye tuna since 2010.

Fishing conditions in the longline fishery in the first half of 2015 were excellent, with a 36 percent increase in catch per unit of effort and a preponderance of large high quality fish in the catch. While welcoming such bounty, the fishermen recognized the down side in that the US bigeye catch limit, under which the Hawai'i fishery was operating, would be reached much earlier than in the past. They communicated this to the National Marine Fisheries Service (NMFS) Pacific Islands Region (PIR) and asked that it expedite the review and approval of a fishing agreement that would allow part of the Commonwealth of the Northern Mariana Islands (CNMI) 2015 bigeye tuna allocations in the Western and Central Pacific Ocean (WCPO) to be transferred to the US longline fishery. The US allocation of 3,502 metric ton (mt) was set by the international Western and Central Pacific Fisheries

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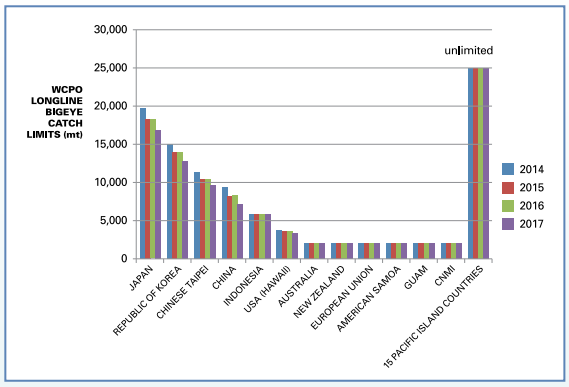
Message from the Executive Director

Our last newsletter of 2015 is dedicated to the Western Pacific Regional Fishery Management Council's activities in Hawai'i, one of our areas of jurisdiction. We hope that the sections on management, research and community projects will offer you a glimpse of the breadth of what we do—from conserving fishery ecosystems to promoting the livelihood of fishermen and a culture of fishing and from serving as the bridge between fishermen and the government to fulfilling our requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), other Congressional Acts and Presidential executive orders.

As we head to press, some of us are at the annual meeting of the Western and Central Pacific Fisheries Commission (WCPFC) to address the international management of tuna and other highly migratory species in the Western and Central Pacific Ocean. The cover article on the two-month closure of the Hawai'i longline fishery illustrates the importance of WCPFC decisions. As advisors to the US Commissioners on the WCPFC, we support an outcome at the current meeting that will be more beneficial to US fishermen than those made in 2014. It is truly appalling that our nation—which is arguably one of only a few nations to fulfill the WCPFC fishery monitoring and compliance agreements—is alotted the lowest quota among the major fishing nations and, hence, is the only one that closed its fishery when reaching the quota. We also call on Hawai'i Gov. David Ige and his



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ECOSYSTEM-BASED MANAGEMENT OF FISHERIES IN THE US PACIFIC ISLANDS

The Western Pacific Regional Fishery Management Council was established by Congress in 1976 to manage marine resources and maintain opportunities for sustainable domestic fishing in the US exclusive economic zone waters and high seas around Hawaii, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands and the eight US Pacific remote island areas.

Hawai'i Bigeye Tuna Fishery Survives Two-Month Closure

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Commission (WCPFC) to which the United States is a member. The WCPFC has established national quotas for longline vessels and other regulations for purse-seine vessels in its attempt to address Pacific-wide overfishing of bigeye tuna.

Unfortunately, the PIR failed to have the necessary rulemaking package ready in time. As a consequence, the Hawai'i longline vessels were banned starting Aug. 5, 2015, from retaining bigeye tuna in the WCPO. Only about 20 of the 146 active Hawai'i longline vessels, i.e., those that also have American Samoa longline permits, were allowed to catch and retain bigeye in the WCPO; however, these dual permitted vessels were restricted to catching bigeye on the high seas only. Then on Aug. 12, all US longline vessels greater than 24 meters in length were banned from catching and retaining bigeye tuna in the Eastern Pacific Ocean (EPO).

In early October, Council staff visited the idle longline vessels and held a meeting with longline owners and operators. They estimated that the loss of income for vessels over 24 meters in length amounted to about $1.4 million per week or $11.4 million for the two-month period. In addition they were also subject to various expenses while their vessels lay idle, such as dock fees, fuel, crew wages, crew food, loans payments, insurance and vessel maintenance.

As if this were insufficient tribulations for the fishermen, the Department of Homeland Security (DHS) forbade foreign crew members from conducting maintenance on the docked longline vessels. DHS argued that such work was outside of the visa conditions under which the foreign crews had been hired. Longline owners and operators were reluctant to let their crews leave, however, because of the anticipation that the fishery would reopen. The vessel owners said they were unable to work another job to raise funds since they needed to be present on the vessels 10 to 12 days a month to conduct the maintenance normally conducted by their crews. Further, vessel owners and foreign crews were not eligible for unemployment benefits.

The fishermen were very dispirited after the closure, and some were in favor of a government buyback scheme so they could get out of the fishery. However, even if vessel owners and fishermen got out of fishing, they may have a limited skill set for other employment.

Fortunately, the PIR finally approved the requested fishing agreement between the CNMI and the Hawai'i longline fishery, which allowed the fishery to reopen in the WCPO on Oct. 9. The agreement was approved after NMFS determined that the limited transfer of quota (1,000 mt) was consistent with the conservation needs of the stock and the WCPFC objectives to end overfishing.

On Nov. 25, NMFS received and approved a fishing agreement between the Government of Guam and the Hawai'i longline fleet that allows the transfer of an additional 1,000 mt allocation in the WCPO to the Hawai'i fleet. The agreement was timely as NMFS anticipated that the Hawai'i longline fishery would reach the 1,000 mt allocated from the CNMI on Nov. 30, 2015.

Funds received from these bigeye transfers are used for fishery development, based on marine conservation plans developed by the governors of each of the three territories and approved by the Secretary of Commerce.

The EPO remains closed until Dec. 31, 2015, for US longline vessels over 24 meters in length.

For more on the impacts of the August-October closure, view the video of the fishermen and boat owners at https://www.youtube.com/watch?v=Dkct6nGMuOE.

Director's Message

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administration to support the Hawai'i longline fishery, which provides food, livelihood and cultural continuity to the people of Hawai'i.

Domestically, the Council has been revising its five Fishery Ecosystem Plans (FEPs) to incorporate public comments and enhanced ecosystem elements. The FEPs are being restructured to allow them to be maintained as living documents. Producing timely annual reports that include more ecosystem information will be critical once the revised FEPs are in place. The Council staff and Plan Team members are working to complete the 2015 reports by June 2016.

The Council has also transmitted many recent letters to NMFS supporting US fisheries in the Pacific Islands. For example, we provided a comment letter on the NMFS draft ecosystem-based fishery management policy directive. We expressed concern that the 10 National Standards of the MSA are given differential importance and that there is a myopic focus on the Endangered Species Act and Marine Mammal Protection Act.

We also responded to the Green Turtle Proposed Rule. We highlighted scientific issues regarding the proposed threatened listing for the Hawai'i population and the proposed endangered listings for the populations surrounding American Samoa, Guam and Commonwealth of the Northern Mariana Islands. We recommended that the proposed listings be reconsidered and urged NMFS and FWS to extend the period for making a final determination by six months, given the substantial disagreement and uncertainty regarding the sufficiency and accuracy of available data relevant to the proposed rule.

Our support of fishing communities continues in many ways, from student educational endeavors to community-based management. We also remain supportive of the traditional Aha Moku system of natural resource management and call on Gov. Ige and his administration to make clear to local residents that this system embraces all the people of Hawai'i. The Aha Moku system is based on place, ecosystem and community participation, which are values also inherent in the Council's FEPs.

We hope you enjoy this issue of *Pacific Islands Fishery News*, which began in 1984 and has run regularly since 1988. The centerfold is a poster designed by one of our Fishery Internship and Student Help Project interns. Zach Yamada worked with Council staff Mark Mitsuyasu to document the Main Hawaiian Islands Deep-7 bottomfish fishery and presented the poster at the Hawaii Conservation Conference this past August.

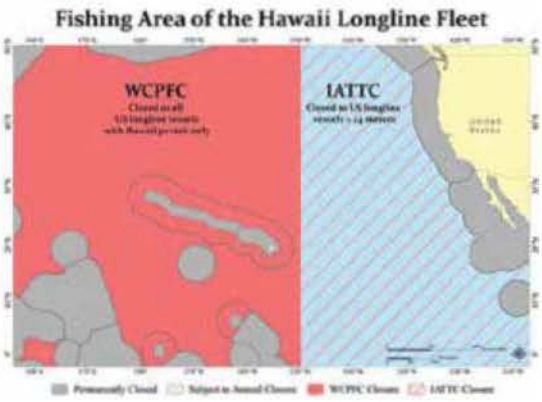
Happy Holidays,

Kitty M. Simonds

Kitty Simonds

How the Hawai'i Longline Fishery Is Managed

The Hawai'i longline fishery is managed domestically by the Western Pacific Regional Fishery Management Council and the National Marine Fisheries Service (NMFS) as well as under international measures that are adopted by two tuna regional fishery management organizations (RFMOs) and implemented by Council and NMFS regulations. One RFMO, the Western and Central Pacific Fishery Commission (WCPFC), has jurisdiction over the Western and Central Pacific Ocean (WCPO). The other RFMO, the Inter-American Tropical Tuna Commission (IATTC), has jurisdiction over the Eastern Pacific Ocean (EPO).



The WCPFC closure of US longline bigeye tuna harvesting lasted from Aug. 5 to Oct. 9, 2015. The IATTC closure for US longlinge vessels greater than 24 meters harvesting bigeye tuna began Aug. 12 and continues until Dec. 31, 2015.

Hawai'i sits at the boundary of the two RFMOs with the Hawai'i longline fleet fishing in the waters of the WCPO and EPO. Both RFMOs have management measures in place to address the conservation of bigeye tuna, which has been subject to overfishing Pacific wide. Overfishing continues in the WCPO but recently ended in the EPO.

As part of the WCPO measures the Hawai'i fleet operates under a quota based on the 2004 catch of bigeye of 4,181 metric tons (mt). Initially the quota was set at 90 percent of this limit or a total allowable catch of 3,763 mt. In 2015, the catch was dropped a further 5 percent of the baseline limit to 3,554 mt. When NMFS published regulations to implement this limit, it was further decreased by 52 mt to account for an overage by the Hawai'i fleet in 2014, thus limiting the Hawai'i longline fleet to 3,502 mt. The fishery is scheduled for a further 5 percent reduction in 2017 to 3,345 mt.

Under WCPFC conservation and management measures, the three US Participating Territories of American Samoa, Guam and the Commonwealth of the Northern Mariana Islands (CNMI) are not subject to any longline bigeye catch limit, in common with other Small Island Developing States (SIDS) in the WCPO.

The IATTC bigeye conservation measures in the EPO include a 500 mt limit for US longliners greater than 24 meters in length. Thirty-three vessels, or 20 percent of the Hawai'i longline fleet, are greater than 24 m in length.

In November 2011, the US Congress passed the Consolidated and Further Continuing Appropriations Act (CFCAA) of 2012 (Section 113). Section 113 authorized American Samoa, Guam and CNMI to use, assign, allocate and manage their catch and effort for highly migratory fish stocks, including pelagic management unit species, through fishing agreements with US vessels permitted under the Pelagic Fishery Ecosystem Plan (FEP) to support fisheries development in the US territories. Section 113 also directed the Council to recommend an amendment to the Pelagic FEP and associated regulations to implement Section 113 under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. The provisions of Section 113 were extended through the end of 2013 through separate legislation.

Consistent with Section 113, the Council in 2014, developed and NMFS approved Amendment 7 to the Pelagic FEP. Amendment 7 established a process under the authority of the Magnuson-Stevens Act to specify catch and/or effort limits for pelagic fisheries in American Samoa, Guam and the CNMI as recommended by the Council, consistent with the conservation needs of the stock. The process also allows NMFS to authorize the government of each US Participating Territory to the WCPFC to allocate a portion of its catch or fishing effort limit of pelagic management unit species to US fishing vessels permitted under the Pelagic FEP through specified fishing agreements to support fisheries development in the territory. Regulations implementing Amendment 7 at 50 CFR 665.819 became effective on Oct. 24, 2014.

In accordance with regulations implementing Amendment 7, NMFS in 2014, specified a catch limit of 2,000 mt of longline-caught bigeye tuna for pelagic fisheries of each US Participating Territory and authorized each US territory to allocate up to 1,000 mt of its 2,000-mt bigeye tuna limit to a US longline fishing vessel or vessels identified in a specified fishing agreement (79 FR 64097, Oct. 28, 2014). In that year, the CNMI government entered into a single specified fishing agreement with Quota Management, Inc. (a corporation representing vessels permitted in the Hawai'i longline fishery), authorizing Hawai'i-based longline vessels identified in that agreement to harvest up to 1,000 mt of the CNMI's 2,000 mt bigeye quota. The agreement also required Quota Management, Inc. to make an agreed upon deposit to the Western Pacific Sustainable Fisheries Fund to support fisheries development projects in the Commonwealth approved by the governor.

Public Advice Informs Revised Fishery Ecosystem Plans

In 2001, the Western Pacific Regional Fishery Management Council completed the nation's first ecosystem-based plan for fisheries. The Coral Reef Ecosystem Fishery Management Plan included specific measures to promote sustainable fisheries, while providing for substantial protection of coral reef ecosystem resources and habitats throughout the Council's jurisdiction. In 2009, the Council reorganized all of its five fishery management plans to fishery ecosystem plans (FEPs). This entailed creating place-based management plans that set up the framework to address multiple and interacting ecosystem components. Now, five years later, the Council has reviewed and is proposing revisions to its five management plans, including the Hawai'i Archipelago and Pelagic FEPs.

The Council has spent the past year engaging its advisors and others via a series of meetings across the region, including Hawai'i, to solicit input on the current plans. The Council also hired an O'ahu-based consulting group to recommend improvements to the plans. From these efforts the Council learned that the plans' management objectives should be more measurable, emphasize important fishery ecosystem elements and be tailored to individual FEP issues and conditions. The plans could be better formatted to more cohesively describe the fisheries and their management, and unnecessary and dated ecosystem information could be removed.

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Public Advice (Continued from page 3)

Fishermen and others who advise the Council on the Hawai'i Archipelago and Pelagic Fishery Ecosystem Plans met Feb. 4, 2015, in Honolulu to discuss restructuring the plans.

The draft revised Hawai'i Archipelago FEP contains a new management policy, "to apply responsible and proactive management practices, based on sound scientific data and analysis and inclusive of fishing community members, to conserve and manage fisheries and their associated ecosystems." It also has four new goals: 1) conserve and manage target and non-target stocks, 2) protect species and habitats of special concern, 3) understand and account for important ecosystem parameters and their linkages, and 4) meet the needs of fishermen, their families and communities.

The Hawai'i Archipelago FEP also contains a set of reworked management objectives. Because these objectives guide development of plan amendments, the reviewers felt they should reflect issues and concerns specific to Hawai'i. The overarching objectives are to a) support fishing communities; b) prevent overfishing on Council-managed stocks; c) rebuild overfished stocks, d) improve fishery monitoring and data collection; e) promote compliance; f) reduce bycatch and minimize interactions and impacts to protected species; g) refine and minimize impacts to essential fish habitat; h) increase traditional and local knowledge in decision-making; i) consider the implications of spatial management arrangement in Council decision-making; and j) consider the implications of climate change in Council decision-making.

The draft revised Hawaii Archipelago FEP is available for review at www.wpcouncil.org/wp-content/uploads/2014/03/10.D3-Hawai'i-Draft-FEP.pdf.

The draft Pelagic FEP is available for review at www.wpcouncil.org/wp-content/uploads/2014/03/10.D5-Pelagics-Draft-FEP.pdf.

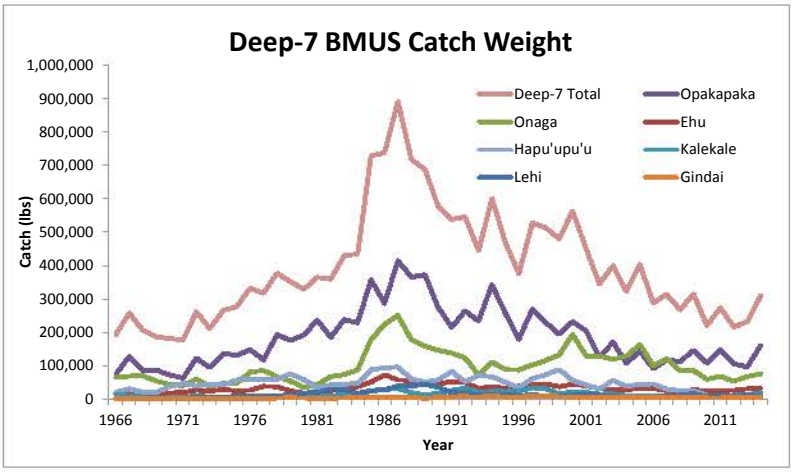
Council and NMFS staffs are in discussions about revisions to the FEPs.

2015 Hawai'i Reports to Include Half Century of Data, Enhanced Ecosystem Elements

The Western Pacific Regional Fishery Management Council has been working with the Hawai'i Division of Aquatic Resources to draft the first annual commercial landings report for the main Hawaiian Islands. This initial report illustrates commercial fishing trends based on 49 years of data from 1966 to 2014. Fishing parameters from 2014 were compared to the historical records to evaluate deviations from long- and short-term averages, develop a summarization script and create the draft 2014 annual report for the Hawai'i Archipelago Fishery Ecosystem Plan (FEP). The 2014 report is serving as a template for future Hawai'i FEP annual reports.

The 2015 report, which will use this template, is scheduled for release in June 2016. The report covers bottomfish species, including the prized deep sea snappers and grouper known as the Deep 7, as well as fish, mollusks, crustaceans and limu found within coral reef ecosystem. Understanding yearly changes in the catch and effort of a fishery will assist policymakers in constructing sound strategies to manage vital resources of Hawai'i.

A separate 2015 annual report will cover fisheries managed under the Pelagic FEP, such as the Hawai'i longline fisheries for tuna and swordfish.



Total pounds caught of main Hawaiian Islands Deep-7 bottomfish from the draft 2014 Hawai'i Archipelago FEP annual report.

Both 2015 annual reports will include enhanced ecosystem elements such as modules on protected species, habitat, human dimensions and climate change. For example, the protected species module will comprehensively examine the current status of protected species interactions in each fishery operating under the Hawai'i Archipelago and Pelagic FEPs. The module will aid the Council in ensuring that federally managed fisheries do not post adverse impacts to protected species such as sea turtles, seabirds and marine mammals.

In advance of the annual report development, the Council's Protected Species Advisory Committee in May 2015 reviewed sea turtle and seabird interaction trends in the Hawai'i longline fishery over time and recommended further evaluating leatherback turtle interaction patterns in the Hawai'i deep-set longline fishery. The deep-set fishery, which targets tuna, has very low leatherback interaction rates compared to the shallow-set fishery, which targets swordfish. As a result, the deep-set fishery had very limited data available for analysis. The Hawai'i longline fishery now has over 20 years of observer data since coverage started in 1994, and the Pacific Islands Fisheries Science Center will conduct a detailed analysis of available data to evaluate patterns in leatherback turtle interactions over time. The analysis results are expected to inform the Council's 2015 annual report and, in turn, provide the Council with information to better monitor the fishery's impacts on protected species.

Hawai'i Annual Catch Limits Set through 2018

In 2006, the reauthorized Magnuson-Stevens Fishery Conservation and Management Act (MSA) included requirements to prevent and end overfishing and rebuild overfished stocks. To comply with these requirements, the Western Pacific Regional Fishery Management Council amended its fishery management plans to include a mechanism for specifying annual catch limits (ACL) for all fisheries at a level such that overfishing does not occur and to implement measures to ensure accountability measures for adhering to these limits.

The MSA includes 10 National Standards. Guidance for National Standard 1 (to prevent overfishing while achieving optimum yield) allows for a multi-year specification of ACLs to minimize administrative burden on the Council and to provide stability in the fisheries. With this in mind, the Council recommended ACLs for its coral reef ecosystem complex, crustacean complex, precious corals complex and non-Deep 7 bottomfish complex species for 2015-2018 at its 159th meeting. The ACLs for these species complex run from the start to the end of the calendar year.

The Council also recommended ACLs for the Main Hawaiian Islands (MHI) Deep 7 bottomfish for fishing years 2015-2016 to 2017-2018 at its 163rd meeting. The ACLs for the MHI Deep 7 run from Sept. 1 to Aug. 31 the year following. Fishing in the Northwestern Hawaiian Islands for all species (except for sustenance purposes, i.e., eating while in the monument) is prohibited due to its marine national monument designation. For real time updates on the MHI Deep 7 bottomfish ACL, go to http://hawaiibottomfish.info/.

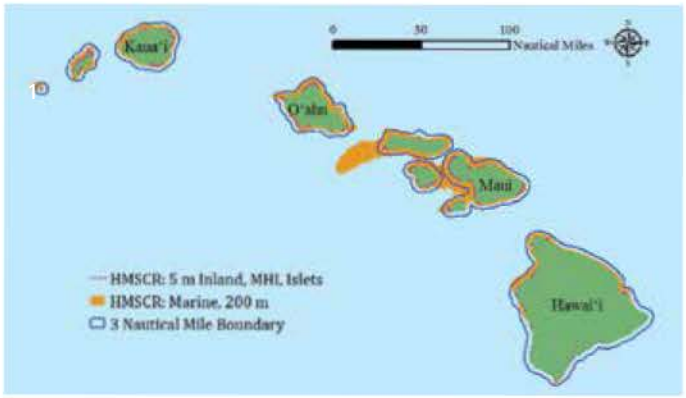
The annual catch limit for slipper lobsters in Hawai'i is 280 pounds.

Hawai'i Annual Catch Limits in Pounds

Coral Reef Ecosystem (CRE) Species Complex	2015	2016	2017	2018
Selar crumenophthalmus (akule or bigeye scad)	988,000	988,000	988,000	988,000
Decapterus macarellus ('opelu or mackerel scad)	438,000	438,000	438,000	438,000
Acanthuridae (surgeonfish)	342,000	342,000	342,000	342,000
Carangidae (jacks, including *Seriola dumerili* or kahala)	161,200	161,200	161,200	161,200
Carcharhinidae (reef sharks)	9,310	9,310	9,310	9,310
Crustaceans (crabs)	33,500	33,500	33,500	33,500
Holocentridae (squirrelfish)	148,000	148,000	148,000	148,000
Kyphosidae (chubs/rudderfish)	105,000	105,000	105,000	105,000
Labridae (wrasses)	205,000	205,000	205,000	205,000
Lethrinidae (emperors)	35,500	35,500	35,500	35,500
Lutjanidae (snappers, including *Lutjanus kasmira* or ta'ape)	330,300	330,300	330,300	330,300
Mollusks (octopus)	35,700	35,700	35,700	35,700
Mugilidae (mullets)	19,200	19,200	19,200	19,200
Mullidae (goatfish)	165,000	165,000	165,000	165,000
Scaridae (parrotfish)	239,000	239,000	239,000	239,000
Serranidae (groupers)	128,400	128,400	128,400	128,400
All other CRE management unit species (finfish and invertebrates) combined	485,000	485,000	485,000	485,000
Crustacean Complex				
Deepwater shrimp	250,773	250,773	250,773	250,773
Spiny lobsters	15,010	15,010	15,010	15,010
Slipper lobsters	280	280	280	280
Kona crab	27,600	27,600	27,600	27,600
Precious Coral Complex				
Au'au channel black coral	5,512	5,512	5,512	5,512
Makapu'u Bed pink coral	2,205	2,205	2,205	2,205
Makapu'u Bed bamboo coral	551	551	551	551
180 Fathom Bed pink coral	489	489	489	489
180 Fathom Bed bamboo coral	123	123	123	123
Brooks Bed pink coral	979	979	979	979
Brooks Bed bamboo coral	245	245	245	245
Ka'ena Point Bed pink coral	148	148	148	148
Ka'ena Point Bed bamboo coral	37	37	37	37
Ke'ahole Point Bed pink coral	148	148	148	148
Ke'ahole Point Bed bamboo coral	37	37	37	37
Exploratory Areas precious coral	2,205	2,205	2,205	2,205
Bottomfish Complex				
Non-Deep 7 Bottomfish	178,000	178,000	178,000	178,000
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
Deep 7 Bottomfish	326,000	318,000	306,000	TBD

Final Rule Announced for the Hawaiian Monk Seal Critical Habitat

On Aug. 21, 2015, the National Marine Fisheries Service (NMFS) announced the final rule to revise critical habitat for Hawaiian monk seals. Consultation is required under the Endangered Species Act for actions that are authorized,funded or carried out by federal agencies that may affect critical habitat. The revised critical habitat went into effect Sept. 21, 2015.



Monk seal critical habitat in the main Hawaiian Islands.

In the main Hawaiian Islands (MHI), the monk seal critical habitat generally includes the seafloor and marine habitat to 10 meters or approximately 33 feet above the seafloor from the 200-meter depth contour through the shoreline and extending into terrestrial habitat 5 meters or approximately 16.5 feet inland from the shoreline between identified boundary points around Kaula Island, Ni'ihau, Kaua'i, O'ahu, Maui Nui (including Kaho'olawe, Lana'i, Maui and Molokai) and Hawai'i. The marine portion of the critical habitat only includes the area 10 meters from the seafloor and does not include the remainder of the water column. Certain areas of the MHI are excluded from the designation because they are ineligible for designation due to existing management under an Integrated Natural Resource Management Plan or national security considerations.

In the Northwestern Hawaiian Islands, the critical habitat includes all beach areas, sand spits and islets, including all beach crest vegetation to its deepest extent inland, as well as the seafloor and marine habitat 10 meters in height above the seafloor from the shoreline out to the 200-meter depth contour around 10 atolls, islands and reefs.

The final rule is a substantial revision to the proposed rule, which was published in June 2011 and received significant criticism from various stakeholders and the public. NMFS reduced the boundary from the proposed 500-meter depth contour based on public comments and additional scientific information. Responding to public comments, NMFS also produced a revised economic report and clarified potential economic impacts from the designation.

The critical habitat designation is not expected to impact fisheries managed under the Council's Hawai'i Archipelago Fishery Ecosystem Plan (FEP) at this time. The final biological report for the critical habitat designation stated that "at this time, there is no information to indicate that Hawai'i's FEP managed fisheries will require additional management above current efforts to address impacts to critical habitat."

For more information on the final critical habitat designation, go to www.fpir.noaa.gov/PRD/prd_critical_habitat.html

What Happens When a Hawaiian Monk Seal Hauls Out on a Boat Ramp?

That was the question raised by members of the Hawai'i Archipelago Fishery Ecosystem Plan Advisory Panel (AP) at its meeting on Oct. 15, 2015.

With the monk seal population growing in the main Hawaiian Islands, the Hawai'i AP expressed concern that fishermen and other members of the public may have encounters with monk seals at public access areas. In particular, Hawai'i AP asked if anything could be done if a monk seal hauled out on a boat ramp, preventing people from launching their boat or returning from their trip.

We asked the Marine Mammal Response Network at the National Marine Fisheries Service (NMFS) Pacific Islands Regional Office for advice.

Q: ***What can fishermen and other boat users do if a monk seal is hauled out on a boat ramp in a manner that would block public access to that ramp?***

A: The first thing to do is to call the Marine Mammal Hotline so that a NMFS staff member or volunteer can be sent to assess the situation. See below for the hotline number. Although ramps and other access points are rarely blocked by monk seals, reporting such incidents is important. NMFS encourages everyone to use the hotline to report any situation where seal health or human safety is potentially at risk.

Q: ***If a monk seal staff or volunteer comes to the harbor, can they move the monk seal to restore access to the boat ramp?***

A: Trained NMFS staff and volunteers are authorized to move a monk seal under certain situations. The staff or volunteer will assess the need for displacement on a case-by-case basis. A seal on a boat ramp does not automatically mean that displacement will be warranted. In general, NMFS will move seals if there is a public safety or seal safety issue involved.

Q: ***Have there been examples of NMFS staff moving a seal that hauled out on a boat ramp?***

A: Yes. For example, NMFS moved a monk seal from the boat ramp at Honokohau Harbor on Hawai'i Island on April 20, 2015.

Q: ***Is there anything the public can do on their own if there is a monk seal at a boat ramp?***

A: Members of the public should NOT attempt to move a monk seal on their own as this may endanger both the person and the seal. Harassing and disturbing a monk seal is prohibited under federal and state law unless the displacement is conducted by authorized personnel.

Who to Call about Marine Mammal Incidents

NMFS Marine Mammal Hotline toll-free 1 (888) 256-9840

Call the hotline, staffed 24 hours a day year round, for any seal, dolphin or whale incident, including strandings, vessel strikes and entanglements.

In addition, the NMFS Marine Mammal Response Network has staff and volunteers on six islands. The phone numbers listed here are staffed during daylight hours. For reports at night, it is best to call the toll-free hotline above.

O'ahu (808) 220-7802

Maui/Lana'i (808) 292-2372

Kaua'i (808) 651-7668

Moloka'i (808) 553-5555

Hawai'i Island (808) 987-0765

Red Fish

The main Hawaiian island (MHI) bottomfish fishery is managed through two sub-complexes—the Deep-7 and the rest of the bottomfish species. Every time fishery managers get together with the bottomfish fishing community, the same questions arise. Where did the Deep-7 species complex come from? Why are they grouped together?

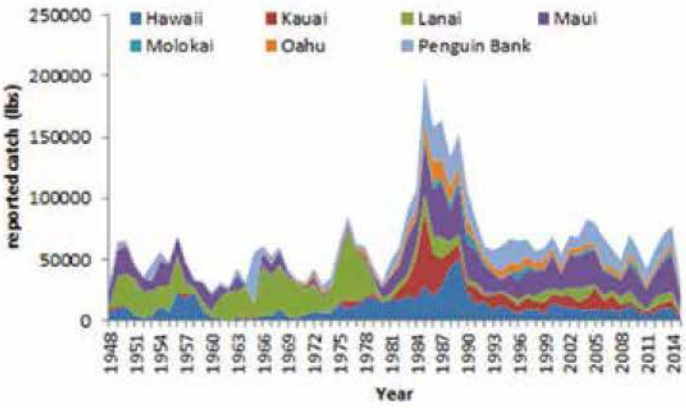
The original fishery management plan (FMP) for bottomfish in the Western Pacific Region was passed in 1986. It included 15 bottomfish species. The two most important commercial and non-commercial components of the bottomfish complex are onaga and 'opakapaka for economic and cultural reasons. From the mid-1980s through the 1990s, the State of Hawai'i took the management lead in the MHI with the Western Pacific Regional Fishery Management Council taking the lead in the Northwestern Hawaiian Islands. Regular monitoring and annual reviews of the fishery were done as part of FMP by the Bottomfish Plan Monitoring Team composed of federal and state fishery agency staff. At the time, the status of the fishery was monitored by tracking the spawning potential or percent of mature bottomfish landed in the fishery over time. No stock assessment was available for this fishery until 2007. In the mid-1990s the spawning potential for onaga and ehu dipped well below 20 percent, which was a trigger for management concern.

Responding to this trend, the State of Hawai'i took management action in 1998 by creating a series of 19 bottomfish restricted fishing areas (BRFAs) throughout the MHI. The goal was to close 20 percent of the available bottomfish habitat area (100-fathom contour) in the MHI to rebuild onaga and ehu stocks. The authorizing legislative language that established these closures stated goals of protecting bottomfish spawning grounds and areas of juvenile recruitment. Although such areas are still largely unknown, the 19 BRFAs went into effect in 1998. As part of the rule package, the state identified seven bottomfish species (onaga, 'opakapaka, ehu, lehi, gindai, kalekale and hapu'upu'u) as subject to the new closure rules. Thus the Deep-7 complex was born. The reason for including these seven species was that they were often associated in the catch when targeting onaga and ehu.

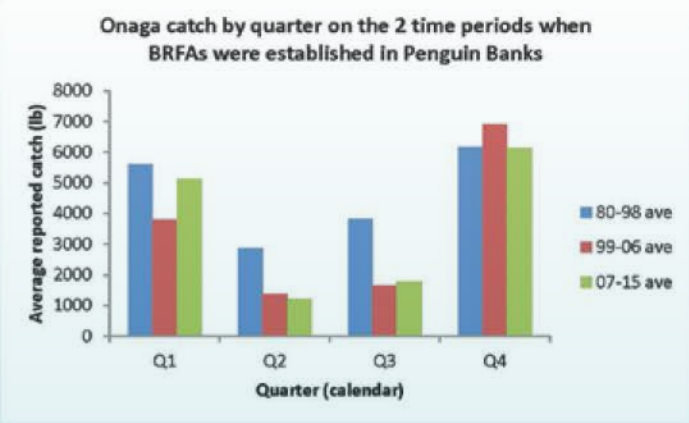
At the time the BRFAs were being crafted by the state, the US Congress revised federal statutes on how the status of fisheries must be monitored. Tracking spawning potential was no longer good enough. Congress stipulated tracking stock status based on the biomass of that stock. In addition, managers had to track and control fishing effort on that stock. Based on these new rules, the Secretary of Commerce sent the Council a letter in 2005 notifying it that "overfishing" was occurring in the bottomfish fishery. In other words, the stock was not overfished, but too much fishing effort was occurring in the fishery.

In 2007, the Council stepped into the management of the MHI bottomfish fishery by implementing a fleet-wide annual quota. Since then, an annual quota has been set for this fishery each fishing year, which starts on Sept. 1 and ends Aug. 31 the following year. The state revised its BRFAs in 2007 by replacing the original 19 closures with 12 larger closures. The Council and National Marine Fisheries Service have both advised the State that the closures are no longer needed as the quota-based management regime now directly controls how many fish are annually taken in the fishery. The fishing community continuously calls for the State to remove the BRFAs as they are redundant management measures that greatly impact certain segments of the bottomfish fishery.

So how has the BRFAs impacted the community and benefited the resource? The goal of the closures was to reduce fishing mortality on onaga so the stock could rebuild. Twenty percent of the habitat was taken away with the hopes of reducing landings by a corresponding 20 percent. Looking at the onaga catch from across the state, it appears the landing has remained consistent through the implementation of the 1998 BRFAs and subsequent revision in 2007. The number of total licenses operating in these areas has also remained constant. So at first glance, it appears fishermen redirected effort into open areas.



Although the BRFAs did not have significant effect on reducing overall onaga landings statewide, they appeared to have localized effects on certain communities within the bottomfish fleet. A close look at changes in onaga landing on O'ahu and at Penguin Banks reveals some interesting trends. You can also



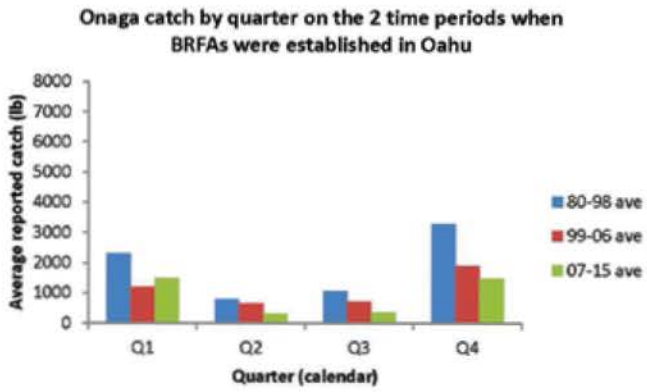
(Continued on page 8)

Red Fish

(Continued from page 7)

clearly see the cultural significance of onaga as the two periods of peak landings include the fourth quarter winter holiday season and first quarter Western and Chinese New Year. Breaking down onaga landing data to quarters and separating them into three distinct time periods (pre-BRFA, original BRFAs and revised BRFAs), you can see landings generally remained constant through all three periods on Penguin Banks, especially during the critical winter holiday seasons (quarters 1 and 4).

In contrast, the drop in onaga landings is apparent on O'ahu after creation of the first set of BRFAs. This is consistent with what the Council has heard through testimonies at meetings about how the BRFAs have especially impacted the bottomfish fishing communities on windward and east O'ahu.



Valuable information has been gleaned through talks with the fishing community over the past decade about the bottomfish fishery. Impacts from the BRFAs offer insights to possible reasons landing trends differ between O'ahu and Penguin Banks. The BRFAs on the windward and east sides of O'ahu impacted small boat fishermen particularly hard as they had no options but to venture farther to catch bottomfish. BRFA closures off of Kane'ohe, Makapu'u and Hawai'i Kai forced those fishermen to much farther runs across the Moloka'i channel and into rougher seas to fish Penguin Banks. However, many of these trailer boats are small and lack the capacity to safely travel such far distances into unpredictable seas.

Fishermen have also noted the enhanced enforcement and compliance of the O'ahu BRFAs because of their close proximity to harbors and coastlines. The Penguin Banks BRFA is much farther and remote, making enforcement difficult. This is manifested in the same (or even higher) level of 4th quarter catch when the demand for red fish is high after the BRFA was established compared with the pre-BRFA era.

Kewalo Basin, in Honolulu, housed a major segment of the commercial bottomfishing fleet in Hawai'i. Many of these "old" timers hung up their raingear and called it quits once the 1998 closures went into place. Highliners like F/V Venus and F/V Taiyo Maru cited the new rules as drivers for their departure from the fishery.

Social and cultural impacts from the BRFAs must also be given serious thought. The art of bottomfish fishing is passed from generation to generation as techniques, skills and, most importantly, locations are honed over many years. For many, bottomfishing is seasonal as red fish is needed for the New Year or on special occasions. Onaga, in particular, with its bright red color and prized white meat is used for these occasions to symbolize long life. Closing highly valued fishing locations, which have been used for generations, cuts off traditional practices and impacts the local culture.

Understanding the dynamics of the fishery, impacts to the community and benefits to the resources are important. However, the analysis is never ending. More questions arise as new information is gleaned from the data. And the story continues….

Bottomfish Management Unit Species (Deep 7 sub-complex in red)

Common English Name	Local Name	Scientific Name
Snappers		
Silver jaw jobfish	Lehi	*Aphareus rutilans*
Grey jobfish	Uku	*Aprion virescens*
Squirrelfish snapper	Ehu	*Etelis carbunculus*
Longtail snapper	Onaga, ula'ula	*Etelis coruscans*
Blue stripe snapper	Ta'ape	*Lutjanus kasmira*
Yellowtail snapper	Yellowtail kalekale	*Pristipomoides auricular*
Pink snapper	'Opakapaka	*Pristipomoides filamentosus*
Yelloweye snapper	Yelloweye 'opakapaka, kalekale	*Pristipomoides flavipinnis*
Snapper	Kalekale	*Pristipomoides sieboldii*
Snapper	Gindai	*Pristipomoides zonatus*
Jacks		
Giant trevally	White ulua	*Caranx ignoblis*
Black jack	Black ulua	*Caranx lugubris*
Thick lipped trevally	Pig ulua, butaguchi	*Pseudocaranx dentex*
Amberjack	Kahala	*Serioila dumerili*
Grouper		
Sea bass	Hapu'upu'u	*Epinephelus quernus*

Hawai'i Yellowfin Tuna Minimum Size Limits

If you ask any two fishermen in Hawai'i about whether the State should raise the current minimum size limit for commercial sale of yellowfin tuna from 3 pounds to something higher, you are likely to get two different answers. It's a hot topic for those who grew up eating the small guys or who rely on them now, and they often advocate no change. However, with new science suggesting that many yellowfin in Hawai'i waters may be permanent residents of the islands rather than passers-through, some fishermen are calling for an increase in the current minimum commercial size as a conservation measure.

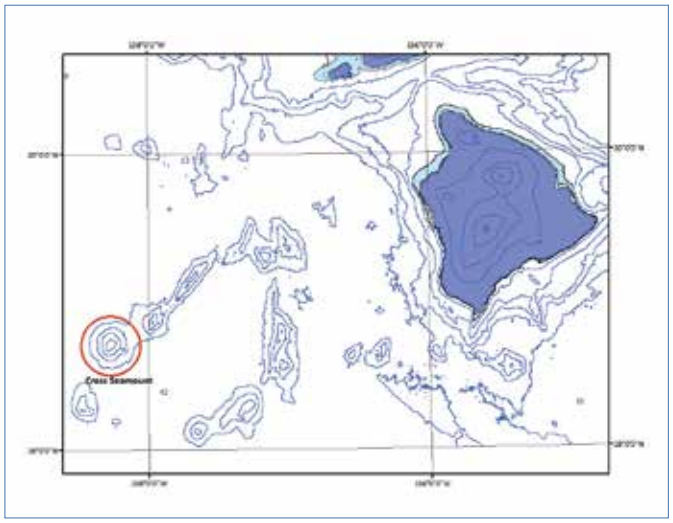
The Council has been looking into this issue for the past year or so. The findings suggest that those who will be affected by an increase in the minimum size are relatively few in number when compared to the State's population as a whole, but they may be impacted greatly in terms of obtaining fish protein for themselves and their families. Small yellowfin are important in these communities because they are reasonably priced, are easy to handle and cook, can feed several people for a couple of days without spoilage and are a part of the cultural landscape of Hawai'i. The demand is high enough that small yellowfin were present in 75 percent of the markets the Council surveyed on O'ahu in February 2015. Several community members spoke passionately about maintaining smaller 'ahi in the markets. Approximately 350 O'ahu residents have signed a petition to the State and Council advocating against raising the current minimum size limit. The Council has examined and is now compiling data on the sale of small yellowfin on Maui, the Big Island and Kaua'i.

It's a complicated issue. Data suggest that, to be meaningful, any increase would have to be fairly substantial, perhaps more than 30 pounds. It's unclear how such a large increase would be received, even by supporters. What's your opinion? How would a jump in the yellowfin tuna commercial size limit affect you? Let us know! Contact Chris Hawkins at Christopher.hawkins@wpcouncil.org or (808) 522-8171.

Hawai'i Advisory Panel Looks at Cross Seamount Fishery

Late last year, the Hawai'i Advisory Panel (AP) discussed whether current fishing conditions at the Cross Seamount area are cause for concern. Fishing at "the Mountain" waxes and wanes, and the Western Pacific Regional Fishery Management Council stays in tune with this unique fishery in order to understand whether management measures are necessary.

The Cross Seamount is approximately 140 miles to the southwest of the Big Island of Hawai'i. At its shallowest point, the Seamount rises to about 385 meters of the surface, an excellent depth for aggregating several commercially important species, such as yellowfin tuna, monchong and small bigeye tuna. This is a unique pelagic fishery in Hawai'i. It lands more than 50 percent of non-longline caught bigeye in the State. Yet, the fishery accounts for 0.5 percent of annual non-longline pelagic fishermen and effort in trips. The type of fishing and gear used at the Cross Seamount is quite varied and shows high levels of ingenuity. Gear type change by season, target catch and what is biting. Gears include shortline, troll, tuna handline, vertical line, deep-sea handline and a hybrid method that combines two or more of these methods.

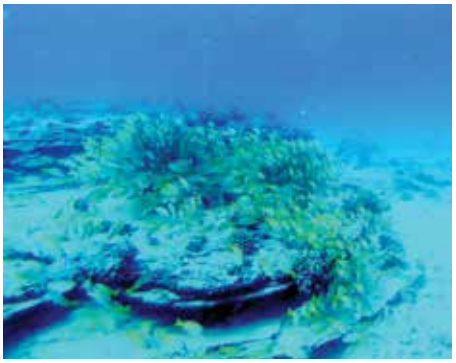


In 2014, a Council contractor examined State of Hawai'i data for Cross between 2009 and 2014 and conducted interviews with several current Cross Seamount fishermen. The biggest change to the fishery was the decrease in boats from about 20 in the mid-1990s to six or seven today. More recently, however, the fishery is in an upswing. The number of licensed fishermen operating at the Cross has increased from nine in 2009 to 14 in 2013. The number of trips has increased 355.5 percent from 64 in 2009 to 224 trips in 2013. Yield has increased drastically (344 percent) from 312,073 pounds to 1,076,344 pounds harvested over the same timeframe. However, the average individual weight of fish harvested from the Cross has decreased from a peak average weight of 26.9 pounds in 2010 to 20.2 pounds in 2013.

Interviews covered the topics of motivations, trip frequency, entrants and exits from the fishery, fishing methods, marketing of fish caught at Cross and fishery conflicts. Fishermen said that historic conflict between longliner and non-longline fishermen at the Cross Seamount no longer exists. One respondent said that Cross Seamount fishermen view themselves as a community or family, have agreed amongst themselves on fishing norms and are able to self-regulate. They communicate well in order to avoid problems between boats and gear. The cadre of Cross fishermen has remained fairly regular and stable for years. Sometimes a new boat or boat owner enters the fishery but often does not stay long. Fishing the seamount is specialized. Fishermen need to know how to fish around other vessels, manage tricky and unique currents and deal with the natural elements at the seamount. Plus the fishery experiences booms and busts, and marketing Cross Seamount fish varies. Some fishermen are now marketing and selling their fish on Facebook through pages such as Hawaii Island Fish Market. Fishermen also email their land connections who alert buyers when the boat will be arriving. Fish are then sold directly from the boat.

The Hawai'i AP noted the increased landings and slightly decreased average weight but did not recommend the Council pursue any specific actions at this time, especially since the fishermen interviewed for the project did not suggest that any management actions are necessary. However, the Council will continue to monitor this important and unique fishery.

Maunalua Study Ground Truths Traditional Knowledge


Left and center: *Ta'ape, weke and other reef fish on the Maunalua Bay study site.* ***Right:*** *Single drop camera system used in study.*

Maunalua Bay on the eastern side of O'ahu was an area famously known for its productive fisheries that supported vibrant communities living off of the land and sea. It was home to one of Hawai'i's largest fishponds, Kuapa. Offshore fish houses, known as ko'a by Hawaiians, were reliably fished by traditional fishermen who knew and understood the natural rhythms and cycles of the fish that lived there and the ecosystem in which they thrived.

Coastal and upland development over the last century has forever changed this east O'ahu shoreline and the natural resource productivity of the bay. Fringing reefs were dredged to fill the once productive fishponds in Wailupe and Paiko to support housing developments. Winding streams have been channelized, increasing the sediment load on the fringing reefs. The largest fish pond on O'ahu was dredged and converted into what is now known as Koko Marina and the water front community of Hawai'i Kai. Road construction along Kalaniane'ole Highway cutoff natural freshwater springs that once flowed freely into the shoreline waters from Kahala to Paiko.

Through all these changes, local fisheries have continued by adapting to the evolving ecosystem. Local fishermen continue to work offshore ko'a in Maunalua Bay that were historically worked generations before by their families. Some of the fish species have changed with the introduction of non-native species, such as ta'ape (*Lutjanus kasmira* or blue-striped snapper), but many of the traditional ko'a still predictively produce abundant food fish as they have for generations.

The Western Pacific Regional Fishery Management Council thought it would be interesting to ground truth fishermen's traditional knowledge of known ko'a by using modern scientific surveying methods. The study would document the natural cycle of a ko'a over time and compare it against what expert fishermen predicted for that ko'a. To do this, the Council met with fishermen who regularly fish Maunalua Bay to see if they would be willing to divulge one of their sacred ko'a spots in the name of science.

This study was designed to determine the relative abundance and distribution of nearshore fishery resources at a traditionally used ko'a utilizing an underwater camera monitoring system. A remote-sensing camera technique was chosen because it can be rapidly deployed and retrieved from depth, can be employed over broad areas for minimal cost and is nondestructive. Underwater photo and video platforms have been effective in capturing accurate and repeatable fish and habitat data

360 degree camera system used in the study.

throughout a wide range of depths and habitat types without artificially attracting fish with bait, which would bias potential species-habitat associations. Furthermore, camera systems are more objective and cost efficient than SCUBA transect surveys currently used to assess reef-fish abundance.

Participating fishermen considered several ko'a sites for this study, each offering opportunities to monitor different species complexes. The team agreed on a relatively shallow offshore ko'a known to house ta'ape, weke (*Mulloidichthys flavolineatus* and *M. vanicolensis* or goatfish) and mamo (*Abudefduf abdominalis* and *A. vaigiensis*, or sergeant fish). Relying on their traditional knowledge of the ko'a, the project team fishermen documented details about the study site's physical description, species diversity and abundance, ocean conditions and seasonal changes.

Project scientists next developed a sampling strategy that uses a single strata randomized statistical design. Camera drop locations were randomized per month within a single stratum or around the ko'a itself. Camera directions were recorded to determine if the camera was facing the ko'a or not. Maximum counts per species were recorded for each camera. Through this study, it was found that fishermen's traditional knowledge of the abundance of fish at the ko'a can be used as a resource for predicting the changes in populations for select species throughout the year. The video surveys supported the trends described by fishermen for the three main target fish at the ko'a: mamo, ta'ape and weke. These species were expected to be found in the highest abundances throughout the year in comparison to the other species, which was indeed the case.

While traditional knowledge is helpful in understanding important food fish, it is lacking in understanding species populations that inhabit the ko'a that are not fished for food or for sport. These other reef species play a major role in the function of the ko'a ecosystem. By examining the community as a whole, connections among the species can be identified and increase our ability to understand changes in the community.

Main Hawaiian Islands Bottomfish

A Case Study in Fisheries Conservation and Management

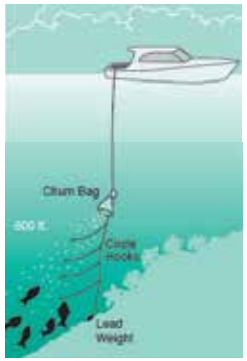
Zachary Yamada, Joshua DeMello, Mark Mitsuyasu

onaga (longtail snapper)

The Hawai'i bottomfish fishery targets snappers, groupers and jacks that inhabit deep slopes and banks at depths ranging from 50 to 200 fathoms. The fishery provides a high-value, fresh, local source of protein for the people and promotes traditional fishing practices utilizing modern technology.

Main Hawaiian Islands Deep-7 Bottomfish Species

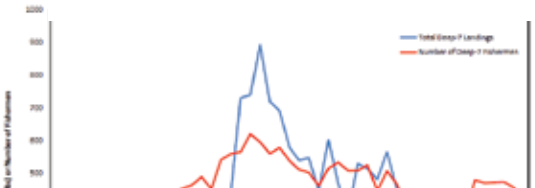
SCIENTIFIC NAME	ENGLISH COMMON NAME	LOCAL NAME/HAWAIIAN NAME
Aphareus rutilans	Silverjaw Snapper	Lehi
Epinephelus quernus	Hawaiian Grouper	Sea Bass/Hāpu'upu'u
Etelis carbunculus	Red Snapper	Ehu/Ula'ula
Etelis coruscans	Longtail Snapper	Onaga/ 'Ula'ula koa'e
Pristipomoides filamentosus	Pink Snapper	Paka/'Ōpakapaka
Pristipomoides sieboldii	Lavender Jobfish	Kalekale
Pristipomoides zonatus	Flower Snapper	Gindai/'Ūkīkiki



Bottomfish vessels range from 15 to 70 feet and fishermen deploy two to three vertical lines using electric reels. Each line has terminal gear consisting of a Christmas tree configuration of between five and 12 baited hooks with a 5-pound weight at the end. A chum (palu) bag with chopped squid or fish is often used at the top of the baited hooks to attract fish (see figure at left).

kalekale (lavender jobfish)

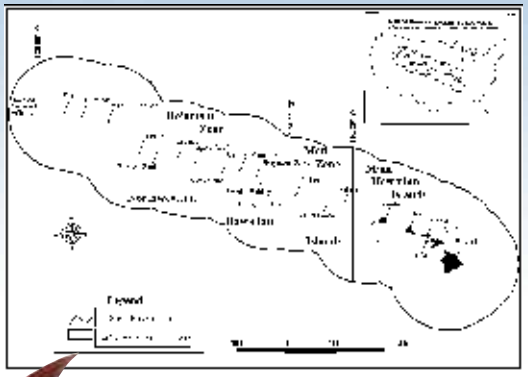
MHI Deep-7 Bottomfish Fishery Landing (in 1,000 lbs) and Participation from 1966–2014



Participation in the MHI Deep-7 bottomfish fishery shows an overall increasing trend while landings have continually decreased since the mid-1980s (see figure

1986

The Western Pacific Regional Fishery Management Council (Council) developed and the National Marine Fisheries Service (NMFS) approved the Bottomfish and Seamount Groundfish Fishery Management Plan (FMP). The FMP provided the ability to manage bottomfish in the Federal waters (generally 3–200 miles) around Hawai'i and implemented regulations to prevent overfishing.



lehi (silverjaw snapper)

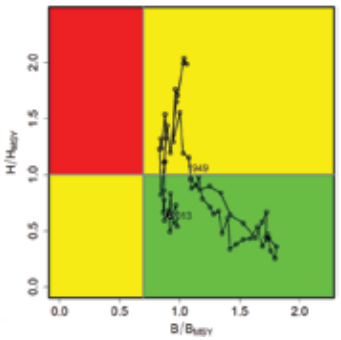
1989

The Hawaiian Archipelago was split into two management zones: the Main Hawaiian Islands (MHI) and the Northwestern Hawaiian Islands (NWHI), which was further divided into two zones, the Ho'omalu and Mau Zones (see map above). Under a "gentlemen's agreement," the State took the lead on bottomfish fishery management in the MHI and the Council took the lead in the NWHI. Regulations for each of the areas are provided in the table (below).

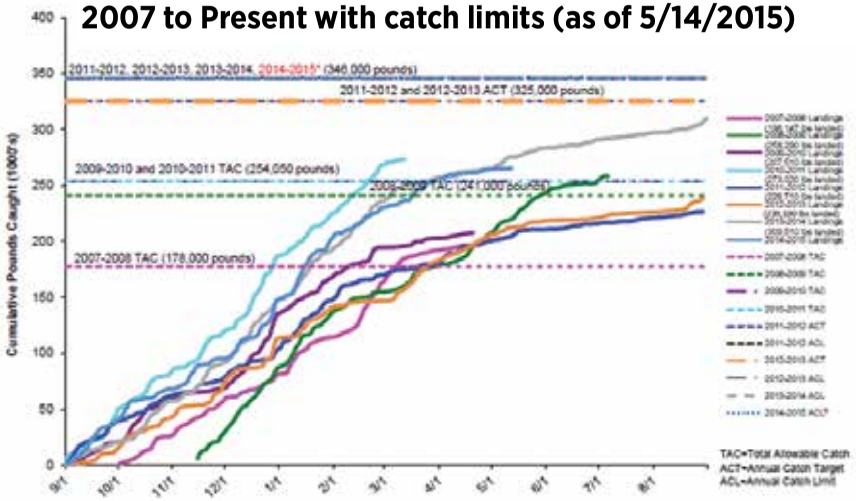
	MAIN HAWAIIAN ISLANDS	NWHI MAU ZONE	NWHI HO'OMALU ZONE
Location	Hawai'I Island to NI'ihau	Nihoa and Necker Islands	French Frigate Shoals to Kure Atol
Management Authority	HDAR; Hawaii Administrative Rules	Bottomfish FMP; Federal Regulations	Bottomfish FMP; Federal Regulations
Effort Controls	Unlimited entry; 19 Bottomfish RFAs in place (12 as of 2006)	Limited entry since 1999, up to 10 permits allowed (2 permits reserved for indigenous communities)	Limited entry since 1989 with up to 7 permits allowed
Capacity Controls	No vessel size limits	60-foot vessel size limit	60-foot vessel size limit
Average Trip Duration	Mostly day trips, but may extend for several days	Trips last up to 2 weeks	Trips last up to 3 weeks
Recreational Fishing Controls	5 MHI Deep-7 species combined per person per day (Federal and State)	No recreational fishing allowed without federal limited entry permit	No recreational fishing allowed without federal limited entry permit
Permit, License and Reporting	Bottomfish vessel registrations for all vessels. Commercial operators must have CML & make trip catch reports	CML, federal permits and daily landing reports required	CML, federal permits and daily landing reports required
Observers	None	Yes, federal observers	Yes, federal observers

at left). These trends contributed to the overfishing determination of the bottomfish stock in 2005. Recent increasing trends reflect the coordinated management regime.

Recent stock assessments show the bottomfish fishery is neither overfished nor experiencing overfishing. A Kobe Plot (at right) provides a visual representation of the status of the stock at different points in the fishery's history.



Comparison of MHI Deep 7 Bottomfish Landings from 2007 to Present with catch limits (as of 5/14/2015)



Annual catch limits (ACLs) and near-real-time monitoring have been placed on the fishery to ensure that the fishery continues to avoid overfishing of the stock. If these limits are reached, the fishery is closed until the next fishing year.

Stock assessments and cooperative research are being done with fishery scientists, managers and fishermen. Research on life history contributes to updating the assessments and ACLs.

gindai/'ūkī ki (flower snapper)

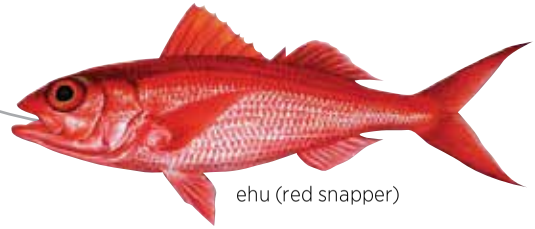
1996

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) was reauthorized and required the use of Maximum Sustainable Yield (MSY) over Spawning Potential Ratio (SPR). This change in the measurement of the stock status had implications for the stock status of the MHI Deep-7 fishery.

1998–2003

The Council's Bottomfish FMP Plan Team monitoring the stock status of the bottomfish stocks in Hawai'i noted declining SPR values and recommended the State of Hawai'i address the low SPR values for onaga and ehu. In response, the State implemented 19 Bottomfish Restricted Fishing Areas (VRFAs) in the MHI to protect bottomfish spawning areas.

'ōpakapaka (pink snapper)



ehu (red snapper)

2005–2006

The Council was notified by NMFS in 2005 of an overfishing status for the MHI bottomfish stock. In 2006, the MSA was reauthorized mandating Annual Catch Limits (ACL) for all federally managed fisheries.

2007–2011

To address the overfishing determination, the Council and State of Hawai'i coordinate a summer seasonal closure in 2006 and work towards additional measures, including revising the BRFAs and developed a catch quota for commercial bottomfish fishermen. Council developed a Total Allowable Catch (TAC) for the Deep-7 species in the MHI. The TAC was derived using the State's commercial catch report data and represented a 22% reduction in fishing mortality for 2007. The fishing year was set from September 1 to August 31 to account for the sociocultural importance of bottomfish during the holiday season. The State of Hawai'i moved from monthly reporting to trip reporting and improved reporting compliance. The management framework transitioned from the TAC to ACLs in 2011.

2009

President George W. Bush proclaimed the NWHI as a Marine National Monument under the Antiquities Act. Commercial fishing (including bottomfish) in the NWHI is prohibited under the proclamation.

hāpu'upu'u
(sea bass/Hawaiian grouper)

For more information visit www.wpcouncil.org **www.facebook.com/wprfmc** **www.hawaiibottomfish.info@wpcouncil**

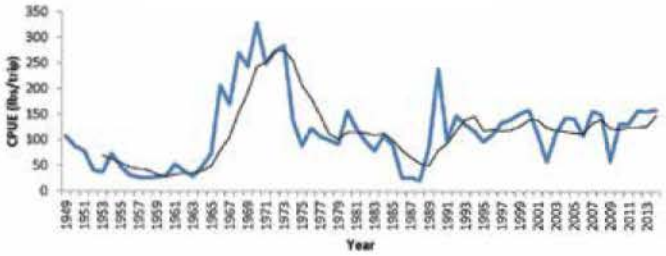
Fisheries Internship and Student Help (FISH) Internship Project | Western Pacific Regional Fishery Management Council | 1164 Bishop St., Suite 1400 | Honolulu, HI 96813

Fish drawings courtesy of Art by Pepe.

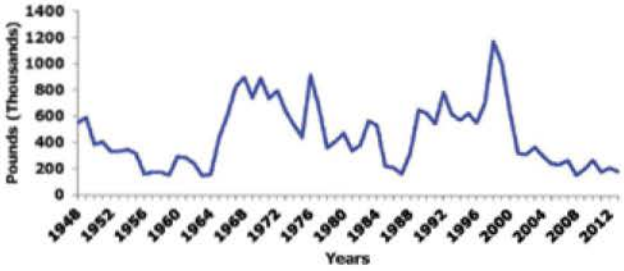
Project Underway to Estimate Akule Population

The bigeye scad (*Selar crumenopthalmus*, locally known as akule) is an important food source for many Hawai'i residents and represents one of the most productive nearshore fisheries in Hawai'i. Akule is considered a coastal pelagic species, occupying an intermediate trophic link between the coastal environment in which it feeds and the pelagic migrations of its predators. Although an important commercially harvested species, akule has been little researched and its stock status is unknown. Fortunately, it is a highly productive, short-lived species that is not readily susceptible to high fishing pressure.

Oah'u Annual CPUE



Hawai'i Commercial Lands of Akule



Commercial akule fishermen mostly use surround nets deployed from a fishing vessel. The boat frequently works in tandem with a spotter plane to efficiently target appropriate schools. Akule can also be caught by hook-and-line. In the past, various coastal communities in Hawai'i used hukilau nets to catch akule in great numbers.

Akule aeiral survey photo with akule schools circled.

Based on State of Hawai'i commercial fisheries data, the total commercial catch for this species has remained relatively consistent over the previous 10 years, with higher landings in the 1980s and 1990s. Fluctuations in landings can be attributed to many factors including fishing effort, market demand and environmentally driven recruitment variation (e.g., rainfall). The catch per unit effort has also remained fairly stable over the past 20 years.

Recognizing that the main commercial fishery for akule uses spotter planes, the Western Pacific Regional Fishery Management Council is conducting cooperative research studies that use aerial surveys coupled with commercial fishing operations to potentially generate akule population trends. Aerial spotting planes provide a means for direct observations of many marine species found on or near the ocean surface. This surveillance method has been largely utilized in scientific surveys for estimating population sizes and distributions of many taxonomic groups. Pilot project surveys were conducted in 2015 on the feasibility of using the aerial spotter estimates. The surveys revealed that the fishery is likely catching a very small proportion of the population, suggesting that the fishery is sustainable and has little impact on the stock.

Surround net used to capture akule.
Photo courtesy of Leo Ohai.

Partnership Tackles Toothed-Whale Depredation in the Hawai‘i

The Hawaii Longline Association (HLA), in collaboration with industry members, independent researchers, the Pacific Islands Fisheries Science Center and the Western Pacific Regional Fishery Management Council, is tackling a long-standing challenge faced by longline fishermen around the world: depredation by odontocetes (toothed whales). The team, which gathered in Honolulu for a kickoff meeting in November, will conduct field trials in 2016 to determine the commercial viability and practicality of devices designed to reduce odontocete depredation without causing injury to the animal. The project is funded by the FY2015 Saltonstall-Kennedy Grant Program.

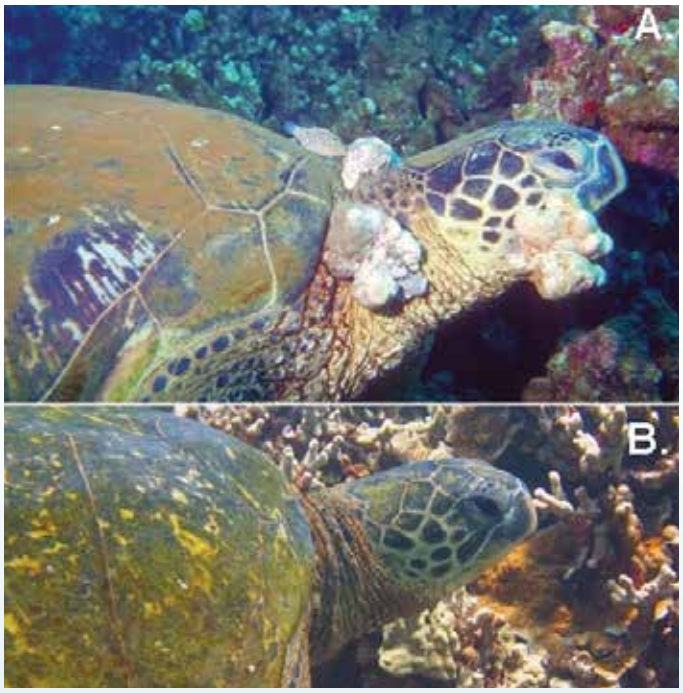
Project team members gather for a group photo in front of a longline vessel during their kick-off meeting in November.

Odontocetes such as false killer whales have long been known to feed on fish caught on longline gear, leaving only the heads of bigeye tuna and other valuable fish on the hook. The devices to be tested are designed to release a deterrent structure around the target catch when triggered by the weight of the fish. Similar concepts have been previously tested with some positive results for reducing depredation in longline fisheries in other regions. However, prototypes used in most studies significantly interfered with fishing operations and are not considered viable for commercial fishery applications.

A more recent study used prototypes designed with fishermen input and focused on minimizing interference with fishing

New Analysis Highlights Hawai‘i Green Turtle Resilience to Tumor-Causing Disease

If you have encountered Hawai‘i green turtles (known in Hawaiian as honu) while diving or snorkeling, chances are you have seen them with tumors on their skin. Since at least the late 1950s, the honu has been seen with these tumors, which are caused by a disease called fibropapillomatosis (FP). FP is the main known cause of turtle strandings in Hawai‘i. There is no doubt that this disease affects individual turtles.



A green turtle photographed in 1993 with tumors (A) and the same turtle photographed tumor-free in 2004 (B). Photo credit: Peter Bennett and Ursula Keuper-Bennett, www.turtles.org.

However, green turtles have been known to recover from FP, and the population has rebounded even in the presence of these tumors. A new analysis conducted by Milani Chaloupka, PhD, reveals that this disease has not caused a population decline even in an area considered to be a global FP hotspot.

The analysis used data from a long-term monitoring project spanning from 1982 to 2010 at the Pala‘au foraging ground off Moloka‘i. The monitoring project was led by George Balazs of the Pacific Islands Fisheries Science Center, working closely with several Moloka‘i fishing families. Over the course of nearly 30 years of monitoring, thousands of individual immature green turtles were tagged, measured and checked for FP disease status. Turtles with FP were found to have lower annual apparent survival probability compared to those that were disease free, but the long-term population trend at this foraging site was found to be stable over time at approximately 1,860 immature turtles.

Consistent with previous studies, FP disease prevalence at the Pala‘au foraging population increased following an outbreak in the early 1980s. At least 46 percent of the Pala‘au population was affected by FP by the disease’s peak in the mid-1990s, followed by a gradual decline.

The honu population has shown a remarkable rebound in the face of a chronic disease that was once feared would bring demise to the population.

Green turtles in Florida have also experienced high rates of population increase despite being the other global hotspot for FP. This highlights the resilience of green turtle populations to persist through significant threats.

Longline Fishery

False killer whale. Photo courtesy of Southwest Fisheries Science Center, NOAA Fisheries Service.

operations. The trials conducted in Australia and Fiji showed promising results. Odontocete depredation rates were lower and target fish catch rates higher on hooks with the deterrent devices than on control hooks. The devices also reduced catch depredation by sharks, providing an added benefit to fishermen.

The trials to be conducted in the Hawai'i longline fishery will use one of the devices tested in Australia and Fiji. The team will also develop a second device with input from fishermen to optimize the design for operations in the Hawai'i longline fishery. The project will test for the impact of these devices on target and non-target fish catch rates, fish survival and size, and various operational considerations including gear set and retrieval time.

Depredation is not only an economic issue for the fishery but also a conservation concern in the rare event when an odontocete becomes incidentally hooked in the process. Such interactions with false killer whales in the Hawai'i deep-set fishery have been the focus of the False Killer Whale Take Reduction Plan, developed pursuant to the Marine Mammal Protection Act. However, regulatory measures implemented under the Take Reduction Plan focused on reducing the severity of injury to false killer whales in the event of incidental interactions because of the lack of technical solutions to prevent interactions in the first place.

The Council has a long history of working collaboratively with the industry and researchers to develop and implement solutions to minimize impacts on protected species. Past successful efforts include bycatch mitigation measures for seabirds and sea turtles, which have reduced interactions by approximately 90 percent in the shallow-set longline fishery.

A Look at Deployment, Design, Location of Hawai'i FADs

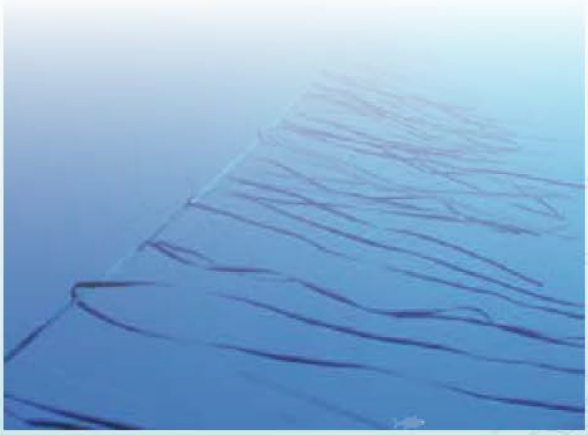
For generations, native Hawaiian fishermen have tended ko'a, or fishing shrines in the ocean, by placing stones or food in a distinct locations to attract fish. Similar in concept to ko'a, modern fish aggregation devices (FADs), which are buoys anchored in depths between 100 and 2,000 fathoms, have been used in Hawai'i and other US Pacific Islands for decades as an effective method to attract pelagic species such as aku, 'ahi, mahimahi, ono and billfish targeted by commercial, subsistence and recreational fishermen.

Since 1980, the State of Hawai'i FAD Program (http://www.hawaii.edu/HIMB/FADS/) has been maintaining a network of FADs to promote recreational fishing opportunities using Sports Fish Restoration Act funding administered by the US Fish and Wildlife Service. There are more than 50 FADs permitted to be deployed in State and federal waters throughout Hawai'i by the Division of Aquatic Resources (DAR). The local government jurisdictions of American Samoa, Guam and the Commonwealth of the Northern Mariana Islands have similar programs to DAR's and use the same funding source.

FADs are popular because they provide consistent fishing opportunities and can reduce search time for fish. As all fishermen can attest, more time catching and less time searching is important. Over the past 18 months, DAR has been restricted in deploying State FADs due to a lengthy environmental review process involving the US Fish and Wildlife Service. For example, of the 55 permitted FADs, more than 30 are currently not deployed. At the Western Pacific Regional Fishery Management Council's 164th meeting, which was held Oct. 21 and 22, 2015, in American Samoa, the State of Hawai'i Council member, Alton Miyasaki, reported that the environmental review process for the DAR FAD program was nearly complete and that FADs will soon be redeployed. This news should come as welcome relief for Hawai'i fishermen and just in time for the winter Holiday season.

State of Hawai'i FAD buoy. Photo courtesy of Warren Cortez.

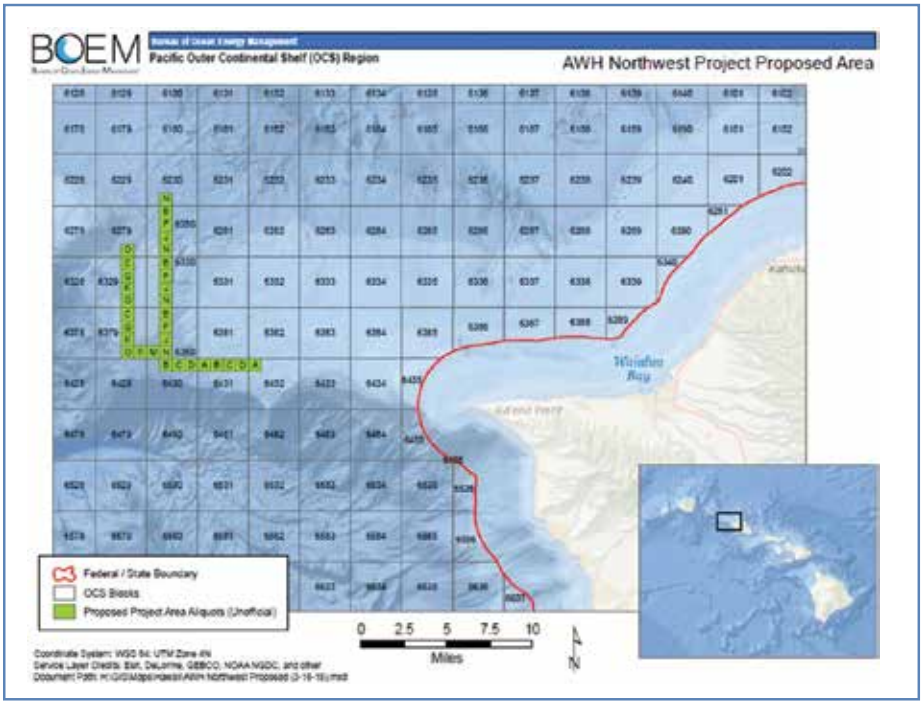
Also at its 164th meeting, the Council discussed FAD placement and design. For example, the Council has been made aware of concerns from Hawai'i fishermen that DAR should reevaluate where it deploys FADs in relation to known fishing grounds, bottom topography and currents, and it should add streamers to the FADs, like it did in years past. Fishermen are convinced that streamers, which typically are lengths of rope or strapping material tied into the chain or line below the water surface, enhance the ability of FADs to attract fish. Reluctance to add streamers is due to the potential added drag on the system, which could reduce the longevity of the buoy, as well as time and resources to attach the streamers. The Council, however, is interested in working with DAR, Hawai'i fishermen and federal permitting agencies to identify an environmentally friendly FAD design that includes streamers, has high deployment duration and is effective at attracting pelagic species.



FAD rope with streamers. Photo courtesy of David Itano.

FADs also provide a valuable research function to fishery scientists who conduct tagging studies. Most of the yellowfin and bigeye tuna tagged in Hawai'i waters with conventional or satellite tags were caught off FADs. The Council remains committed to working together with Hawai'i fishermen, scientists and DAR to support an effective FAD program that promotes sustainable fisheries, research and enhanced fishing opportunities in Hawai'i.

What Fishermen Should Know about Wind Energy



O'ahu Northwest Project, proposed to be located 12 miles northwest of Ka'ena Point in water depths of approximately 700 to 1,000 meters (2,296 to 3,280 feet). The proposed lease area is 11,387 acres (4,608 hectares). Source: www.boem.gov/hawaii

Hawai'i's mandated clean energy goals combined with advances in offshore technology have sparked wind energy development interest in Hawai'i's waters. Currently, two unsolicited lease requests filed with the Bureau of Ocean Energy Management (BOEM) propose offshore wind facilities off Ka'ena Point and South O'ahu by AW Hawaii Wind, LLC (AWH). Wind energy projects have pros and cons for the fishing community, so it is critical that fishermen remain involved in the leasing process.

BOEM Leasing Process

BOEM issues leases for renewable energy projects on the Outer Continental Shelf (OCS) in four phases: planning and analysis, leasing, site assessment, and construction and operations. During the planning and analysis phase, BOEM processed AWH's unsolicited lease request. The OCS in Hawai'i begins 3 nautical miles from the shoreline. Upon receipt of a lease request, BOEM determines whether the applicant is legally, financially and technically qualified to hold a lease. BOEM made a positive determination for AWH earlier this year. In the leasing phase, which is underway for the AWH request, BOEM will publish a Request for Interest (RFI) in the Federal Register to determine if there is competitive interest in the proposed lease area. The RFI also solicits stakeholder comment on site conditions and other information that may be relevant to the proposed project and its potential environmental, social, cultural and economic impacts. BOEM will then either negotiate a lease with the interested developer or hold a lease sale.

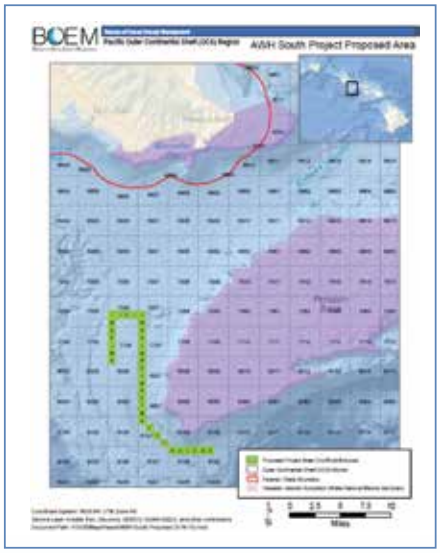
Further opportunity for public input exists through the National Environmental Policy Act (NEPA) process in the final phases, the site assessment and construction and operations phases. A NEPA document will be prepared during development of both the Site Assessment Plan and the Construction and Operations Plan.

Pros and Cons

Wind projects include installing wind turbines, anchoring structures and an undersea cable to transmit the energy to the grid on O'ahu. These structures have the potential to affect the attendant ecosystem. Environmental review of wind energy projects proposed in fishing grounds must carefully consider the potential impact on pelagic fish migratory patterns, fish habitat and birds that traverse nearshore waters and are "fish finders." While the fish aggregation device (FAD) effect of all floating structures may impact fish migratory patterns, the effect has the benefit of increasing fishing opportunities. Disruptions in navigation from wind turbines must be minimized to ensure fishermen may benefit from the FAD effect.

Seabirds associated with fishing may experience direct mortality or behavioral disruption as a result of interactions with wind turbines. Fishermen use seabirds to find fish, so impacts to seabirds may indirectly impact fishing success. Careful siting of the wind projects can mitigate potential impacts to seabirds. If the projects are sited in areas of high commercial or non-commercial fishing use, the projects present another con to fishermen through displacing fishing effort.

Fish habitat is another ecosystem concern associated with offshore wind development. Laying undersea cables has the potential to displace or replace benthic habitat from the wind turbine site to the shoreline. Additionally, water column impacts may have the potential to affect the habitat of egg and larval life stages of all fishes and crustaceans. The Western Pacific Regional Fishery Managemetn Council defines Essential Fish Habitat (EFH) in its Fishery Ecosystem Plans for all managed fisheries. BOEM will consult with the National Marine Fisheries Service during the NEPA process on potential impacts to EFH.



O'ahu South Project, proposed to be located about 17 miles south of Diamond Head in water depths of approximately 300 to 700 meters (984 to 2,296 feet). The proposed lease area is 12,099 acres (4,896 hectares). Source: www.boem.gov/hawaii

Get Involved

The Council encourages all interested parties to submit individual comments on any proposed federal actions, including proposed wind energy projects, that may affect federally managed fisheries. At the time of this writing, the RFI for the AWH projects had not been published. RFIs can be found through the Federal Register document search at www.federalregister.gov. More information on BOEM's activities in Hawai'i can be found at www.boem.gov/hawaii.

Blue Marlin Capital Deserves a World Class Facility

Honokohau could be redeveloped into a world-class marina that attracts businesses and volumes of tourists.

Kona is recognized as the blue marlin capital of the world. Its small boat harbor at Honokohau is filled with more than 100 charter vessels offering half- and full-day charters with a good chance of catching a blue marlin. Blue marlin and other large gamefish are often caught in close proximity to Honokohau because the steeply dropping coast brings large pelagic fish close to shore. Kona is host to many gamefish tournaments including the prestigious Hawaii International Billfish Tournament, usually mounted in July.

Every issue of *Hawaii Fishing News* recounts the fish landed or tagged-and-released at Kona. The October 2015 edition includes three photos of fish greater than 500 pounds and two granders, or fish greater than 1,000 pounds. In the past, about two-thirds of the fish landed by the Kona charter fleet were blue marlin. This has dropped to about 30 percent as more charter captains embrace the catch-and-release ethic, estimating the weight of the fish and then tagging it. A YouTube video of a 16-year-old New Yorker landing a grander in February went viral, receiving up to half a million hits.

With this kind of success one could be forgiven for being underwhelmed when actually visiting Honokohau. Its location in a barren desert-like lava field does it no favors when it comes to landscape aesthetics. But the big surprise is how primitive Honokohau is compared to other world-class sportfish destinations such as Cabo San Lucas, La Paz and Los Suenos in Mexico and harbors in Costa Rica, Brazil, Nicaragua and Cape Verdes, Africa. These developing countries offer far superior harbor facilities, which attract not only fishing patrons but also tourists who visit the docks to dine and shop.

Honokohau facilities include toilets on both sides of the harbor but no showers. The north side of the harbor, which handles the majority of the traffic because of two small boat ramps, has no paved parking or driveways. The unpaved surface can quickly turn to mud, and charter captains and crews have had to wash their customers' feet before they come aboard.

The gleaming charter vessels nestling in this ugly, underequipped lagoon provides quite a contrast. The north side of the harbor has no electrical power so vessel operators have no shore power. On the harbor's south side where there is power, vessels owners had to put in their own shorepower connection at a cost of $30,000 per unit. Having power is a safety issue as charged vessel batteries keep bilge pumps working so boats stay afloat. Another complaint is non-trailer boats have only a single fuel supplier in the harbor.

Ko'olina, a private facility on O'ahu, comes close to being a first-class harbor in Hawai'i. Perhaps the best future for Honokohau is to become privatized as well. Kona and its surrounds continue to grow. Part of that growth could be the redevelopment of Honokohau into a world-class marina that attracts other businesses and volumes of tourists above and beyond the sportfish fraternity.

Pacific Blue Marlin
Kajiki, A'u, Sa'ula, Batto

Distribution

- Found in all tropical oceans.
- Found year-round in Hawai'i.
- Large females migrate into Hawai'i waters in summer to spawn.

Stock Status

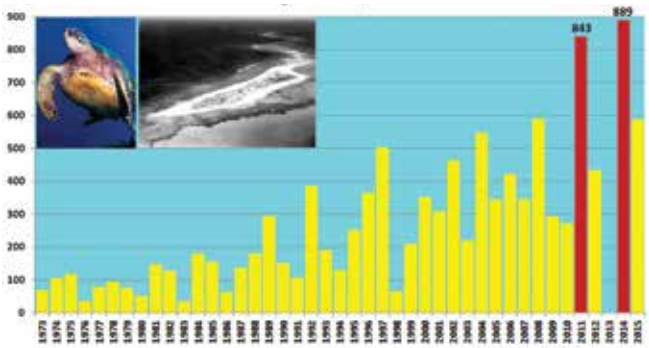
- Fished sustainably, with the stock neither overfished nor subject to overfishing.

A Case for Honu Management

Hawai'i, like much of the world that has green sea turtles (*Chelonia mydas*) in their environment, traditionally harvested the animal as food. Culturally, honu (Hawaiian green sea turtle) is an important part of the diet of native Hawaiians. In the early 1970s, about a decade after Hawai'i statehood, the argument was made that commercial harvest of green sea turtles was causing a precipitous decline in the honu population. The State, recognizing the importance of the animal as a traditional food, sought to allow home consumption. The State banned the commercial harvest of honu and implemented a permit system and catch limits to control the harvest and manage the species.

Then in 1978, the federal government listed honu and most of the world population of green sea turtles as "threatened" under the Endangered Species Act (ESA). A "threatened species" is likely to become endangered in the foreseeable future throughout all or a significant portion of its range. An "endangered species" is one that is in danger of extinction throughout all or a significant portion of its range. The State argued for the continuance of home consumption of honu, but the federal authority of the ESA did not allow it.

Green Turtles Nesting at East Island, French Frigate Shoals, 1973-2015



Nesting at East Island in the French Frigate Shoals, Northwestern Hawaiian Islands, represents about half of all nesting activity in Hawai'i. Hawaiian green turtles nest approximately every four years, and it is natural to see high and low years over a several year cycle. Nesting in 2014 marked a record at 889 nesting females. 2015 represents the highest "low" year in 42 seasons at nearly 500 nesting females.

On Feb. 14, 2012, the Association of Hawaiian Civic Clubs filed a petition to determine if the honu was a distinct population segment (DPS) of *C. mydas* and petitioned for it to be delisted as no longer threatened. A DPS is the smallest division of a species permitted to be protected under the ESA. All Hawaiian green sea turtles nest in the Hawai'i archipelago, most in the Northwestern Hawaiian Islands. Numbers have increased. Tagging studies show that the adults remain near the Hawaiian Islands. Honu have been reported by community members to be foraging in areas that that they were not known to frequent, areas that were occupied by other species and other species complexes. Recent research indicated that some foraging populations have reached the carrying capacities of their environment.

A recent green turtle review by the National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (FWS) recommended an analysis be conducted to determine the application of the DPS policy to the green turtle. If the population is determined to be a DPS and then delisted, the species can be managed by the State of Hawai'i rather than the federal government.

The required timeline for the Secretaries of Commerce and the Interior to respond to petitions is outlined in the Code of Federal Regulations (Title 50, Section 424.14):

- Within 30 days of receiving the petition, the Secretaries must acknowledge the receipt in writing.
- Within 90 days of receiving the petition, the Secretaries must publish a "90-day Finding" as to whether the petition presents substantial scientific or commercial information suggesting that the petitioned action may be warranted. [NMFS and FWS issued the 90-day finding on the petition to designate Hawaiian green turtle as a DPS and delisting it on Aug. 1, 2012, i.e., about 165 days after receiving the petition.]
- If the 90-day Finding indicates the petitioned action may be warranted, then NMFS and FWS will initiate a status review and will also provide opportunity for public comment at this time. [NMFS and FWS accepted public comments on the 90-day finding until Oct. 1, 2012, i.e., the public had about 60 days to comment.]
- Within 12 months of receiving the petition, the Secretaries must publish a "12-month Finding" and in most cases will make the finding that a) the petitioned action is not warranted (no DPS designation and no delisting) OR b) the petitioned action is warranted and publish a proposed rule for DPS and delisting. If a proposed rule is published, a public comment period will follow. [On March 23, 2015, i.e., 37 months after receiving the petition, NMFS and FWS published a proposed rule that divides the population of green sea turtles into 11 DPSs and maintains the threatened status for the honu while upgrading two other DPSs to the endangered status.]
- Within a year of the proposed rule publication, the final rule will be due. [While the proposed rule should become final on March 23, 2016, an additional six-month extension has been requested to review the science used for the finding.]

Each of the above actions occurred well outside the required time, and a final rule is still being developed. Many of the public comments in response to the 12-month finding challenged the scientific justification for continuing ESA listing for the honu. The honu could and should be an example the successful application of the ESA when so few listed species are recovered. Instead, delays and an apparently arbitrary, indiscriminate use of science have delayed the finding of recovery.

The purpose of the ESA is to recover species, which for various reasons, are on the cusp of extinction. Oftentimes the reason for the depletion is the impact of human activities on the species or on the natural environment on which the species depend. It would be logical to assume then that recovered species could be protected under another regulatory regime. This would ease the cost of enforcement for a species no longer in danger of extinction and allow management of the resource so that the ecosystem can be maintained in a balance beneficial to the community. Without management, the ecosystem goes through cycles of abundance and scarcity, with species populations rising and falling depending on the availability of forage and habitat. When a population rises to the point of depleting its food sources, it will crash and the cycle will start again. This natural function can be exacerbated or enhanced by periodic naturally occurring events such as El Nino, La Nina, decadal oscillations and storms as well as anthropogenic causes. The point of management is to smooth out the effect of those events and keep resources abundant and sustainable.

The ESA is a tool that can be used to protect species that are seriously threatened with extinction, but it is not the tool to manage a recovered species or an ecosystem. True, some species will never be delisted and may go extinct while protected by ESA. The honu is not one of them.

Aha Moku at a Crossroad

In 2007, the Hawai'i State Legislature created the Aha Ki'ole Advisory Committee with the purpose of identifying the system of best practices of traditional management of Hawai'i's natural resources. In 2009, the Committee reported that the best practices are contained within the traditional Aha Moku system and include an adaptive management regulatory regime, a code of conduct in support of the regulatory regime, a system of community consultation, a system of education and outreach, and eligibility criteria to participate in management of natural resources.

The Aha Moku O Maui meet with then gubernatorial candidate David Ige in September 2014.

The Legislature in 2012 responded to the report by formally recognizing the Aha Moku system and establishing the Aha Moku Advisory Committee (AMAC) within the Department of Land and Natural Resources (DLNR) to advise the chair through the Aha Moku system. The AMAC was established as a liaison between the community of traditional practitioners with specific knowledge of the conservation and management of cultural and natural resources and the DLNR, which has authority and responsibility for management and conservation of these resources. The AMAC's responsibility was to support this bottom up approach through community consultation. However, in the ensuing two and a half years, the AMAC held only four meetings. Minutes of those meetings are not available for public review.

Aha Moku Island Councils from Moloka'i, Maui, O'ahu and Kaua'i have struggled with the Committee to get their issues addressed. The AMAC did not meet in 2015 to consider any island issues. Instead, much of the Committee's time has been spent establishing conflicting councils on the islands, with the AMAC reserving to itself the right to recognize some island councils while divorcing itself from other island councils, including those that had nominated the committee members that serve on the AMAC.

The AMAC has prevented meetings of island councils by telling conveners that they cannot hold meetings without proper notice as required under the Sunshine law. Aha Moku Island Councils are not State boards or commissions and are not required to notice their meetings. However, the AMAC is a State commission and needs public notice and publication of its meetings and meeting agendas. This structure is by design. Aha Moku Island Councils are autonomous community organizations that can meet and discuss issues as a community. They can then send their advice and recommendation to their island representative on the AMAC for inclusion on a meeting agenda to discuss and recommend findings for use in advising the DLNR chair. This has not happened to the disappointment of the communities and supporters for the Aha Moku system.

In 2015, the community uproar over the poor performance of the AMAC led to the Legislature adopting Senate Concurrent Resolution 55 SD1. The terse resolution states that the AMAC is to engage stakeholders for the purpose of developing and adopting rules for the operation and administration of AMAC. The Committee is to work with DLNR, the Office of Hawaiian Affairs and the Association of Hawaiian Civic Clubs (AHCC) on this task and to report its proposed administrative rules to the Legislature no later than 20 days prior to the convening of the Regular Session of 2016. Some of the needed administrative rules recommended are term limits for AMAC members; administrative duties for the executive director, chair and vice chair; removal, withdrawal and admission rules for AMAC members; budgeting process; and standard operating policies and procedures.

On Nov. 13, 2015, the AHCC, at its annual convention, rejected a resolution from the AMAC asking the Association for support for funding and approval of its draft administrative rules. The AHCC has supported the Aha Moku system and will continue to support the AMAC, but it expected more than the late, poorly written resolution without draft rules provided to it.

The AMAC is losing support from the community. The intent of the AMAC was to bring Native Hawaiian values and best practices of traditional resource management to benefit all the people of Hawai'i. The AMAC has yet to live up to that goal. What can be done to improve the AMAC so Hawai`i can benefit from the functioning of this committee?

IUCN Releases New Loggerhead Sea Turtle Red List Assessment

The International Union for Conservation of Nature (IUCN) Marine Turtle Specialist Group (MTSG) has been working through regional assessments for all turtle species. It completed the leatherback assessment in 2013, and, on Dec. 1, 2015, announced the assessment for loggerhead (*Caretta caretta*). For these regional assessments, the IUCN completes one for the global population and one each for the subpopulations.

The new listing for the global and Pacific subpopulations are below. The assessment is available online at www.iucnredlist.org/details/3897/0.

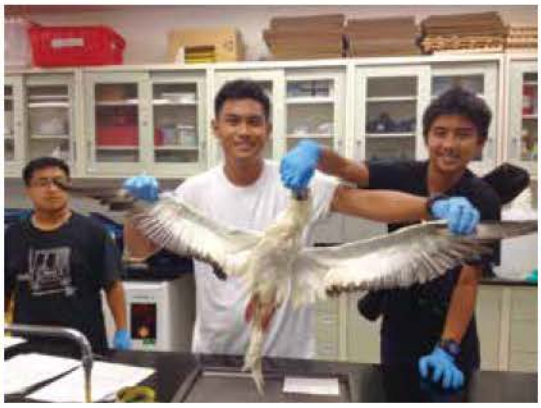
Global: *VULNERABLE (previously listed Endangered globally since 1996)*

North Pacific: *LEAST CONCERN*

South Pacific: *CRITICALLY ENDANGERED*

The North Pacific subpopulation is equivalent to the North Pacific Distinct Population Segment (DPS) under the Endangered Species Act (ESA), and the South Pacific subpopulation is equivalent to South Pacific DPS under ESA.

Hook, Line and Sinker


From left: *A completed ocean sensor assembled by student teams to monitor ocean temperature.* ***Center:*** *A visit to seabird expert Professor David Hyrenbach's laboratory at HPU.* ***Right:*** *Turtle necropsy being conducted by Dr. Thierry Work.*

The following article was written by Tiffany Agustin, who participated in the 2015 Hawai'i summer class on fisheries and marine resource management. She is currently a senior at Moanalua High School. Those interested in participating in the 2016 summer fisheries class can contact the Western Pacific Regional Fishery Management Council at (808) 522-8220.

After hearing about the Western Pacific Regional Fishery Management Council's class on fishing sustainability at Moanalua High School from friends and former students, I decided that this would be an ideal class to take to get the most out of my summer before my senior year. Like others before, I heard of being spoiled with field trips and amazing food, how learning was always fun, and of the many activities that were exclusive solely to our program.

The days passed by slowly in the beginning. We were a class of 18 students from everywhere on the island thrown together for a short five weeks but with long days. Although we stayed in the classroom for a majority of the first two weeks, the fun never ceased and was always integrated with the learning. Coloring to learn the anatomy of a fish, playing games to understand fishing regulations and the Tragedy of the Commons, or even getting hands-on by building environmental sensors for our class project was what made the class such an enjoyable and unique experience. Spanning from engineering to biology, an unexpected variety of fields was covered over the summer, while keeping fisheries as the main focus. There was never a dull moment. We were always learning: audibly, visibly and physically!

As I mentioned, our main class project was to build environmental sensors that could measure different variables within the ocean. Light and temperature were our main focus this year. Our guest speaker and project leader was Lucas Moxey who taught us the basics of electrical engineering and software programming. Using a breadboard, we had first learned to wire different colored LED lights to a power source. Once connected correctly, other students and I downloaded programming software to script commands for the lights to follow, including the speed, order and duration. It was amazing to see how quickly and simply we could all become engineers! Then the real task came: actually building the environmental sensors. Moxey supplied the materials, which included a mini computer, a huge bread board, a multitude of colored wires, a light sensor, a temperature sensor, a battery pack and a RTC (real time clock).

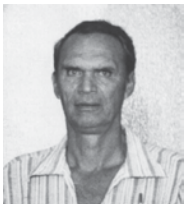
After about four hours of slaving away to connect and test every-thing, we finally built three environmental sensors. In order to keep them safe from the wind and water, we placed them into plastic containers, sealed them with duct tape and glued them to boogey boards. To weigh the sensors down to keep them in place, we drilled holes through both ends of the boards, threaded rope through the holes and tied weights to the ends. Each sensor was out on the water for no less than five days straight. I'm sad to say that the light sensors had trouble out in the elements and our data was unclear, but we able to get a hypothesized sine-like wave with fluctuating temperature levels during the day and night hours.

After the first couple of weeks, the field trips began to pour in, coming at us four to five times a week on average. Our weekly adventures included trips to the Coast Guard, a sea urchin farm at Anuenue, a turtle necropsy with Dr. George Balazs and Dr. Thierry Work, a visit to Hawai'i Pacific University and seabird expert Professor David Hyrenbach, and, of course, fishing on a boat out of Kewalo Basin (we didn't get a lot of fish, but we were glad that most of us caught at least one).

We were grateful to be out of the classroom, but we hadn't expected to actually be tired from a day at summer school. The experience was unlike any other that we've ever had in a single summer. It had reeked at times, surprised us, thrilled us, flown us to Kaua'i, took us fishing (some of us for the first time), educated us and got us hooked on Hawai'i's complicated fishery. Diving head first into the activities, presentations and classwork from people who were heavily involved within the fishing community made all of us realize that fisheries are a large part of what sus-tains us as an island, although no one may talk about it as much as tourism or other things.

In the end, we all had a newfound appreciation for all the agencies and organizations that we hadn't known about prior to taking the class. The exclusivity of the program made us realize that what we had was a rare opportunity to see marine science taught in a different way, straying from traditional methods and combining a fun and hazy summer with educational schooling. To all the people who were involved in educating us, we are deeply thankful for you volunteering your time out of your summer to teach us about marine science. From the ocean to the kitchen, we learned so much about fish and marine life overall. We extend our deepest gratitude to WESPAC, our organizational host and sponsor. By the end of the summer, our slightly piqued interests in marine science had grown exponentially. Honestly, you got all 18 of us hooked, line and sinker!

In Memoriam



Louis "Buzzy" Agard Jr., one of the original members of the Western Pacific Regional Fishery Management Council, passed away this year at the age of 91. Born in 1924, Buzzy was best known to the Council as an accomplished lawai'a. He began working on aku boats at an early age and the tuna cannery in Kaka'ako. He began fishing in the Northwestern Hawaiian Islands (NWHI) in 1946. He flew moi and akule from French Frigate Shoals to Honolulu on a DC-3 cargo aircraft to supply the Honolulu markets. He also captained the *Koyo Maru* to catch akule and deep-sea and inshore species at Nihoa and other areas of the NWHI. His fishing experience led to his appointment as an original member of the Council in 1976. Buzzy was also an early advocate in the Hawaiian sovereignty movement and a staunch supporter of aloha 'aina. This ethic of conservation and malama 'aina resonated in his work to incorporate a cultural aspect to the NWHI Coral Reef Ecosystem Reserve and eventually Papahanaumokuakea Marine National Monument. Buzzy was a great proponent of the Hawaiian fishing culture and values and will be deeply missed.

Henry Chang Wo, an advisor to the Council, community leader and fighter for 'Ewa Beach, passed away on Sept. 19, 2015. Born on May 19, 1941, Henry grew up in Halawa and as a child accompanied his family to 'Ewa Beach to fish and pick limu. He called 'Ewa the House of Limu. He was among the first of traditional practitioners that identified the importance of fresh water to grow and propagate limu and provide for a healthy marine environment. He spent more than a decade fighting Haseko Development to prevent the loss, redirection and redistribution of fresh water that would occur with development of the 'Ewa plain. In 2006, Henry was instrumental in creating the 'Ewa Beach Limu Management Area, which provided an exemption for traditional gathering rights. Henry was a member of the Aha Moku Council of O'ahu and contributed to the development of Aha Moku Advisory Committee. He became a much sought after advisor, presenter and speaker at conferences and gatherings. It was not uncommon to see Uncle Henry giving classes and demonstrations to University students, tourists and children, altogether, on any given Saturday. Henry was a member of the 'Ewa-Puuloa Hawaiian Civic Club. He contributed regularly to section 106 consultations required by the Historic Preservation Act and advised and consulted on numerous environmental impact statement actions. He remained employed throughout his life working at the Department of Transportation at the Honolulu airport and spent 10 years as a civilian worker on Johnston Island. He had a large extended family at the family compound in 'Ewa Beach where everyone was welcomed. He didn't have to lock the door; someone was always home.

Michael Crook, longtime Advisory Panel member in American Samoa, recently passed away. He served in the US Peace Corps as a fisheries extension agent for the government of (Western) Samoa's Division of Fisheries before moving to American Samoa, where he taught secondary school marine science in the early 1980s. In the early 1990s, he returned to fisheries, owning and skippering the 40-foot *Leilani*, specializing in fresh fish exporting and game fish chartering in American Samoa. Mike served as a fisheries consultant, a master fisherman with the American Samoa and Samoa governments, and a fish aggregation device researcher. He became an alternate master and navigator for US-flagged purse-seine vessels operating out of Pago Pago and worked for all three canneries that operated in the territory. Mike was an advocate for properly managed fisheries and believed in the Western Pacific Regional Fishery Management Council and its decision-making process. As an active fisherman in the largest fishery in American Samoa, he provided the Council with accurate and detailed information and concerns regarding the pelagic fisheries and effects management could have on the fishery. He was also an avid surfer and one of the pioneers of the surf scene in American Samoa.

Lauvao Stephen Haleck, a High Talking Chief Village of Aunu u, County of Sa'ole and former Council chair, passed away this September in American Samoa. He was born and raised in Pago Pago, attended Central Bible College in Springfield, Missouri, and actively served in his church. Lauvao was married to Malesete Groshe-Haleck for 33 years, with whom he raised four children. A recreational and subsistence fisherman, Lauvao was first appointed as a Council member in 2003. He became the vice chair for American Samoa in 2008, Council chair in 2010 and then continued as vice chair in 2011-2012. At the time of his passing, he was serving on the Council's American Samoa Advisory Panel. In recognition of his fisheries management service, the Council recognized Lauvao as the 2015 Richard Shiroma Award recipient for his outstanding contributions to the Council. His wife accepted the award on his behalf at the 164th Council meeting this October in Utulei. In addition to his service to the region's fishermen, Lauvao served on many boards as well as chair of the American Samoa Coral Reef Advisory Group.

Council Family Updates

The Council at its 164th meeting voted to reappoint its 2015 officers for 2016. **Edwin Ebisui Jr.** continues as chair; **Michael Duenas**, vice chair for Guam; **John Gourley**, vice chair for the CNMI; **Fredrick McGrew Rice**, vice chair for Hawai'i; and **William Sword**, vice chair for American Samoa.

Also at its 164th meeting, the Council appointed **Mike Tenorio** to the Scientific and Statistical Committee; **Archie Taotasi Soliai**, manager of StarKist, to the Fishing Industry Advisory Committee; **Peter Crispin** and **Nonu Tuisamoa** to the American Samoa Advisory Panel (AP); and **Daniel Roudebush** and **Geoff Walker** to the Hawai'i AP.

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2016 Council Calendar / Recipe

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February

22-24: Councils Coordination Committee, TBD

March

8-10: Scientific and Statistical Committee, Honolulu

14: Standing Committees, Honolulu

15-17: Western Pacific Regional Fishery Management Council, Honolulu

30-31: Marine Planning and Climate Change Committee, Honolulu

April

1: Social Science Planning Committee, Honolulu

7-8: Protected Species Advisory Committee, Honolulu

11-13: Archipelagic and Pelagic Plan Teams, Honolulu

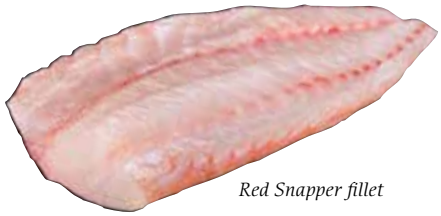
14-15: Fishery Data Collection and Research Committee, Honolulu

Baked Onaga

Courtesy of the Maile Room, Kahala Hilton, Honolulu

Ingredients

1½ to 2 lbs whole onaga (ruby snapper)
Salt and pepper, to taste
1 tbsp lemon juice
Dried fennel leaves (optional)
½ cup melted butter
½ to 1 cup onion, thinly sliced
3 tbsp butter
2 medium potatoes
2 medium tomatoes, quartered
½ cup dry white wine
3 tbsp Pernod (anise-flavored liquor)
1 sprig of parsley
1 lemon, quartered



Red Snapper fillet

Preparation

Preheat oven to 375 degrees. Clean fish and season inside and out with salt, pepper and lemon juice. Place fennel leaves inside fish. Brown fish on both sides in melted butter.

Place fish in baking dish, pour over remaining butter, and bake for 10 minutes. Sauté onion in the 3 tbsp of butter and place around fish. Bake another 10 minutes. Peel and thinly slice potatoes, and parboil in salted water. Add potatoes to the fish and bake another 10 minutes. Add tomatoes and pour white wine over fish. Sprinkle with Pernod. Bake for another 5 minutes or until wine is evaporated.

Plating

Place fish on a serving platter, and arrange vegetables around it. Pour juice from the baking dish over fish. Garnish with parsley and lemon quarters.

(Featured in the Pacific Islands Fishery News, *October 1988. For more island fish recipes, download the* Fish Forever Favorites *booklet from the Council at www.wpcouncil.org/education-and-outreach/educational-library.)*

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