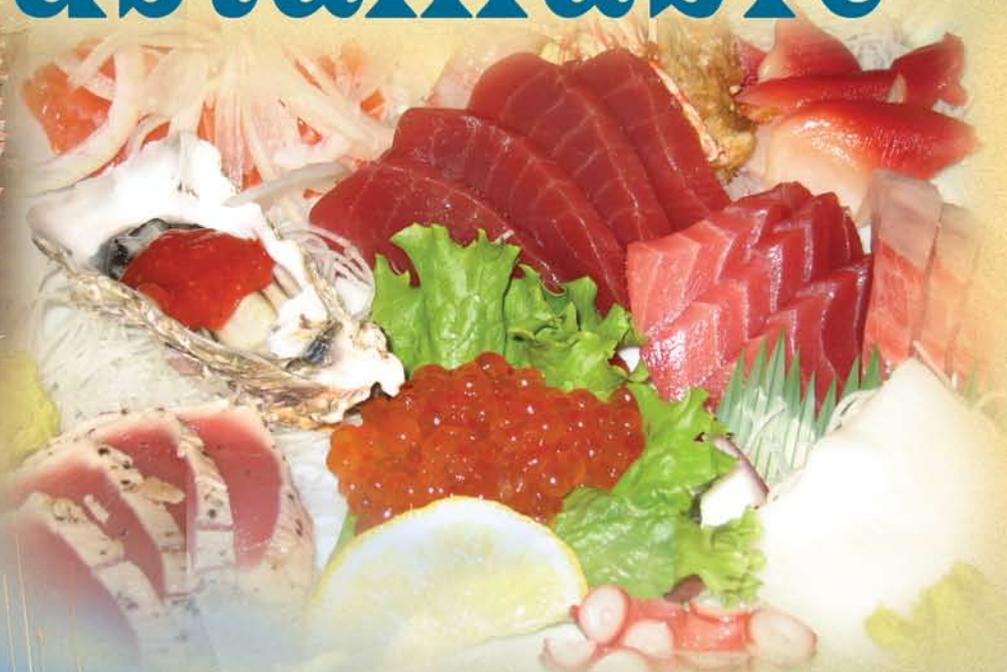


Keeping Hawaii Seafood

Sustainable



Sustainable seafood comes from responsible fisheries.
Hawaii's pelagic fisheries are among the best managed in the world.
Our managers and scientists work together with the fishing sector to keep
Hawaii seafood sustainable. We can enjoy Hawaii seafood with confidence
knowing that it is produced in a responsible fishery, one that is intensively
studied, monitored and regulated to ensure sustainability.



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Keeping Hawaii Seafood Sustainable

HAWAII SEAFOOD SUSTAINABILITY STATEMENT

Hawaii Fisheries are sustainable.

The people of Hawaii work together with unity of purpose to preserve fishing and protect fishery resources. The fishing sector collaborates with scientists and managers to reduce impacts and risk to protected species and to prevent fish populations from becoming overfished. Our fish are hook and line-caught, no gill nets, trawl nets or seine nets are used. We constantly strive to anticipate and exceed expectations for sustainable fishery management and to pioneer mitigations that reduce environmental impacts. We trace our seafood products directly to registered vessels that are accountable to government regulations and intensive monitoring by fishery observers.

The Hawaii longline fishery for tuna and swordfish produces sustainable seafood.

This fishery is sustainable because it meets the national and international requirements for 1) science-based, precautionary fishery management, 2) performance in managing fish populations for sustainability, and 3) controlling fishery impacts on the ecosystem.

The Hawaii fishery management system is exemplary.

This fishery operates under a model fishery management system. With every aspect of the fishery strictly regulated, closely monitored and tightly enforced, it is a model for sustainable pelagic fisheries worldwide. This management system is based on sound science and a transparent and inclusive fishery management process committed to sustainability.

Key Elements of the Hawaii Longline Fisheries Management System.

- High compliance (94%) with the United Nations FAO Code of Conduct for Responsible Fisheries.
- Conformance with national, regional and international laws and rules.
- Management system can adapt to new information and/or changes in fish population status or environmental conditions through timely corrective actions.
- Strong science and research base.
- Effective monitoring, data availability and enforcement, including comprehensive observer program.
- Adherence to advice of the Scientific and Statistical Committee comprised of uniquely qualified scientists.
- Precautionary approach to address uncertainty.

This fishery operates under a model fishery management system. With every aspect of the fishery strictly regulated, closely monitored and tightly enforced, it is a model for sustainable pelagic fisheries worldwide.



Photo: Wilson Lau

- Transparent and inclusive stakeholder involvement in development of regulations.
- Fishing capacity is capped under the Hawaii longline vessel limited entry system.
- Strict and mandatory measures limiting protected species bycatch.
- Habitat protection through environmental standards for fishing vessels.

Performance of the fishery management system.

None of the pelagic fish populations harvested are overfished. Hawaii's fishery is doing its part to eliminate overfishing on Pacific bigeye tuna. Ecosystem impacts are constantly being assessed and managers, scientists and the fishing sector are working together on solutions. Substantial and verifiable reductions of protected species interactions and finfish bycatch have been achieved.

Consumers can use sustainable Hawaii Seafood with confidence.

The Hawaii longline fishery has achieved a high level of compliance with United Nations FAO Code of Conduct for Responsible Fisheries, U.S. National Standards for sustainable fishery management implemented by the National Oceanic and Atmospheric Administration Fisheries Service and the Western Pacific Regional Fishery Management Council, as well as international conservation and management measures adopted by the Western and Central Pacific Fisheries Commission and the Inter-American Tropical Tuna Commission.

Supporting the Hawaii Seafood Sustainability Statement

Greater detail on the basis of the Sustainability Statement can be found in the Hawaii Seafood Sustainability Platform.



Photo: NOAA Observer Project

The Hawaii longline fishery has a track record of precautionary conservation measures.

- 1991** First limited entry pelagic fishery in the U.S.
- 1991** First pelagic fishery in the U.S. to require daily logbook reporting.
- 1991** Longline fishing exclusionary zones set up around Hawaii.
- 1993** Fishery observers placed on vessels to monitor protected species impacts.
- 1994** First U.S. fishery to require vessel tracking using satellite technology.
- 2000** Shark finning was prohibited.
- 2004** Became the only Pacific fishery with a fleet limit on sea turtle interactions.
- 2004** Established the most extensive government fishery observer program of any Pacific longline fishery (100% of swordfish trips and more than 20% of tuna trips).

SECTION 1

THE HAWAII SEAFOOD SUSTAINABILITY PLATFORM

The purpose of the Hawaii Seafood Sustainability Platform

Labels and brand claims do not make seafood sustainable. Responsible fisheries do. An effective fishery management system and its performance record ensure responsible fishing and sustainability.

This platform describes how Hawaii Seafood meets the standards and principles of sustainable seafood to distinguish Hawaii from other sources of fishery products in the marketplace. It explains what is being done by fishery managers, scientists and the fishing sector to keep Hawaii Seafood sustainable.

Our ocean fisheries set the benchmark for responsible fisheries and the sustainable seafood they produce. Hawaii Seafood is sustainable because our fisheries achieve high marks in meeting international and American standards for sustainable fisheries.

Why is sustainability important?

In Hawaii, sustainability means the perpetuation of families, communities, our multi-cultural population, food traditions, healthy diets and lifestyle—not just fisheries and fishing livelihoods. This is our culture, our heritage, our identity and obligation.

Fishing is an essential part of Hawaii's sustainable future. The ocean has provided the people of Hawaii with food for centuries. Today, our people eat nearly 3 times the national average amount of seafood each year. Hawaii's ocean fisheries are among the best-managed,



Photo: John Kaneko

Unloading bigeye tuna (ahi)

most intensively monitored and studied in the world. But fishing pressure from international fleets and the global seafood demand is now so great that it exceeds the ocean capacity for sustainable harvest of some fish species. The amount of fish harvested annually simply cannot increase without end. There is a limit to how much fish can be harvested in a sustainable manner. Strict limits and controls, and respect for agreements are needed.

We are facing some hard questions today. With the number of countries competing for the ocean's fish, how do we in Hawaii act responsibly and make sure that fishing is done sustainably? Is Hawaii part of the problem or a model of the solution for the sustainable future of ocean fisheries? Can Hawaii show the rest of the world how to fish within limits to protect the fish and preserve the ocean's natural seafood pantry? Can Hawaii serve as a model for responsible fisheries?

Accountability.

Accountability to government control is critical in the sustainability of fisheries. Hawaii open ocean longline

fishery products are traceable to U.S. government-approved vessels, fishing practices and management measures. Our fishery management depends on the work of dedicated scientists and managers from the U.S. National Oceanic and Atmospheric Administration (NOAA), the Western Pacific Regional Fishery Management Council and others. We rely on the fishery research, monitoring and assessments performed by these agencies to keep the fishery sustainable based on sound-science and precautionary management decisions. For these reasons it is likely that Hawaii Seafood meets any established set of standards or criteria for sustainable fisheries.

What can consumers do to support sustainable fisheries?

Clearly, there are consumer choices to be made. Responsible consumers can support responsible fisheries in the market. Seek out sustainable seafood by asking about the country of origin. Find out how fish are harvested, handled and processed. This is one way we can play a role in preserving sustainable seafood for future generations.

Do you know where your seafood comes from?

Traceability is necessary to ensure that seafood actually comes from sustainable fisheries. Hawaii pelagic fisheries products are directly traceable to U.S. fishing vessels with limited access permits that operate under satellite vessel-tracking surveillance and with high levels of government observer coverage at sea. There is no transshipment of fish from Hawaii vessels at sea. High seas transshipment is one of the ways fish from illegal, unregulated and unreported fishing vessels (IUU) can enter the market undetected. IUU fishing is one of the greatest threats to sustainable fisheries. The regulations and enforcement in the Port of Honolulu make certain that fish from foreign vessels are not landed that could become comingled with Hawaii-caught fish as they pass through the auction marketing system. There is a record check for each vessel delivering fish to the Honolulu Fish auction to be certain it is a registered American vessel. All Hawaii longline vessels hold valid limited entry permits. By these measures, it is not possible for fish from IUU vessels to take on the U.S. country of origin label through the Port of Honolulu.

What is Sustainable Seafood?

Sustainable seafood is a renewable ocean resource. It is harvested in a way that the catch can be continued year after year without jeopardizing or compromising the future of the fish population or the marine ecosystem it depends on. In order to utilize fish sustainably and maintain fish populations indefinitely, natural fish mortality and fish harvested must be replenished by reproduction and growth. To maintain this balance, fishing activity must be well-managed, and the relationship between the harvested fish population and the ecosystem must be understood. This is the challenging role of fishery managers with help from fishery scientists, the fishing sector and others.

See Figure 1

Role of Government in Sustaining Fisheries.

All ocean fisheries in the U.S. are managed by government agencies. There are laws and regulations in place that mandate managing American fisheries for sustainability. In Hawaii we have the necessary enforcement capabilities and compliance is high. Our Hawaii fisheries are closely

monitored, studied and constantly re-evaluated on shore and at sea. We rely on the scientific assessments made by our scientists to make informed and objective management decisions. This adaptive management system is capable of making adjustments to keep the Hawaii fishery operating within sustainable limits. The government agencies are best qualified to make the objective assessments and management decisions to protect the fish and the environment while supporting the sustainable harvest.

Fishery scientists and managers have technical definitions of “sustainability,” what do they mean?

“Maximum Sustainable Yield” (MSY) is the maximum average amount of fish that can be harvested from a population on a continuing basis.

“Overfishing” occurs when the amount of fish harvested is greater than the level which produces MSY.

A fish population is **“Overfished”** when it falls substantially below the level needed to produce MSY.

“Optimum yield” (OY) is a precautionary operating target that managers set below MSY to ensure that the limits on harvest rate are not exceeded and the fish population size does not fall below that needed for MSY.

What are the basic foundations required to keep seafood sustainable?

Those of us who love seafood can judge the quality of seafood in the market. We can identify the species of fish. But how can we judge the sustainability of seafood? To do this, we must know something about where the fish came from and how it was caught.

Simply put, we need to know,

- 1) How the fishery is managed
- 2) Status of harvested fish populations
- 3) The ecosystem impacts of fishing

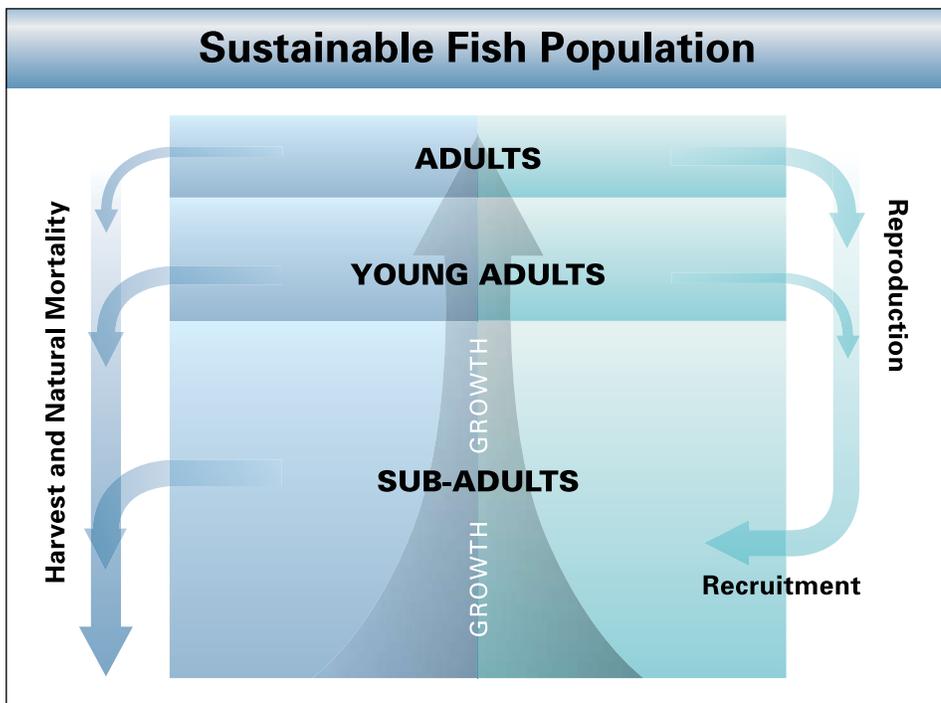


Fig. 1

SECTION 2

HOW HAWAII FISHERIES ARE MANAGED

Sustainability factors

1) Fishery Management

- 2) Status of harvested fish populations
- 3) Ecosystem impacts of fishing

The essential foundation for producing sustainable seafood is an effective fishery management system. It must have a mandate to manage for sustainability. It must have an adaptive management plan that relies on the best available science and stakeholder input. Management decisions must be tempered with a precautionary approach to account for uncertainty. The performance of a fishery management system is judged by setting management goals, regular assessments of the status of the fish population, limiting adverse fishery impacts on the ocean ecosystem and

monitoring the effectiveness of corrective management actions that are taken. Done effectively, managing for sustainability is a dynamic process, requiring periodic course adjustments to keep the fish harvest within sustainable limits. [See Figure 2](#)

To be successful, there must be 1) fishery level objectives, 2) a fishery management plan with bycatch and ecosystem impacts monitored and mitigated and 3) verification that the fishery is meeting its objectives by responding to the best available science and scientists' recommendations.

A weak management foundation makes seafood unsustainable.

Buying seafood based on the lowest price may have more unseen and unintended environmental costs. Seafood products are unsustainable when produced in poorly studied, monitored and managed fisheries with weak management foundations that are incapable of ensuring sustainability and responsible fishing practices. The key is to know something about the management foundation and its perfor-

mance record of successfully balancing the fish harvest while maintaining the fish population and controlling ecosystem impacts of fishing. [See Figure 3](#)

A strong management foundation makes Hawaii Seafood sustainable.

Hawaii Seafood is sustainable. It comes from vessels that operate within an exemplary fishery management system. A series of leading-edge precautionary conservation measures have been implemented that make it a model for sustainable fishery management. Hawaii open ocean longline fisheries for tuna, swordfish and the other associated fish species are rigorously managed for sustainability by the U.S. National Oceanic and Atmospheric Administration (NOAA) Fisheries Service and the Western Pacific Regional Fishery Management Council.

Hawaii Seafood products are produced in fisheries that meet the 10 National Standards for Conservation and Sustainable Management required by the Magnuson-Stevens Fishery

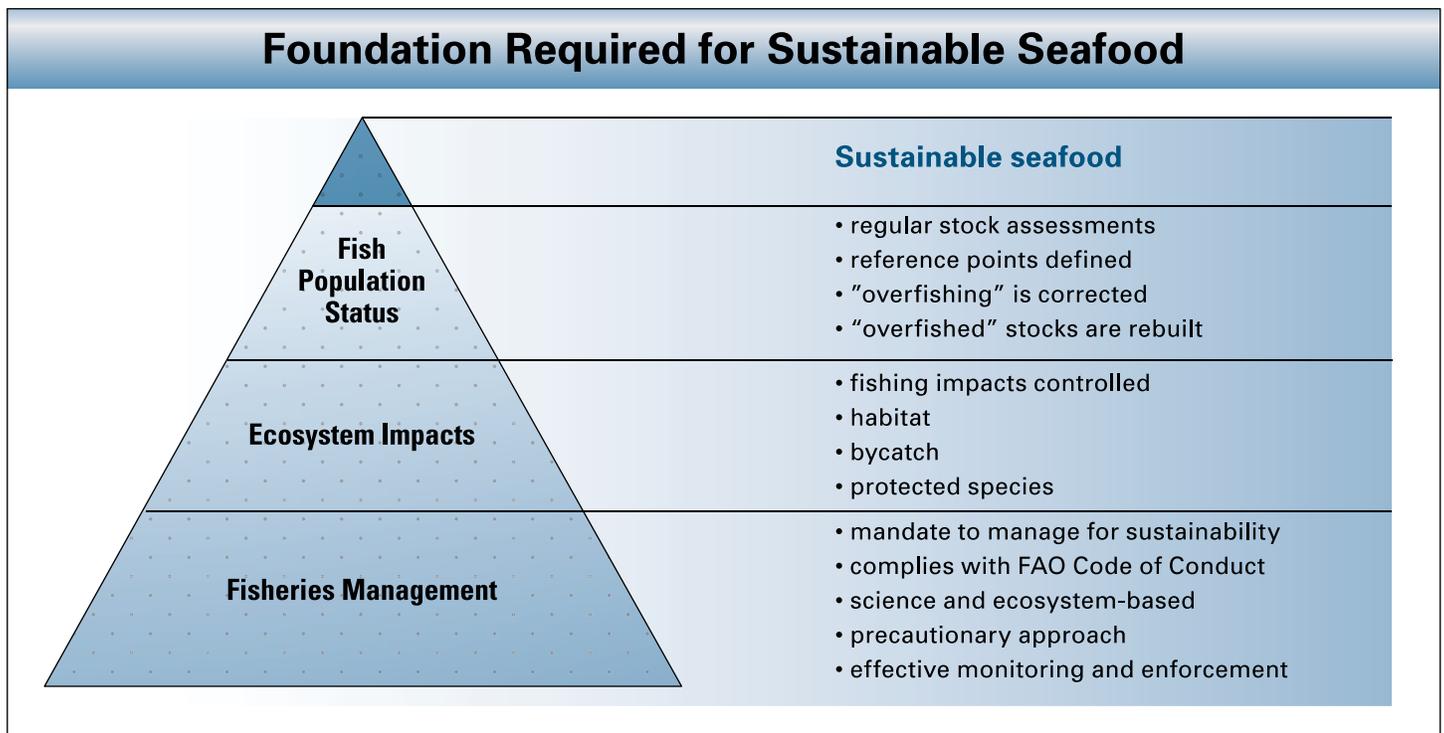


Fig. 2

Weak Foundation Leads to Unsustainable Seafood

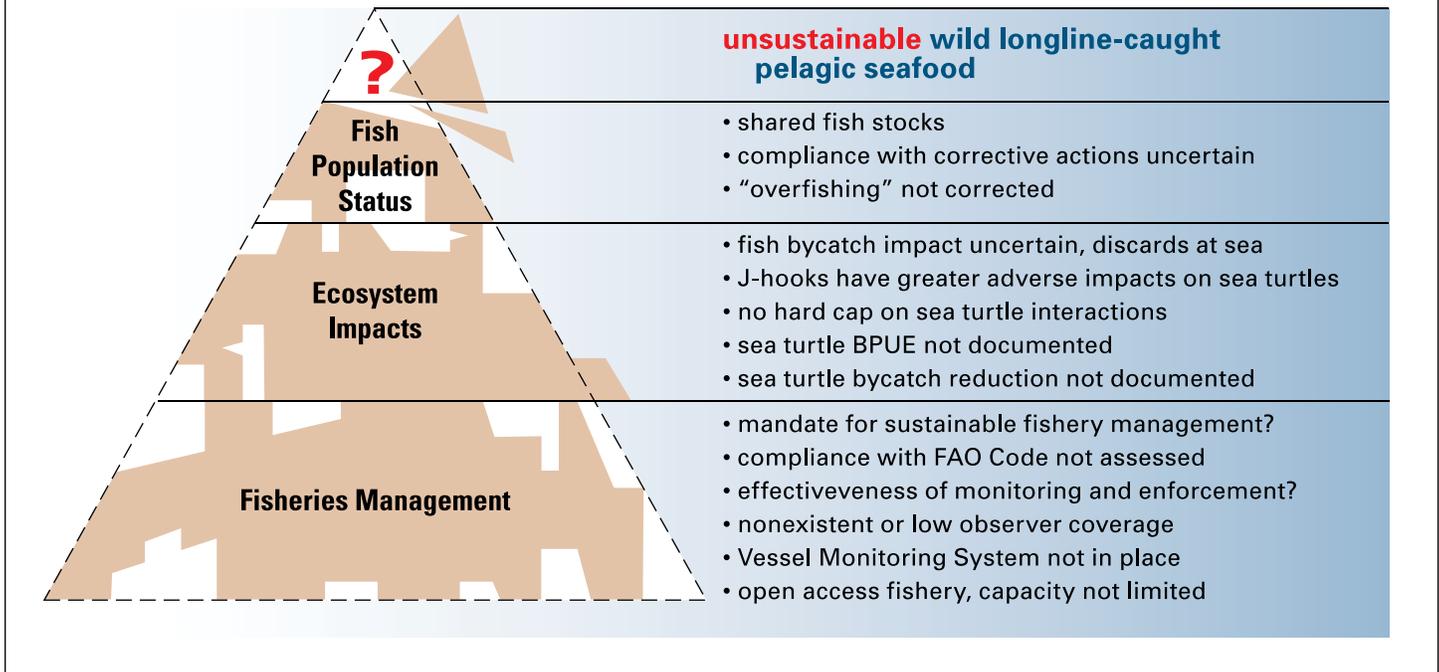


Fig. 3

Conservation and Management Act (MSA). The MSA is the overarching regulation for managing American ocean fisheries. This ensures that fish stocks are maintained, overfishing is eliminated and the socioeconomic benefits for the nation are achieved over the long-term.

Management decisions are science-based, precautionary and made through an open and inclusive process. The fish population status is reviewed yearly by a panel of uniquely qualified fishery scientists. Their assessment of the condition of the fish populations determines whether corrective management actions are needed. Under MSA, corrective actions must be taken to prevent or end overfishing of fish populations. None of the pelagic fish populations harvested in Hawaii is currently overfished. Overfishing has been detected on Pacific bigeye tuna and reduced harvest limits are in place. Adverse ecosystem impacts of fishing are assessed and controlled. We have the effective tools and the capacity to assess fishing impacts, work with

harvesters to develop practical solutions, and to monitor and document progress.

See Figure 4

Managing Hawaii fisheries for sustainability.

Sustainable fisheries management requires that managers know fish biology, how much fish is being harvested, the size of fish harvested and how much effort is required to catch the fish. Monitoring this information over time, gives fishery scientists

and managers an estimate of the fish population status. Managers must also anticipate the uncertainties of natural mortality and environmental variations that might cause changes in reproduction and growth. Fishery scientists and managers therefore depend on working with the fishing sector to determine the status of the fish population, the impacts on the ecosystem and how to make adjustments or corrective actions to fish sustainably.

The federal management system for Hawaii fisheries integrates the roles of



Photo: Orlak Callaghan

Science and Statistical Committee at work.
From left: Drs. Pierre Kleiber, John Sibert, Richard DeRiso, John Hampton, and Milani Chaloupka

Foundation for Sustainable Hawaii Seafood

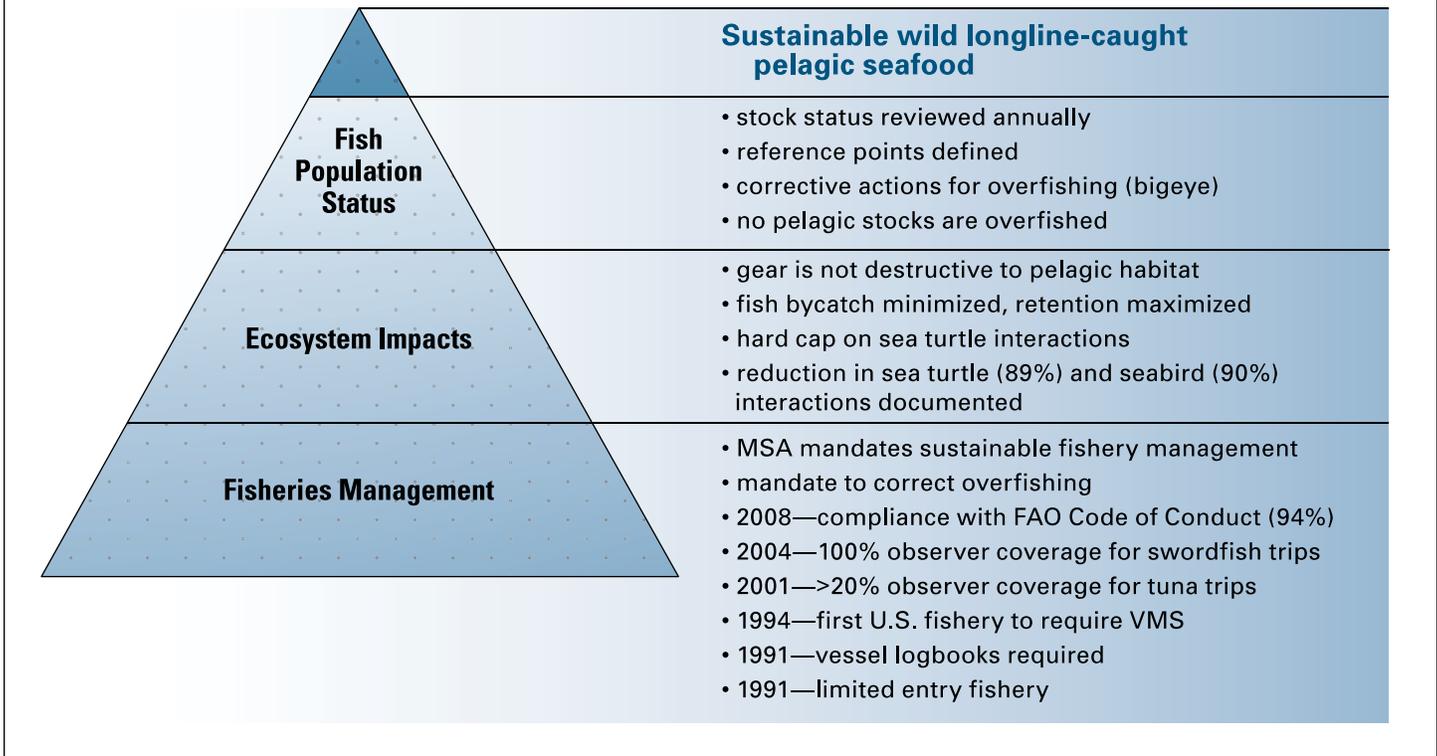


Fig. 4

the NOAA Pacific Islands Regional Office (PIRO), NOAA Pacific Islands Fisheries Science Center (PIFSC), the Western Pacific Regional Fishery Management Council (WPRFMC), the U.S. Coast Guard and other agencies. Working with the Hawaii longline fishing industry, fishery scientists from NOAA and the University of Hawaii Pelagic Fisheries Research Program (PFRP) monitor and study the fishery to generate the information needed for science-based management. NOAA PIFSC, PIRO and WPRFMC staff prepare scientific stock assessments, and environmental and socioeconomic impact analyses used for decision making. See Figure 5

The WPRFMC serves the primary purpose of formulating and modifying the Fishery Management Plan (FMP) based on scientific advice and input from the diverse range of stakeholders through a transparent, open process. Public testimony is taken at all meetings, for all issues. The WPRFMC Scientific

and Statistical Committee, advisory panels and numerous other committees provide advice. The WPRFMC has 13 voting members (9 representing fisheries interests and 4 agency representatives) plus three non-voting members representing federal agencies.

The FMP and its amendments are proposed management actions to keep the fishery sustainable. The FMP and amendments are submitted to NOAA

for review, rule-making and implementation. The U.S. Coast Guard and NOAA enforce the regulations. The result is a model fishery management system that is science-based, inclusive and able to respond to changing conditions to steer the fishery within sustainable limits. While this process is often contentious and challenging, it is the model for inclusive, science-based fishery management.



Science and Statistical Committee meeting

Photo: Orlak Callaghan

Uncertainty and the Precautionary Approach.

Ideally, fishery management is based on a complete understanding of marine populations and ecosystems and how they are impacted by fishing. This ideal is unattainable for most fisheries, including Hawaii longline fisheries, because of uncertainty and the possibility of unforeseen impacts in the complex and highly dynamic ocean ecosystem. For this reason, fishery management incorporates a precautionary approach that accounts for the uncertainties. To improve the quality of science-based management, there is an emphasis on relevant research and effective monitoring of fishery impacts on targeted, non-targeted and associated species to forecast ecosystem change and minimize unforeseen impacts of management actions.

Who sets the Standards for Sustainable Fisheries?

Sustainable seafood comes from responsible fisheries. There is only one globally-harmonized standard for how to develop and manage wild capture fisheries—the United Nations' Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries, adopted in 1995 (FAO 1995). The FAO is the forum through which the world's nations set internationally-agreed to norms for food production.

The Code of Conduct prescribes in great detail what countries should do to manage fisheries sustainably by addressing,

- 1) Fishery Management
- 2) Fishing Operations
- 3) Post-harvest & Trade Practices
- 4) Integration with Coastal Area Management
- 5) Aquaculture
- 6) Fisheries Research

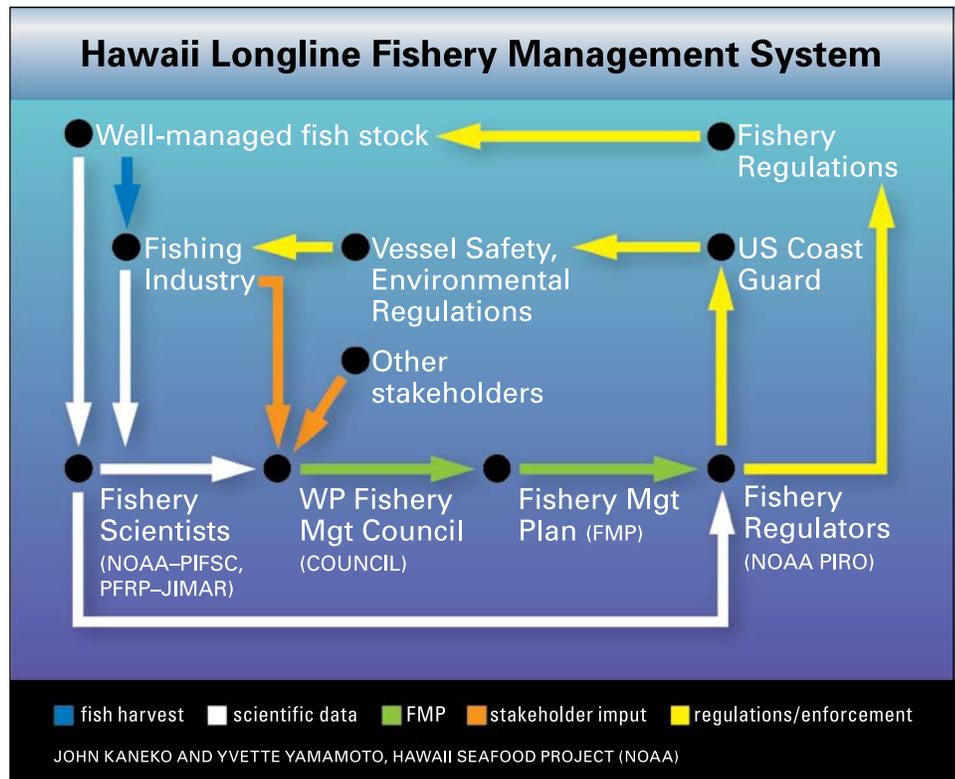


Fig. 5

How does the Hawaii Longline Fishery measure against the FAO Code of Conduct for Responsible Fisheries?

In 2006, the Hawaii longline fishery was the first pelagic fishery in the world to be fully assessed against the FAO Code of Conduct (Bartram et al. 2006). The Responsible Fisheries Assessment (RFA) of the Hawaii longline fishery was used by the FAO as one of the few models of the practical application of the Code as an evaluation tool since its adoption in 1995 (FAO 2007). In 2008, the fishery was evaluated for a second time to report on progress in achieving the objectives of the Code. Our fishery scored 94% compliance with the detailed provisions of the Code (Bartram et al. 2008). This demonstrates how this fishery operates responsibly and is managed for sustainability. Hawaii's fishery is truly a model for fisheries management and remains one

of the few fisheries in the world to have been assessed comprehensively against the global standard.

International Management of Pacific tuna and related fish.

Open ocean (pelagic) fish harvested in Hawaii fisheries are part of wide-ranging Pacific populations managed under national and international agreements to which the U.S. is a party. Hawaii longline fisheries operate within the management jurisdiction of two Regional Fisheries Management Organizations (RFMO), the Western and Central Pacific Fisheries Commission (WCPFC) and the Inter-American Tropical Tuna Commission (IATTC) in the eastern Pacific. Whether in Hawaii or international waters, Hawaii longliners follow U.S. fishery regulations at all times.

See map (Figure 6)

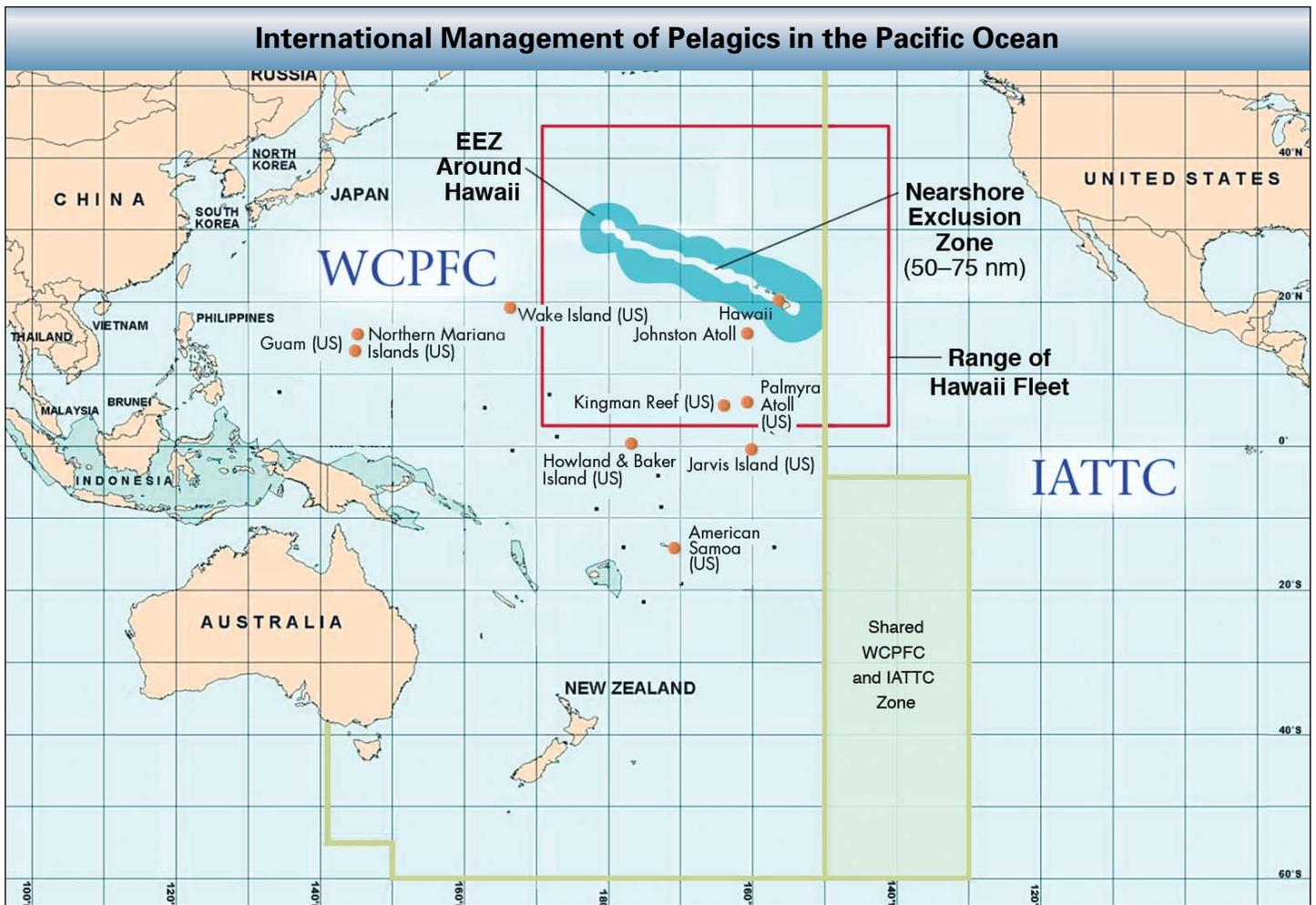


Fig. 6

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Is sustainability in fisheries management something new in Hawaii?

Key elements of Hawaii longline fisheries management have been in effect since the early 1990s. We have a substantial performance record of precautionary management measures that pre-date the 1995 FAO Code of Conduct for Responsible Fisheries and today's sustainable seafood movement.

1987 Drift net fishing for pelagic species prohibited in U.S. exclusive economic zone in western Pacific. (*Pelagic Fishery Management Plan (FMP)*)

1991 Moratorium was followed by the limited access permit system restricting number and size of Hawaii longline vessels. The Hawaii longline fleet was the first pelagic fishery in the U.S. to be managed under a limited entry system, a precautionary action well ahead of its time. (*Emergency rule NOAA. Pelagics FMP Amendment 4, Pelagics FMP Amendment 7*)

1991 Mandatory logbook reporting to NOAA Fisheries and permit requirement for Hawaii longline vessel operators. Captains are required to submit detailed records to determine the location, catch, bycatch and other aspects of management concern. (*Pelagics FMP Amendment 2*)

1991 Longline gear must be marked with vessel ID. (*Pelagics FMP Amendment 2*)

1991 Protected species (no fishing) zone was established where longline fishing is prohibited within 50 nautical miles offshore of the Northwestern Hawaiian Islands to prevent interactions with protected species concentrated near shore. (*Pelagics FMP Amendment 3*)

1992 Longline exclusion (no fishing) zones 50-75 nmi offshore of main Hawaiian Islands established to prevent longline fishing from impacting protected species and small boat fisheries that occur closer to shore. (*Pelagics FMP Amendment 5*)

Hawaii longline fishing with NOAA observers aboard



Photos: NOAA Observer Program

1993 Federally-mandated observers placed on Hawaii longline fishing trips to document and assist in reducing the impacts of protected species interactions. (*Terms and conditions of NMFS Biological Opinions*)

1994 Vessels registered with Hawaii longline limited access permits must carry vessel monitoring system transmitters (VMS) for real-time tracking. Hawaii's fishery was the first application of this satellite technology in U.S. fisheries regulation. (*NOAA rule 59 FR 58789*)

1995 FAO adopts the Code of Conduct for Responsible Fisheries

2000 Shark finning (retaining only the fins) was prohibited (*US Public Law 106-557, Hawaii Law HRS 188-405*)

2001 Federally-mandated observer coverage increased to minimum of 20% of Hawaii longline tuna fishing trips (*NMFS Biological Opinion*)

2002 Closure of the Hawaii swordfish longline fishery because of sea turtle interactions. (*Pelagics FMP Regulatory Amendment 1 implementing NOAA Biological Opinion*)

2002 Seabird mitigation measures required in Hawaii longline fisheries (*Pelagics FMP Regulatory Amendment 5, Pelagics FMP Framework Measure 2*)

2003 "Overfishing" is defined and a control rule is established for stocks managed under Pelagics FMP. (*Pelagics FMP Amendment 8*)

2004 Hawaii swordfish longline fishery re-opened with 100% observer coverage, restrictions on hook and bait types and annual limits on fishing effort and fishery interactions with loggerhead and leatherback turtles. Annual protected species training for vessel operators is required. (*Pelagics FMP Regulatory Amendment 3*)

2009 Pacific bigeye tuna catch limits established to eliminate overfishing in the WCPFC and IATTC management areas. To comply, Hawaii longline fishery catch limits have been proposed by NOAA and the final rule is pending and implementation/enforcement is expected in the 2009 season.

SECTION 3

STATUS OF FISH POPULATION

Sustainability factors

- 1) Fishery Management
- 2) Status of harvested fish populations
- 3) Ecosystem impacts of fishing

How do scientists determine the status of fish populations?

Scientists examine several “windows” that provide insight into the life cycles of open ocean (pelagic) fish populations.

- Fish catch and fishing effort may provide clues to fish abundance in specific areas and depth ranges. Declining catch rates with increasing fishing effort could indicate problems in maintaining a desired sustainable fish population size.
- Size composition of the individual fish in the catch provides insight into the ages of the fish in the population. Declining average fish size or a sharp increase in the percentage of small fish in the catch could indicate problems in maintaining a sustainable fish population.

- Tagging experiments are conducted to understand movement patterns and determine if fish can be managed as one population or as multiple populations that require more localized management.

Scientists combine views from all of these “windows” in statistical models that estimate the mass and size composition of fish populations. Fishing can be “turned off” in these models to estimate what the condition of the fish population might have been in the absence of fishing given the observed variability in the ocean environment. The ratio of the fished to unfished biomass is then interpreted as a measure of the impact of fishing.

Fish population status is reviewed annually.

- by the Science and Statistical Committee of the Western Pacific Regional Fishery Management Council
- by the Scientific Committee of the Western and Central Pacific Fisheries Commission, and
- by the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean

Scientists review current and projected fish populations’ status and advise RFMOs (WCPFC, IATTC) whether fishing is at a sustainable level or reaching an unacceptable level (“overfishing”) with a population trajectory toward an overfished state if corrective actions are not taken.

Each year, the Western Pacific Fishery Management Council prepares an annual report on the status of U.S. Pacific pelagic fisheries. This report fulfills the requirement of NOAA Fisheries for annual Status and Assessment

of Fisheries Evaluation (SAFE) reports on federally-managed fisheries. It summarizes the status of fish populations harvested by Hawaii longline and other pelagic fisheries. It also makes recommendations for corrective

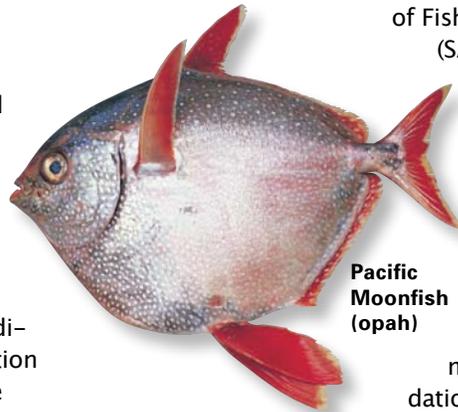
actions to resolve any overfishing or overfished issues in these fisheries, as required by the Magnuson-Stevens Fishery Conservation and Management Act.

When is fishing “Sustainable”?

- When fish population losses due to fishing and natural factors are replenished or surpassed by population gains through the addition of young fish.
- Fishery scientists estimate a target catch of fish or level of fishing that will allow natural replenishment of the fish population.
- Fishery managers aim to keep fish catch or the level of fishing below this target, as adjusted based on socio-economic and environmental factors.

“Do the right thing”

Hawaii fisheries managers do not wait for international action to address overfishing issues. Under national standard guidelines of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (50 CFR 600.310), the Western Pacific Regional Fishery Management Council must take corrective action immediately in the form of a Fishery Management Plan amendment or proposed regulations when it has been determined that:



Pacific Moonfish (Opah)

Photo: NOAA Observer Program



NOAA observer measuring tuna

What do scientists and managers say about the status of the major fish populations harvested by Hawaii longline fisheries?

Fish Population	Sustainable Seafood?	How Sustainable?	Recent Stock Assessment	Corrective Management Actions	
				Regional Organizations	Hawaii longline fisheries management
Pacific Skipjack tuna (aku)	Yes	Not overfished. Overfishing not occurring. Increased catch possible ^{1,2}	2008 ^{1,2,3}	None necessary or proposed	None necessary or proposed
Pacific Yellowfin tuna (ahi)	Yes (if IATTC takes corrective management action in the eastern Pacific)	Not overfished. Overfishing is occurring in the eastern Pacific and is approaching in the western and central Pacific ^{3,4,5}	2007 ^{3,4,5}	WCPFC5–2008–DP01: Combination of purse seine fishing and no FAD fishing in EEZs; FAD fishing seasonal closures (2–3 mo), FAD management plans and 100% observer coverage of FAD fishing on high seas. IATTC: conservation measures pending.	Longline fishing capacity limited to no more than 164 permitted vessels. Compliance with WCPFC and IATTC measures.
Pacific Bigeye tuna (ahi, mebachiki)	Yes, because WCPFC is taking actions to correct “overfishing” and IATTC actions are pending.	Not overfished. Overfishing is occurring. Fishing should be reduced to avoid further stock decline ^{3,6,7}	2008 ^{3,6,7}	WCPFC5–2008–DP01: Combination of purse seine fishing day limits and no FAD fishing in EEZs; FAD fishing seasonal closures (2–3 mo) or 10% bigeye tuna catch reduction (from 2001–2004 baseline), FAD management plans and 100% observer coverage of FAD fishing on high seas. Reduction in annual longline bigeye tuna catch (10 to 30% from 2001–2004 baseline). IATTC: Resolution C–09–01: Combination of purse seine fishing day limits, seasonal and area closures. for the longline vessels over 24 meters in overall length (78 ft) there are bigeye catch limits. The Hawaii longline fleet is limited to no more than 500 mt per year of bigeye from the IATTC are in the eastern Pacific. ¹⁵	Longline fishing capacity limited to no more than 164 permitted vessels. NOAA has proposed regulations to establish an annual bigeye tuna catch limit of 3,763 mt to comply with WCPFC and IATTC measures. ¹⁶
Pacific Swordfish (mekajiki)	Yes	Not overfished. Overfishing not occurring. ^{3,10,11}	2003 ^{3,12}	None necessary or proposed for North Pacific swordfish.	Longline fishing capacity limited to no more than 164 permitted vessels.
Pacific Blue marlin (kajiki)	Yes	Not overfished. Overfishing not occurring. ^{3,12}	2003 ^{3,12}	Conservation measures not proposed.	Longline fishing capacity limited to no more than 164 permitted vessels.
North Pacific Striped marlin (nairagi)	Yes	Not overfished. Overfishing is approaching or may be occurring ^{2,12}	2008 ¹³	Conservation measures pending updated stock assessment	Longline fishing capacity limited to no more than 164 permitted vessels.
Pacific Moonfish (opah)	Unknown	Unknown	None available. Life history studied.	Conservation measures not proposed.	Longline fishing capacity limited to no more than 164 permitted vessels.
Pacific Sickie Pomfret (monchong)	Unknown	Unknown	None available.	Conservation measures not proposed.	Longline fishing capacity limited to no more than 164 permitted vessels.

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NOAA observer with barracuda

Fish Pop: “Do the Right Thing” (continued from p. 12)

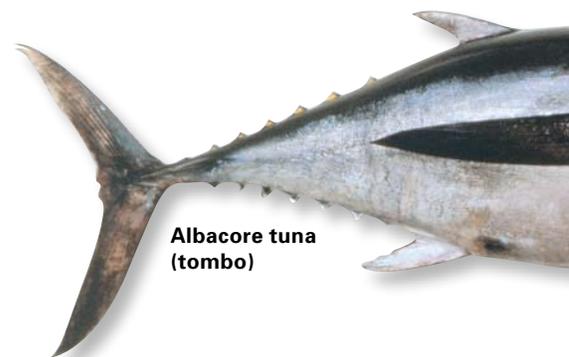
- The maximum fishing threshold for overfishing is being approached
- NO. If we fail to “do the right thing.” If appropriate corrective action is not taken, then the fish population will continue a downward trajectory toward becoming “overfished.”
- Overfishing is occurring (i.e., the level of fishing has exceeded the level that produces MSY)

Is seafood sustainable when it comes from an overfished population?

- The minimum fish population (biomass) threshold that will produce MSY is being approached
- NO. “Overfished” means a fish population can no longer fully renew itself because too many losses from fishing and natural factors outweigh gains from the addition of young fish. Immediate corrective management action is needed to eliminate overfishing, and rebuild the fish population before (and if) sustainable fish catch and catch rates can be re-established.
- A fish population is overfished (i.e., the mass of fish has dropped below the level needed to produce MSY)
- Adequate progress has not been made in correcting previously identified overfishing issues.

Is seafood sustainable when overfishing is occurring?

- YES. If we “do the right thing.” By taking corrective management action to reduce harvesting (eliminate overfishing), the fish population can continue to renew itself and the harvest can remain a sustainable seafood over time.



Albacore tuna (tombo)



What about when overfishing is occurring in a wide-ranging fish population?

Pacific tuna and swordfish swim widely across the ocean and are harvested by the fleets of many nations. The Pacific bigeye tuna is an example. According to our scientists, the Pacific bigeye tuna population is not overfished, but overfishing is occurring. Fishery managers agree that catch reduction is required. The question is should all fleets share in the catch reduction proportionally? Or should those fleets that fish responsibly be treated preferentially in international negotiations for harvest levels? There can be no clearer incentive or message to fleets that do not fish responsibly than reducing their catch limits until they contribute to the prevention of overfishing and responsible science-based fishery management.



*Hawaii Longline Fishery—
A Sentinel for Others*

Hawaii longline fisheries are the most intensively monitored pelagic fisheries in the Pacific Ocean. This is done with detailed logbook reporting on every longline set, shipboard observers on over 20% of tuna trips and 100% of swordfish trips, vessel location monitoring systems and other federal management requirements. The goal of the Western and Central Pacific Fisheries Commission is for all nations longline fishing in the management

area to achieve 5% observer coverage by June 30, 2012 (WCPFC 2007). The Hawaii longline fleet represents only 3% of the Pacific bigeye longline fishing effort but has already exceeded the 5% goal generating a substantial proportion of all available observer data. This makes Hawaii the primary source of high-quality at-sea fishery observer data for the entire multi-national Pacific longline fishery at this time. Any reduction in this critical supply of reliable data increases uncertainty, is counter to the precautionary approach and degrades the quality of science-based management.

Hawaii is a leader in sustainable fisheries management and should be recognized for its performance. Well-managed fisheries must be rewarded with preferential shares of the sustainable catch. This is the only practical way to achieve the rapid adoption of responsible fisheries management and operations by all fleets in order to effectively prevent overfishing on shared stocks. Hawaii longline fisheries should continue to serve as a data-rich sentinel fishery while other nations' fleets in the western and central Pacific Ocean strive to establish the necessary observer programs, data collection, reporting, quality control and analytical capabilities needed to make their contribution to sustainable management of shared fishery resources.



SECTION 4

ECOSYSTEM IMPACTS OF FISHING

Sustainability factors

- 1) Fishery Management
- 2) Status of harvested fish populations
- 3) **Ecosystem impacts of fishing**

From “single-species” to “ecosystem-based” management

Managing fisheries for sustainability must address not only the conservation of targeted species but also the possible adverse impacts on associated species and habitats that are part of the ecosystem. The transition to the ecosystem approach to management in Hawaii began in 2005 for the Fisheries Management Plan for pelagic fish (WPRFMC 2005). When the transition is complete, ecosystem-based fisheries management will likely include actions that will consider the natural variability of ocean ecosystems and may include the use of physical or biological indicators.

Impacts on Essential Fish Habitat

In contrast to the vital role played by structural habitat like coral reef in Hawaii’s inshore fisheries, the pelagic habitat of the species caught in the Hawaii longline fishery is the open-ocean water column (NMFS 2001). A great amount of information exists on environmental fluctuations and their effect on the productivity and distribution of pelagic species. These environmental influences are thought to be the major factor affecting the essential habitat for pelagic species. In contrast, no data exist which indicate that Hawaii’s pelagic fisheries have an effect on the pelagic environment, or the essential habitat for pelagic species,



Photo: NOAA Observer Program

Setting longline gear

that could be detected, being overshadowed by the oceanographic cycles that dominate the pelagic ecosystem in the Pacific Ocean (NMFS 2001).

Fishing vessels produce sewage, garbage, oil and lost gear which may have a negative effect on the marine environment. The 2001 Environmental Impact Statement of the Hawaii longline fishery completed by NOAA concluded that these types of fishery impacts are likely to be small. The Hawaii longline fishery follows the requirements of the MARPOL Convention (International Convention for the Prevention of Pollution from Ships) enforced by the U.S. Coast Guard. This prohibits the at-sea disposal of plastics and limits oil and other discharges. Loss of fishing gear is minimal because it is standard practice to use radio buoys to track the position of longline gear. Consequently, the direct effect on the pelagic habitat is negligible.

The Hawaii longline fishery has beneficial environmental impacts. While at sea, Hawaii longline crews routinely clean up after others by retrieving derelict nets and other debris lost or discarded by net fisheries and cargo vessels for proper disposal on shore.

Fish bycatch

Fish bycatch is fishery waste. Bycatch can be defined as fish caught but discarded at sea either dead or injured with delayed mortality (Hall 1996). Fish and other animals caught in fishing gear, but released alive with a good likelihood of survival are not bycatch by this definition. The Hawaii longline fishing industry and auction marketing system have succeeded in emphasizing high-quality high-value chilled fish, maximizing the value and retention of the fish species harvested. The Hawaii market values most pelagic fish species caught so that fish discards are minimized and utilization of the catch is maximized. It’s the responsible thing to do.

In the Hawaii longline fishery, the highest discards and releases are of sharks, snake mackerels (gempylids), cutlass fish (trichiurids), pelagic stingrays and other fish species. In the Environmental Impact Statement on the Hawaii Longline Fishery, NOAA could not find data which indicate that the fishery has a discernable impact on the continued existence of these species (NMFS 2001). These fish (other than mako and thresher sharks) are generally not considered edible or marketable.

Consequently they are of low value and generally not retained.

Nonetheless, substantial progress has been made in reducing shark bycatch in the Hawaii longline fishery (Walsh et al. 2009). Shark finning was banned in this fishery in 2000. Sets of shark fins must now be landed with corresponding carcasses (NMFS 2009). This and other changes in the fishery (switching from squid to mackerel-type bait for swordfish) have resulted in the substantial reduction of the shark mortality rate by 89% in the swordfish fishery and by 94% in the tuna fishery in Hawaii (Walsh et al. 2009). Blue sharks dominate the incidental shark catch in the fishery. The percentage of blue sharks caught and released alive is very high (94–96%). The blue shark appears to tolerate capture and handling stress and the survival rate after release is thought to be high (Moyes et al. 2006).

Seabirds

Hawaii longline fisheries interact with seabirds. The U.S. Fish and Wildlife Service (USFWS) prepared Biological Opinions in 2002 and again in 2004 under Section 7 of the Endangered

Species Act on the effects of the Hawaii longline fishery on the short tailed albatross (*Phoebastria albatrus*). The USFWS concluded that due to the low interaction rate the fishery is not likely to jeopardize the species' continued existence (USFWS 2002; USFWS 2004).

Protecting seabirds. The fishery has developed and implemented measures that have significantly reduced seabird bycatch (Gilman et al. 2007a; Gilman et al. 2008). These include requirements for carrying line clippers, dip nets and de-hookers for safe handling of seabirds (NMFS 2009). Other measures control the attractiveness of and access to the baited hooks. Side-setting (opposed to stern-setting) longline gear is one practical way to be certain the baited hooks sink safely beyond the reach of seabirds. Bird-scaring curtains are also used to keep diving seabirds away from baited hooks. If side-setting is not used, there is an alternative set of conservation measures that focus on distracting seabirds away from baited hooks by strategically discharging fish offal, dyeing baits blue to make them less attractive to birds and setting the baited hooks during dark hours to limit the visibility of

the baits. Seabird bycatch reduction measures implemented in June 2001 reduced the bycatch rate by 96% (Van Fossen 2007).

Sea turtles

Sea turtles can become hooked and or entangled in pelagic longline fishing gear. These accidental sea turtle captures are extremely rare events in the Hawaii fishery (Gilman et al. 2007b). NOAA prepared Biological Opinions in 2004 and 2008 and concluded that the anticipated impacts of the Hawaii longline fisheries on sea turtles was not likely to jeopardize the continued existence of these species.

Protecting sea turtles. The Hawaii longline fishery has greatly reduced sea turtle bycatch by about 90% (Boggs et al. 2009; Gilman et al. 2007b). The only reliable way to document this requires a high level of monitoring by impartial fishery observers. At-sea fishery observers are deployed on Hawaii longliners targeting swordfish (100% trip coverage) and bigeye tuna (>20% trip coverage). They monitor fishing activities and document protected species interactions. The swordfish sector operates within a hard cap sea turtles captures (17 loggerheads or 16 leatherbacks). These interactions range from lethal to harmless entanglements with live release, so that captures do not equal mortalities. If either cap is reached, the swordfish fishery is closed immediately in real time and vessels must return to port. No other longline fleet in the Pacific operates under a hard cap to protect sea turtles. NOAA PIRO maintains an updated tally list of sea turtle interactions in the Hawaii swordfish (shallow-set) segment of the longline fishery. The cap has only been reached once since it was implemented

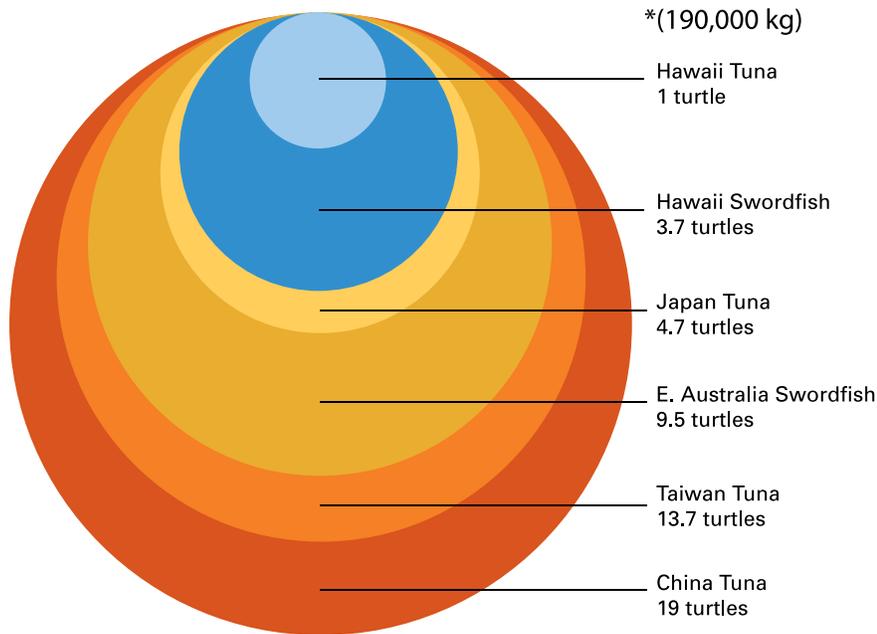
Photo: NOAA Observer Program



NOAA observer with red-footed booby

ON THE WEB: Leatherback and Loggerhead Turtle Interactions in the Shallow-set Component of the Hawaii-based Longline Fishery [NOAA]. http://www.fpir.noaa.gov/SFD/SFD_turtleint.html#numberscaught

Longline Sea Turtle Bycatch to Fish Catch*



Source: Bartram et al., 2009 Figure by Y. Yamamoto and John Kaneko

Fig. 7

in 2004 as a conservation measure.

Practical and effective methods have been adopted. Sea turtle avoidance measures implemented in the swordfish fishery include the mandatory use of large circle-shaped hooks instead of “J”-shaped hooks and replacing squid with mackerel-type bait (NMFS 2009). Circle hooks are not as easily swallowed by sea turtles. Mackerel-type bait is easier than squid bait for turtles to remove from hooks. By switching to circle hooks and mackerel-type bait, turtles are much less likely to ingest the baited hooks and become hooked. This simple and practical solution has been a great success without reducing the fish catch rate. The sea turtle interaction rate has been reduced by approximately 90% for loggerheads, 83% for leatherbacks, and 89% for combined species (Gilman et al. 2007b). The WCPFC is now considering the Hawaii longline fishery as a model for achievable reduction of longline fishing impacts on sea turtles (Brouwer and Bertram 2009).

Protecting sea turtles requires international cooperation at sea and at the beach. Additional measures have been implemented to protect sea turtles after they are captured (NMFS 2009). These include a requirement for annual protected species training for vessel operators and owners and for carrying on board a prescribed set of tools for safely handling, de-hooking and releasing hooked and entangled turtles.

Loggerhead turtle



Photo: M. Johnson

It is recognized that the decline in Pacific sea turtles is also caused by land-based activities in the vicinity of aggregations of turtles at nesting beaches and fishery impacts. To assist in turtle conservation, the Hawaii longline fishery, its scientists and managers have been involved in international programs to help share effective sea turtle bycatch reduction methods with other fishing fleets and to promote the protection of sea turtles at nesting beaches.

Comparing sea turtle impacts associated with seafood. Objective measurable criteria for fishery impacts on sea turtles are needed to determine the environmental baggage associated with seafood. Hawaii longliners set the benchmark for low sea turtle Bycatch to Fish Catch ratios (B/C) of all longline fisheries compared that operate in the Pacific (Bartram et al. 2009). The B/C ratios of Hawaii longline fisheries are based on the highest number of observed longline sets and the highest quality and quantity of data of any longline fishery in the Pacific.

The Hawaii tuna longline fishery established the low impact B/C benchmark with a rate of 1 sea turtle interaction per 190,000 kg of tuna caught. B/C ratios give us an index for comparing fisheries and their seafood products. Hawaii’s tuna and swordfish both have the lowest impact on sea turtles of any of the other longline fisheries in the Pacific supplying the same fish to the market. The estimates of B/C ratios for fleets outside of Hawaii are based on very few observed longline sets. The confidence in the B/C ratio estimates will increase as the number of observed sets increases in the future. Clearly, Hawaii is the source of longline-caught tuna and swordfish with the lowest impact on sea turtles. [See Figure 7](#)

Marine Mammals

Interactions with marine mammals in the Hawaii longline fishery have been documented but are infrequent events. There are a few records of rare interactions with 3 monk seals, 1 humpback

whale and 1 sperm whale prior to measures that eliminated longline fishing near shore. The implementation of the Protected Species Zone in the Northwest Hawaiian Islands and the longline-prohibited zones around the main Hawaiian Islands which prevent longline fishing within 50 nautical miles of the islands from Hawaii Island to Midway Island has had positive impacts. Since then, no further accidental interactions have occurred.

NOAA has issued Biological Opinions on the fishery impacts (NMFS 2004;

NMFS 2008) and concluded that the Hawaii longline fishery is not likely to jeopardize the continued existence of humpback whales, sperm whales and Hawaiian monk seals.

There are a few records of interactions with small cetaceans (6 Risso's dolphins, 2 bottlenose dolphins, 2 false killer whales, and 1 short finned pilot whale) in the Hawaii longline fishery. No records of fishery interactions with fin whales, blue whales, or sei whales exist. There are also no records of interactions with rough-toothed dolphins, Pacific

white-sided dolphin, striped dolphins, Bryde's whales, melon-headed whales, dwarf sperm whales, pygmy killer whales or pygmy sperm whales.

The high level of fishery observer coverage required for Hawaii longline vessels (>20% for tuna trips, 100% for swordfish trips) ensures that rare interactions with marine mammals are monitored, documented and assessed by NOAA to be certain that appropriate management actions are taken if they become warranted by evidence of significant fishery impacts.

CONCLUSIONS ABOUT SEAFOOD FROM HAWAII LONGLINE FISHERIES

Hawaii longline fisheries produce sustainable seafood.

The fishery is sustainable. It meets the requirements for 1) science-based, precautionary fishery management, 2) performance in managing fish populations for sustainability and 3) controlling fishery impacts on the ecosystem.

The Hawaii fishery management system is exemplary.

None of the fish populations harvested are overfished. Overfishing is being eliminated. Ecosystem impacts are constantly being assessed and managers, scientists and the fishing sector are working together on solutions. With every aspect of Hawaii longline fisheries strictly regulated, closely monitored and tightly enforced, they are a model for sustainable pelagic fisheries worldwide. This management



system is based on sound science and a transparent and inclusive fishery management process committed to sustainability.

Consumers can use sustainable Hawaii Seafood with confidence.

Our fishery has achieved a high level of compliance with FAO Code of Conduct for Responsible Fisheries, U.S. National Standards for sustainable fishery management, as well as international conservation and management measures adopted by the Western and Central Pacific Fishery Commission and the Inter-American Tropical Tuna Commission.

Hawaii Seafood can help companies achieve the goal of corporate responsibility and enhance seafood sustainability campaigns.



Photo: Ron Benner

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This document was prepared by J. John Kaneko and Paul K. Bartram of PacMar Inc., Honolulu, Hawaii under the Hawaii Seafood Project, August 29, 2009. The purpose of the document is to explain what makes Hawaii seafood sustainable based on its exemplary science-based fishery management system and its strong track record of managing fish stocks for sustainability while controlling ecosystem impacts. This sustainability platform is a starting point that must be updated periodically due to the dynamic nature of fisheries. This document and future updates will be available on the website www.hawaii-seafood.org.

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