

- DRAFT -

**CASE STUDY:  
ASSESSING THE SUSTAINABILITY OF PACIFIC BIGEYE TUNA SUPPLIES  
ENTERING THE HAWAII FRESH FISH MARKET**

**Prepared for IUCN-the World Conservation Union**

**by Paul K. Bartram**

**Honolulu, Hawaii, U.S.A.**

**[hapahaole@tripleb.com](mailto:hapahaole@tripleb.com)**

**Abstract**

Bigeye tuna is the most de

## 1. Case Study: Fish Resource, Fishing Method and Target Market

The present paper was prepared under contract to IUCN-The World Conservation Union. The terms of reference call for "...a case study on chain of custody, problems with status quo, strategies for improvements, using as a basis for study fisheries in the Pacific." The following study focuses on Pacific bigeye tuna harvested in multi-species catches by pelagic longline fleets and delivered to Hawaii's fresh fish market. Discussed in this case study are the Hawaii market for fresh bigeye tuna, suppliers of this product and the present absence of third-party eco-labeling and/or traceability systems for this product. Minimum standards of the Food and Agriculture Organization (FAO) of the United Nations for eco-labeling are described and then used to assess the sustainability of the various supplies of bigeye tuna entering Hawaii. Recommendations are made for a "poor man's" traceability system for bigeye tuna that builds on existing "positive lists" of authorized pelagic longline fishing vessels operating offshore of Hawaii and elsewhere in the Pacific Ocean.

Bigeye tuna is in high demand for *sashimi* (raw fish sliced thin). Premium prices are paid in Hawaii (as in Japan) for adult bigeye tuna captured by longline fishing in deep, cold ocean waters that enhance fish oils and translucent red muscle – highly desirable attributes in *sashimi*. Other fishing methods harvest bigeye tuna of lower quality that swim closer to the ocean surface.

The majority of the bigeye tuna entering the Hawaii fresh tuna market are supplied by Hawaii's domestic longline fishery that, in 2006, landed an estimated 4,598 metric tonnes

## 2. Existing or Planned Certification and Eco-Labeling Programs for Fresh Bigeye Tuna Supplied to Hawaii

No formal eco-labeling or product traceability systems currently exist to document the chain of custody of Pacific bigeye tuna from harvest through processing, distribution and marketing in Hawaii or in other markets that receive fresh bigeye tuna from Hawaii.

The National Oceanic and Atmospheric Administration( NOAA) Fisheries of the U.S. requires dealers who import, export or re-export frozen but not fresh bigeye tuna to hold a valid highly migratory species international trade permit and submit statistical documents and reports to help track international trade of this and other highly migratory species.<sup>3</sup> Under the U.S. Country of Origin Labeling Act, all seafood imported into the U.S. for retail sale must have labels identifying country of origin and method of production (e.g., “wild harvest”). Any distributor of a commodity covered by this law may be required to maintain a verifiable recordkeeping audit trail. Restaurants are exempt from country of origin seafood labeling requirements.<sup>4</sup>

Only a few buyers of Hawaii bigeye tuna are planning to establish eco-labeling and/or traceability procedures to verify that this species comes from sustainable sources. For example, Wal-Mart, the world’s largest retailer, announced in January 2006 that it would modify its procurement policy and only buy only wild-caught fish certified by the Marine Stewardship Council (MSC). At a “Seafood Sustainability Meeting,” November 10, 2006, Wal-Mart management advised all seafood suppliers and buyers to be prepared to help achieve the company’s goal of having all certified seafood within 2-4 years, utilizing the services of MSC for eco-labeling of wild fish. Fresh bigeye tuna is often sold through the Wal-Mart subsidiary Sam’s Club at Hawaii and California locations (Jed Inouye, President, Seafood Hawaii, personal communication). During a May 2007 visit to Hawaii, some of Wal-Mart’s top management were briefed on the harvesting, marketing and management systems of Hawaii’s domestic longline fleet that supplies the majority of bigeye tuna to Hawaii’s fresh fish market.

Whole Foods Inc. representatives plan to visit Hawaii in January 2008 to evaluate Hawaii fisheries and suppliers based on the company’s seafood sustainability criteria before finalizing plans to stock their Hawaii stores with Hawaii fish products (Eric Gilman, World Conservation Union, personal communication).

The non-profit Hawaii Seafood Council is developing a Hawaii Seafood Brand emphasizing Hawaii pelagic longline fisheries as highly responsible based on a comprehensive assessment of the 282 provisions in Articles 7,8,10,11 and 12 of the FAO Code of Conduct for Responsible Fisheries (hereafter “Code”)<sup>5</sup> and other measures of sustainability.

---

<sup>3</sup> <http://swr.nmfs.noaa/pir/hms.htm>

<sup>4</sup> <http://www.ams.usda.gov/cool/training.htm>

<sup>5</sup>Bartram, P., J.J. Kaneko and G. Krasnick. PacMar Inc. 2006. Responsible fisheries assessment of Hawaii’s pelagic longline fisheries. Prep. for Hawaii Seafood Project, National Oceanic and Atmospheric Administration, U.S. Dept. of Commerce. Honolulu, HI.

### **3. FAO Minimum Standards to Qualify Fisheries and Fishery Products for Eco-Labeling**

“Sustainability” of a fishery means that harvest levels do not exceed the capacity of a fish stock to replenish itself within a functioning ecosystem. A growing number of marketers and consumers are concerned with differentiating food products from different suppliers according to whether the methods of production are sustainable. It is impossible for them to detect sustainability because it is a “credence” or process attribute.<sup>6</sup>

Sustainability of a fishery product, therefore, must be assessed by applying a set of standards to the fisheries that supply the product. The FAO Committee of Fisheries (COFI) adopted a set of voluntary guidelines for the eco-labeling of fish products during its 26<sup>th</sup> session held 7-11 March 2005.<sup>7</sup> These are minimum standards to qualify fisheries and fishery products for eco-labeling, drawing on the Code. They include requirements for consideration of: 1) the fishery management system; 2) the fish stock and need for remedial action; and 3) serious fishery impacts on the ecosystem.

#### **3.1 FAO eco-labeling standard for fishery management systems**

According to the FAO, a fishery may qualify for eco-labeling if it is conducted under a management system that ensures compliance with requirements and criteria selected from the Code, detailed in Table 1. The management system and fishery should operate in compliance with the requirements of local, national and international law and regulations, including the requirements of any regional fisheries management organization that manages the target stocks.<sup>8</sup>

---

<sup>6</sup>U.S. Department of State – Traceability in the U.S. Food Supply.  
<http://usinfo.state.gov/ei/Archive/2004/Mar/29-403518.html>.

<sup>7</sup>Food and Agriculture Organization (FAO) of the United Nations. 2005. Guidelines for the ecolabeling of fish and fishery products from marine capture fisheries. Food and Agriculture Organization of the United Nations, Rome.

<sup>8</sup>Ibid: para. 28.

**Table 1. FAO Standards for Management Systems (after FAO 2005: para. 29).**

Adequate data and/or information are collected, maintained and assessed in accordance with applicable international standards and practices for evaluation of the current state and trends of the stocks.	After Code Article 7.4.4
In determining suitable conservation and management measures, the best scientific evidence available is taken into account by the designated authority, as well as consideration of relevant traditional knowledge, provided its validity can be objectively verified, in order to evaluate the current state of the stock under consideration in relation to, where appropriate, stock specific target and limit reference points.	After Code Articles 6.4, 7.4.1
Data and information, including relevant traditional knowledge, provided its validity can be objectively verified, are used to identify adverse impacts of the fishery on the ecosystem, and timely scientific advice is provided on the likelihood and magnitude of identified impacts.	After Code Article 7.2
The designated authorities adopt appropriate measures for the conservation and sustainable use of the stock under consideration based on the data, information and scientific advice previously referred to. Short-term consideration should not compromise the long-term conservation and sustainable use of fisheries resources.	After Code Article 7.1.1
An effective legal and administrative framework at the local, national or regional level, as appropriate, is established for the fishery and Compliance is ensured through effective mechanisms for monitoring, surveillance, control and enforcement.	After Code Article 7.7.1 After Code Article 7.1.7
The precautionary approach is being implemented to protect the stock under consideration and to preserve the aquatic environment. <i>Inter alia</i> this will require that the absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures. Further, relevant uncertainties are being taken into account through a suitable method of risk assessment. Appropriate reference points are determined and remedial actions to be taken if reference points are approached or exceeded are specified.	After Code Article 7.5.1  After Code Article 7.5.2

### 3.2 FAO eco-labeling standard for the fish stock under consideration

FAO eco-labeling standards call for the fish stock(s) under consideration to be a) not overfished and b) maintained at a level which promotes the objective of optimal utilization and maintains its availability for present and future generations (FAO Code Article 7.1.1), taking into account that longer-term changes in productivity can occur due to natural variability and/or impacts other than fishing.

In the event that biomass drops well below such target levels, management measures should allow for restoration within reasonable time frames of the stocks to such levels (FAO Code, Article 7.6) (FAO 2005: para. 30).

### **3.3 FAO eco-labeling standard for fishery impacts on the ecosystem**



China-flagged longline vessels operating from Majuro, Marshall Islands, and Tonga-flagged and based longline vessels are presently the largest exporters of fresh bigeye tuna to Hawaii. Both nations are members of the WCPFC and hence, they adhere to fishery management measures that further compliance with the FAO Code, including monitoring, surveillance and enforcement against IUU tuna vessels and participation in establishment



## 4.2 FAO eco-labeling standard for the fish stock under consideration

The Pacific Ocean stock of bigeye tuna (*Thunnus obesus*) is not presently overfished or depleted, but it is one of the tuna stocks currently in an “overfishing” condition, according to scientific consensus.<sup>15</sup> “Overfishing” means that current harvesting effort is above a level which is sustainable in the long term, with no potential room for further sustainable increases in catches. The total longline catch of Pacific bigeye tuna in 2006 was 75,496 MT with a landed value of approximately \$ US 504 million, according to provisional estimates.<sup>16</sup>

Fishing pressure on Pacific bigeye tuna comes from pelagic longline fleets that harvest adult fish for the *sashimi* market and from purse seine fleets that harvest juvenile bigeye tuna around floating fish aggregation devices (FAD) for canning. Increased FAD fishing of juvenile tuna by purse seiners has caused concern over the status of adult stocks of bigeye and yellowfin tuna targeted by longline fisheries (Hampton et al. 2006).

Since 1999, participants in multi-nation high-level conferences that led to the adoption of the Western and Central Pacific Tuna Convention and the establishment of the WCPFC have urged all fishing nations to exercise reasonable restraint in expanding fishing effort and fleet capacity in the WCPFC convention area. Nevertheless, tuna fleets of several countries have breached these past agreements and resolutions. Only one longline fishery operating in the WCPFC convention area is actually regulated under a limited entry program that caps the number and size of vessels – the Hawaii longline fishery.

This precautionary management measure was established in 1992 to control fishing capacity in the Hawaii longline fishery through maximum limits on the number (164) and size (101 feet overall length) of vessels authorized to fish with Hawaii longline limited access permits. Longline fishing vessels registered with Hawaii limited access permits have never numbered more than 141 since the limit of 164 permits was established.<sup>17</sup>

Nog7.he

China-flagged longliners operating of the Marshall Islands and Tonga-flagged and based longliners account for most of Hawaii's fresh bigeye tuna imports. These fleets have licenses to fish in the respective exclusive economic zones of the Marshall Islands and Tonga but neither these port states nor the vessel flag states have limited tuna fishing effort or capacity through fishing license limitation. Until this occurs or WCPFC requires its members to adopt conservation and management measures that directly limit tuna longline fishing effort, foreign longline fisheries will not be in compliance with the FAO eco-labeling standard for fish stock consideration and remedial action.

To date, the WCPFC has established annual bigeye tuna quotas for members and associated nations based on annual bigeye tuna catches by national fleets in the 2001-2004 period.<sup>18</sup> This measure is inadequate in addressing the tuna fishing overcapacity problem, according to some members of the Scientific Committee (SC) that advises WCPFC because the commission has not yet adopted the recommendation of the SC to reduce tuna fishing capacity in the convention area by at least 25 percent<sup>19</sup>

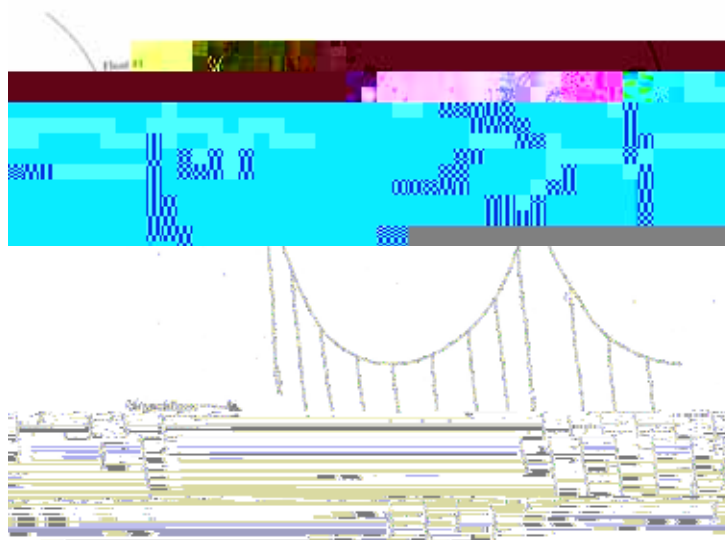
In cooperation with the Japanese government, OPRT and the Japanese longline industry have voluntarily acted to reduce the size of its large-scale longline fleet through a buyback program that aims to scrap about 20 percent of this fleet. OPRT has also enlisted the cooperation of other nations, notably Chinese Taipei, to reduce their fleet and require that Taiwanese-owned vessels that are now under flags of convenience fly the Taiwanese flag.<sup>20</sup>

The ecosystem perspective, however, has heightened concern about the possible impacts of “bycatch” (both fish and non-fish) in tuna longline fisheries. The term “bycatch” is defined as fish released after capture that are dead or with a poor chance of survival. Incidental catches of protected species, such as seabirds and sea turtles, have become a very important, if not dominant, factor in the perception and management of Pacific tuna longline fisheries.

Pelagic longline fisheries are sometimes characterized as having “high bycatch.” The problem with this generalization that pelagic longlining is not a homogenous method of fishing and bycatch impacts can vary significantly with when, where and how the mainline and hooks are deployed. The general design of pelagic longline gear is relatively simple (Figure 1).

**Figure 1. General Design of Pelagic Longline Gear**

a) Mainline between floats



The quantities and species composition of targeted and incidental catch in pelagic longline fisheries are strongly influenced by operating characteristics, including area and season fished, time of set, ocean temperature, fishing depth, types of hooks, baits and other factors, have been found to significantly affect the catch rates and mix of species caught. Variation in gear characteristics can significantly affect the level of longline fishery interaction with sea turtles, for example (Table 2).

**Table 2. Gear Characteristics and Possible Implications for Incidental Take of Sea Turtles. Source: Bartram and Kaneko, 2004.**

<i>Characteristic</i>	<i>Diversity in Pacific Longline Fisheries</i>	<i>Possible Implications for Sea Turtle Bycatch</i>
<b>Hook type</b>	J hook; circle hook	Large circle hooks less likely to hook loggerhead and leatherback turtles than J-hooks.
<b>Hooks between floats</b>	2 to 35	

Fishery regulations implemented under the U.S. Magnuson-Stevens Fishery Conservation and Management Act and “biological opinions” mandated under the U.S. Endangered Species Act have:

- Differentiated the “shallow set” Hawaii longline fishery for swordfish

Members and cooperating parties in the WCPFC have agreed that methods to reduce sea turtle and seabird bycatch need to be widely adopted in pelagic longline fisheries<sup>28</sup> and some non-Hawaii fisheries are conducting experiments to determine best practices to reduce protected species interactions with longlines. However, no pelagic longline fisheries operating in the WCPFC convention area other than Hawaii's longline fishery are presently mandated by fishery regulations to reduce protected species interactions. Thus, only Hawaii's domestic longline fishery can be said to be "effectively" addressing FAO's eco-labeling standard for fishery impacts on the ecosystem.

Foreign longline fisheries that export fresh bigeye tuna to Hawaii might satisfy this FAO standard in the future if the members of the WCPFC mandate the use of best practices to reduce the incidence and severity of protected species bycatch for their national longline fleets such as those required in Hawaii's longline fishery.

## **5. "Poor Man's" Bigeye Tuna Traceability System**

Traceability, including eco-labeling, is one of many trade and market-related measures that could play a supportive role in promoting long-term sustainability of bigeye tuna longline fisheries. Traceability systems involve record-keeping procedures for tracking the flow of products or product attributes through the production process and/or supply chain. Section 3 described FAO's three minimum standards to qualify fisheries and their products for eco-labeling.

The first FAO standard – fishery management system – is traceable for Hawaii bigeye tuna supplies by cross-checking the harvesting vessel identification against "positive lists" of vessels under a management system and authorized to engage in Pacific longline fishing (e.g., Hawaii longline limited access permit vessel registry, WCPFC and IATTC positive vessel lists).

The second FAO standard – consideration of fish stock and remedial action to avoid overfished status – is traceable for Hawaii bigeye tuna supplies by identifying the harvesting vessel and matching it to flag state and then assessing if that flag state has established limits on the number and size of longline vessels in its national fleet. Only firm limits on fishing capacity can address the current problem of overfishing of Pacific bigeye tuna and prevent this stock from becoming overfished in the future.

The third FAO standard – fishery impact on the ecosystem – is not traceable with presently available information, except for the Hawaii longline fishery, in which gear and operational characteristics are regulated and continuously monitored for possible impacts on protected species. For non-Hawaii longline fisheries to satisfy the third FAO standard, additional information about gear and operations would have to be documented.

---

<sup>28</sup>Conservation & Management Measures & Resolutions, Resolution-2005-04, CCM-2006-02, <http://www.wcpfc.int>.

