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## **6. FISH PROCESSING, INDUSTRY, AND TRADE**

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It is important to track the marketing of HMS in order to adequately assess the impacts of conservation and management measures on stocks as well as the people and companies that depend on stock production and harvest. NMFS collects detailed information about U.S. caught HMS from fishermen in the form of observer data and logbook data. In addition, detailed information regarding some species is collected from the first receiver or dealer. NMFS also collects detailed information about certain imported HMS but cannot ascertain the details surrounding the harvest of some species unless the harvesting country submits those data to ICCAT or other regional/global organizations such as the Food and Agriculture Organization of the United Nations (FAO). Because there are “missing links” surrounding the harvest, processing, and trade of HMS, NMFS cannot recreate information about stock production based on trade data. Nevertheless, trade data can be used to update information on international and domestic activities related to these fisheries.

### **6.1 Overview**

The processing and trade-related entities that depend on Atlantic HMS are as diverse as the species themselves. Processing ranges from the simple process of dressing and icing swordfish at sea, to elaborate grading and processing schemes for bluefin tuna, to preserving shark fins. Like all other seafood, HMS are perishable and may pose health hazards if not handled properly. Products range from those having a long shelf-life, such as swordfish, to highly perishable species like yellowfin tuna. Improperly handled yellowfin can produce histamine, large swordfish may contain high levels of mercury, and shark meat requires careful handling due to the high concentrations of urea in the body of the shark. Processing companies are aware of these characteristics and their costs of doing business vary accordingly to protect consumers.

Transportation of these species to market also varies widely from the direct domestic sale of some shark or swordfish meat by a fisherman to a restaurant (carried by truck) to the quick and sometimes complicated export of bluefin tuna from fisherman to dealer to broker to the Japanese auction (carried by commercial airline carrier). Frozen swordfish and tunas are often brought to the United States by overseas shipping companies and sharks and other products may be exported from the United States, processed overseas, and imported in a final product form.

It is unknown how many U.S. companies depend on HMS fisheries, other than those who buy fish directly from U.S. fishermen and those who import bluefin tuna or swordfish. The proportion of those companies that depend solely on Atlantic HMS versus those that handle other seafood and/or products is also unknown. This section provides a summary of the most recent

trade data NMFS has analyzed, as well as a brief description of the processing and trade industries employed in transitioning Atlantic HMS from the ocean to the plate.

### *Processing and Wholesale Sectors*

Quantitatively, NMFS has limited information on the processing sector, i.e., the amount of HMS products sold in processed forms. In addition, knowledge regarding the utilization of Atlantic HMS is largely limited to the major product forms. For example, bluefin tuna are usually shipped and sold in dressed form at fish auctions in Japan. Information on the processing sector of the Atlantic bluefin tuna fishery is detailed in the HMS FMP (Section 2.2.4.1). Other Atlantic tunas, especially bigeye tuna, are frequently shipped fresh to Japan in dressed form. Swordfish are sold fresh and frozen in dressed form and processed products (e.g., steaks and fillets). The utilization of sharks is also not well known since trade statistics frequently do not indicate product forms such as skins and leather, jaws, fishmeal and fertilizer, liver oil, and cartilage (Rose, 1996). Domestically-landed sandbar and blacktip shark meat may be sold to supermarkets and processors of frozen fish products. NMFS continues to work with industry to collect information specific to U.S. and foreign processing of Atlantic HMS to better track markets, conserve stocks, and manage sustainable fisheries.

The U.S. processing and wholesale sectors are dependent on both the U.S. and international HMS fisheries. Individuals involved in these businesses buy the seafood, cut it into pieces that transform it into a consumer product, and then sell it to restaurants or grocery store chains. Employment varies widely among processing firms and may be seasonal unless the firm relies on imported seafood or a wide range of domestic seafood. The majority of firms handle other types of seafood and are not solely dependent on HMS. Other participants in the commercial trade sector include brokers, freight forwarders, and carriers (primarily commercial airlines, trucking, and shipping companies). Swordfish, tunas, and sharks are important commodities on world markets, generating significant amounts in export earnings in recent years.

### *Monitoring International Trade of HMS*

Understanding the harvesting and processing sectors is essential when analyzing world trade in highly migratory fish species. Trade data for Atlantic HMS are of limited use as a conservation tool unless they indicate the flag of the harvesting vessel, the ocean of origin, and the particular species landed. Under the authority of the Atlantic Tunas Convention Act and the Magnuson-Stevens Act, NMFS collects this information while monitoring international trade of bluefin tuna and swordfish. The bluefin tuna and swordfish monitoring programs implement ICCAT recommendations and support rebuilding efforts by collecting data necessary to identify nations and individuals that may be fishing in a manner that diminishes the effectiveness of ICCAT fishery conservation and management measures.

Of the Atlantic HMS, the international trade of bluefin tuna is perhaps the most well-tracked. This is due to international adoption of an ICCAT recommendation to implement the Bluefin Statistical Document (BSD) program. This process is bolstered by Japan's support for the program as a major importer of bluefin tuna. Each bluefin tuna is tagged and documented and the BSD travels with each shipment until the final point of destination (see Appendix II for a copy of the U.S. BSD). This document tracks *imports* and *exports* of bluefin tuna by most ICCAT nations. If bluefin tuna are exported from, or imported to, the United States, the document is submitted to NMFS as part of the monitoring program.

Since the late 1970's, NOAA Form 370 has been used to document imports of yellowfin tuna and other species of tuna for the purposes of protecting dolphins in the eastern tropical Pacific Ocean. Form 370 is filed with other documents necessary for entry into the United States and is then forwarded to NMFS's Southwest Regional Office. The form is **not** required for fresh tuna, animal food, or canned petfood made from tuna.

The United States also monitors the trade of swordfish, but only as it relates to the sale of Atlantic swordfish in U.S. markets. Monitoring U.S. imports of swordfish is facilitated by the use of U.S. Customs data, the Certificate of Eligibility (COE), and importer activity reports. While this program is approved by ICCAT through a recommendation allowing countries to ban the sale of swordfish less than their minimum size, the United States is currently the only country tracking imported shipments of swordfish. If swordfish shipments enter the United States under the swordfish tariff codes required by U.S. Customs regulations, the shipments can be cross-checked with a COE that indicates the flag of the harvesting vessel and the ocean of origin. Furthermore, the COE validates that the imported swordfish were not less than the U.S. minimum size of 33 lb dressed weight.

## 6.2 Exports

NMFS monitors exports of fish products through its Office of Science and Technology. Bureau of the Census data are made available online at [www.st.nmfs.gov/st1/trade/index](http://www.st.nmfs.gov/st1/trade/index). NMFS also collects detailed export data on Atlantic bluefin tuna, most of which are exported to Japan and all of which are accompanied by a bluefin statistical document. "Exports" may include merchandise of both domestic and foreign origin. Census defines exports of "domestic" merchandise to include commodities which are grown, produced, or manufactured in the United States (e.g., fish caught by U.S. fishermen). For statistical purposes, domestic exports also include commodities of foreign origin which have been altered in the United States from the form in which they were imported, or which have been enhanced in value by further manufacture in the United States. The value of an export is the f.a.s. (free alongside ship) value defined as the value at the port of export based on a transaction price including inland freight, insurance, and other charges incurred in placing the merchandise alongside the carrier. It excludes the cost of loading the merchandise, freight, insurance, and other charges or transportation costs beyond the port of exportation.

### *Bluefin Tuna Exports*

As described above and in the HMS FMP, all bluefin tuna imported to, or exported from, the United States must be accompanied by a BSD in order to meet the requirements of ICCAT's BSD program. The United States has participated in the program since 1995 and Table 6.1 summarizes the most recent information.

**Table 6.1** United States Exports of Bluefin Tuna (Atlantic and Pacific). As reported through the Bluefin Tuna Statistical Document Program, 1996 - 1998. U.S. BSD Program, NMFS NERO.

	Landings of Atlantic BFT (mt dw)	Exports of Atlantic BFT (mt dw)	Exports of Pacific BFT (mt dw)	Total U.S. Exports of BFT (mt dw)
1996	749.8	661.7	60.7	722.4
1997	826.8	698.7	917.3	1,616.0
1998	849.1	658.6	694.2	1,352.7

Information on exports of bluefin tuna for the first half (January through June) of 1999 is also available. Preliminary data indicate that 18.2 mt of west Atlantic bluefin tuna, and 10.4 mt of Pacific bluefin tuna were exported from the United States during this time period. These figures are similar to past years, as most landings (and exports) of bluefin tuna in the United States occur during the second half of the calendar year.

### *Shark Exports*

NMFS also collects trade data on the export of sharks, although not in the level of detail found in the BSD program. Shark bycatch information is submitted to ICCAT but there are no management regarding shark conservation and management. Other regional entities, including the FAO, work to conserve sharks worldwide and gather trade information on shark species. Shark exports are not identified by species code with the exception of dogfish. In addition, they are not identified by specific product code other than fresh or frozen meat and fins. Shark shipments are not identified with respect to the flag of the harvesting vessel or the ocean of origin. Due to the popular trade in shark fins and their high relative value compared to shark meat, shark fins are tracked as a specific product code by U.S. Customs. In 1998, exported shark fins averaged \$8.95/kg. In that same year, fresh and frozen shark meat averaged \$1.55 and \$2.43/kg, respectively. Table 6.2 indicates the magnitude of shark exports by the United States from 1995-1998. Prior to 1995, dogfish and all other sharks were grouped into one tariff code. Because dogfish has dominated the export market in volume for sharks during that time, these numbers are not useful for the purposes of this report (dogfish are not in the Atlantic shark management unit),

and are not included here. Sharks are targeted in the coastal Pacific Ocean by the driftnet thresher fishery and are caught incidental to the Bering groundfish (trawl) and tuna and swordfish longline fisheries in the Western Pacific Ocean. However, the Atlantic fishery catches a large number of sandbar and blacktip sharks which are thought to be sold domestically. As a result, it is unknown what percentage of total exports can be attributed to the Atlantic fishery.

**Table 6.2** 1995-1998 U.S. Exports of Shark Products (kg). Bureau of Census data.

Year	Shark Fins Dried (kg, US\$)*		Non-specified Fresh Shark (kg, US\$)		Non-specified Frozen Shark (kg, US\$)	
	NA	NA				
1995	NA	NA	99,101	303,319	309,705	929,787
1996	NA	NA	640,677	1,342,273	358,000	969,955
1997	NA	NA	459,542	920,887	439,992	884,588
1998	141,149	1,264,077	524,249	814,319	102,939	250,107

\* There was no product code for the export of shark fins prior to 1998. Therefore, any exported shark fins may have been identified as unspecified shark product or as unspecified dried fish.

It should be noted that there is no tracking of other shark products besides meat and fins. Therefore, NMFS cannot track trade in shark leather, oil, or shark cartilage products. Additionally, the United States has reported its imports of shark fins since 1964 but has only recently obtained a tariff code for exporting shark fins. Until that time, they were classified under a general heading.

#### *Summary of Atlantic HMS Exports*

Atlantic HMS exports are dominated by bluefin tuna and sharks. According to the *Fisheries of the United States, 1998*, 3,021 mt ww of bluefin tuna were landed in the United States in 1998 from all oceans. When converted to mt dw (using a factor of 0.7519), and compared with 1998 data from U.S. BSD program, it appears that roughly 59 percent of bluefin tuna landed in the United States was exported. The nature of reporting on sharks, particularly distinctions between fins and whole fish, makes comparison too difficult. However, overseas markets provide a profitable outlet for many U.S. Atlantic HMS fishermen and may provide superior markets compared with those found in the United States.

### **6.3 Imports**

All seafood import shipments are required to be accompanied by a 7501 Customs entry form. The information submitted on this form is analyzed by NMFS and that data are available online at [www.st.nmfs.gov/st1/trade/index](http://www.st.nmfs.gov/st1/trade/index). As mentioned on the web page, two methods are used to track imports: "general" imports are reported when a commodity enters the country, and "consumption" imports consist of entries into the United States for immediate consumption combined with withdrawals from Customs bonded warehouses. "Consumption" import data reflect the actual entry of commodities originating outside the United States into U.S. channels of consumption. These are the data used by NMFS. Additional detailed information is collected by NMFS on bluefin tuna and swordfish imports and is discussed in further depth below.

### *Bluefin Tuna Import Monitoring Program*

Similar to exports, Table 6.3 updates information in the HMS FMP on imports and re-exports (products imported and then forwarded on to another country) of bluefin tuna into and from the United States.

Importers of bluefin tuna are required to obtain an annual tuna dealer permit and to report through the BSD program. Since 1997, NMFS has received U.S. Customs data (derived from Entry Form 7501) on imports of fresh and frozen bluefin tuna and swordfish on a monthly basis. These data allow NMFS to track shipments of bluefin tuna and enforce dealer reporting requirements. United States imports and re-exports of bluefin tuna for 1996 through 1998, as reported through both U.S. Customs and the BSD program, are shown in Table 6.4. The difference in import numbers between the U.S. Customs and BSD data may be explained by a lack of knowledge and compliance with the BSD program by importers, especially those on the Pacific coast. As awareness of the BSD program improves among importers, the gap between imports reported through the BSD program and Customs has narrowed, but is still quite large.

Data transferral between NMFS and U.S. Customs helps NMFS verify the bluefin tuna import data it currently receives from dealers and identify those importers who are not in compliance with the BSD program. In general, industry sources report that imports of bluefin tuna into the United States are on the rise as the international value of the dollar remains high and the Asian economic crisis continues. The recent rise in the popularity of raw tuna in the United States has also prompted increasing imports of bluefin tuna and dealers are reporting an expanded domestic market for both locally-caught and imported raw tuna. Improvements in BSD compliance combined with the growing U.S. popularity of bluefin tuna are primarily responsible for the large differences between 1997 and 1998 imports shown in Table 6.4.

**Table 6.3**                      **Imports of Bluefin Tuna into the United States.** As reported through the BSD program and U.S. Customs, 1996 - 1998.

	U.S. BSD Program		U.S. Customs Data (mt dw)
	Imports (mt dw)	Re-exports (mt dw)	
1996	1.9	1.3	N/A
1997	5.3	0.4	109.5
1998	99.9	1.9	225.6

Information on imports and re-exports of bluefin tuna for the first half (January through June) of 1999 is also available. Preliminary data indicate that 55.7 mt were imported into the United States, and an additional 4.1 mt were re-exported during this period.

#### *Swordfish Import Monitoring Program*

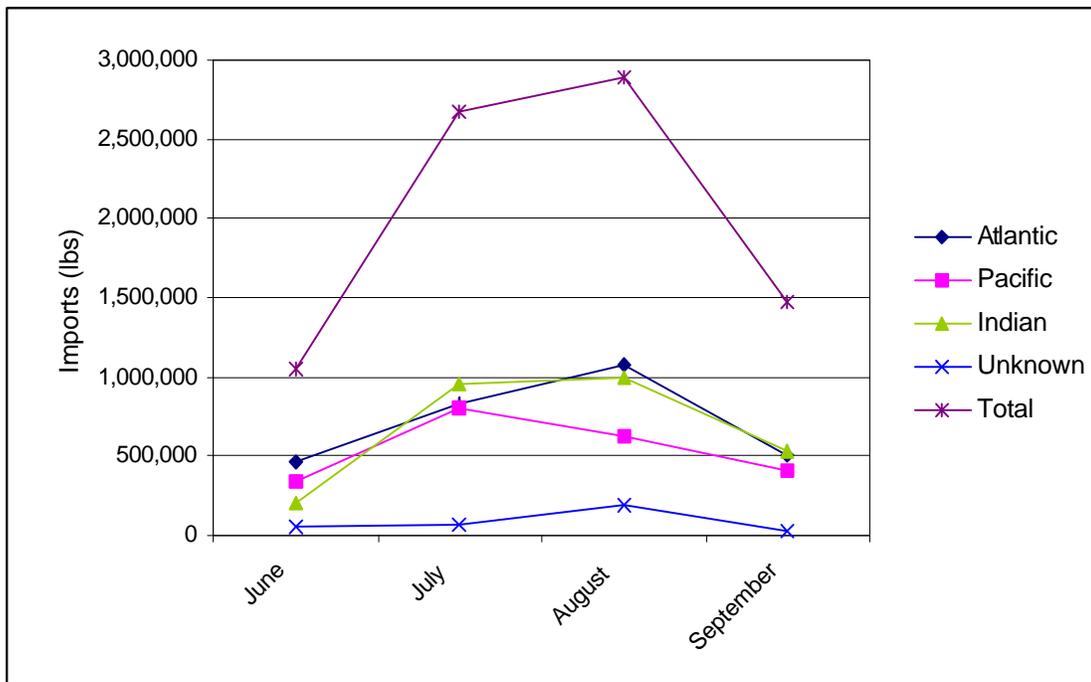
Since the United States is a dominant swordfish market and demand for swordfish may provide incentive for nations to export Atlantic swordfish to the United States, NMFS reports imports of swordfish to ICCAT every year in November as part of the U.S. National Report. Data are collected from Customs entry forms, certificates of eligibility, and U.S. importer activity reports. Data from each source are compiled and cross-checked against other sources to confirm documentation of each shipment. For example, if a swordfish shipment enters the United States, NMFS receives general data about that shipment (exporting country, date of entry, weight of shipment, general product form) on the entry form. NMFS could then ensure that an importer activity report had been submitted detailing prices and specific product forms. NMFS could also check for a Certificate of Eligibility accompanying the shipment to indicate the flag of the harvesting vessel (sometimes different from exporting country), ocean of origin, and verification that, if it was an Atlantic swordfish, it weighed more than 33 lbs dressed weight when harvested. Table 6.4 and Figure 6.1 summarize the bi-weekly dealer report and the COE data for June-September. The July and August peak in import levels may be attributable to increased demand of swordfish during the “summer grilling season”.

**Table 6.4**      **Swordfish Import Data Collected under the Swordfish Import Monitoring Program (lbs).**  
June - September 1999 totals. Based on data received through November 15, 1999.

Flag Country of Harvesting Vessel	Ocean of Harvest				Total
	Atlantic	Pacific	Indian	Unknown	
Australia	0	394060.3	72900.7	6938.8	473899.8
Brazil	796966.8	0	0	0	796966.8
Canada	565248	0	0	0	565248
Chile	0	901326.5	0	0	901326.5
Columbia	0	192.5	0	0	192.5
Costa Rica	0	257504.3	0	0	257504.3
Ecuador	0	52658.3	0	0	52658.3
El Salvador	0	8768	0	0	8768
Fiji Islands	0	52017.6	0	0	52017.6
Grenada	2607	0	0	0	2607
Guam	0	1905	0	0	1905
Indonesia	0	0	74854.3	0	74854.3
Japan	0	163100	0	0	163100
Mexico	0	101845.4	0	0	101845.4
Micronesia	0	542	0	0	542
Namibia	0	0	0	0	0
Netherlands	1597	0	0	0	1597
New Zealand	0	177731.9	0	0	177731.9
Panama	0	243.9	0	0	243.9
Peru	929.4	2374	0	0	3303.4
Philippines	0	30568	0	0	30568
Samoa	0	1204	0	0	1204
South Africa	1262258	0	0	0	1262258
Taiwan	100348	29400	2537219	0	2666967
Trinidad	837	0	0	0	837
Uruguay	156845.1	0	0	0	156845.1
Vietnam	0	5044.1	0	0	5044.1
Unknown	0	0	0	332113.7	332113.7
Totals	2887636.2	2180485.8	2684974.1	339052.5	8092148.6

**Figure 6.1**      **Swordfish Import Data Collected under the Swordfish Import Monitoring Program (lbs).**  
 June - September 1999. Based on data received through November 15, 1999.

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The United States imports both fresh and frozen shark meat. These imports and shark fins can be tracked using data from the Customs 7501 entry form. NMFS does not require importers to submit additional data regarding shark shipments. These meat products are reported to be high-quality and are supplied to restaurants and other seafood dealers that import other high-quality seafood products (Rose, 1996). NMFS does not have specific product information on imported shark meat such as the proportion of fillets, steaks, or loins. NMFS also has no data on imports of the condition of shark fins; i.e., wet, dried, or further processed products such as canned shark fin soup. The United States may be an important trans-shipment port for shark fins; shark fins may be imported wet and then exported dried. It is also probable that U.S.-caught shark fins are exported to Hong Kong or Singapore for processing, then imported back into the United States for consumption by urban-dwelling Chinese Americans (Rose, 1996). There is no longer a separate tariff code for shark leather, making it impossible to track imports of shark

leather through analysis data from the Customs 7501 entry form. Imports of frozen sharks have more than tripled since 1995 while imports of shark fins have decreased by approximately 50percent (by weight) (Table 6.5).

**Table 6.5 1998 U.S. Imports of Shark Products**

Year	Shark Fins Dried (kg, US\$)		Non-specified Fresh Shark (kg, US\$)		Non-specified Frozen Shark (kg, US\$)	
	kg	US\$	kg	US\$	kg	US\$
1994	114,331	4,361,362	0	0	0	0
1995	142,235	2,348,411	1,255,512	3,577,897	46,889	558,201
1996	60,407	2,270,261	1,330,688	3,618,205	21,244	489,442
1997	77,626	3,060,438	1,191,044	3,044,984	59,641	914,783
1998	62,169	1,698,646	947,545	2,160,985	148,167	1,125,994

#### *Summary of Imported HMS*

Atlantic swordfish is an important U.S. import. According to the *Fisheries of the United States, 1998*, 6,846 mt ww of swordfish were landed in the United States in 1998 from all oceans. When converted to mt dw (using a factor of 0.7519), and compared with four months of 1999 data from the Swordfish Import Monitoring Program, it appears that roughly 71 percent of swordfish consumed in the United States may be imported. U.S. consumer preference continues to be a driving force for the world's swordfish fisheries and level of demand will no doubt play a role in future harvesting strategies. As Atlantic swordfish quotas decrease over the next few years to support rebuilding efforts, swordfish from the Pacific and Indian Oceans will continue to supply the U.S. market. Tunas are also imported in great quantity, although it is difficult to identify the source and species of processed tuna products. Bluefin tuna are frequently imported into the United States for transshipment to Japan, the dominant market for high-quality bluefin. However, tracking systems like the U.S. BSD program assist in providing NMFS with information on tuna trade.

#### **6.4 The Use of Trade Data by ICCAT**

The SCRS uses trade data on bluefin tuna, swordfish, and bigeye tuna that are submitted to ICCAT as an indication of increased landings. These data can then be used to augment estimates of fishing mortality rate (F) and produce better assessments. In addition, these data are

used to monitor compliance with ICCAT recommendations and identify those countries whose fishing practices diminish the effectiveness of ICCAT conservation and management measures. In 1996, ICCAT adopted a recommendation to address the lack of compliance with quotas in the bluefin tuna and north Atlantic swordfish fisheries. Penalties for contracting parties that are not in compliance may include catch limit reductions and, if necessary, trade restrictive measures. At the 1997 meeting, this was extended to apply to the South Atlantic swordfish fishery. An analysis of vessel sighting and Japanese BSD data led to the determination that Panama, Honduras, and Belize were fishing in a manner that diminished the effectiveness of the bluefin tuna rebuilding program. On August 21, 1997, NMFS implemented a 1996 ICCAT recommendation to prohibit the importation of Atlantic bluefin tuna and its products from Panama, Honduras, and Belize (62 FR 44422). Since that time, ICCAT has continued to communicate with these nations in an attempt to encourage compliance with ICCAT measures. In 1999, ICCAT recommended that the trade restrictions on Panama be lifted as a result of the Government of Panama's recent efforts to substantially reduce fishing vessel activities deemed inconsistent with ICCAT measures. Therefore, consistent with the ICCAT recommendation, NMFS proposes to lift the import restriction on Panama and allow for the importation of Atlantic bluefin tuna from that country.

Honduras and Belize are thought to have vessels that continue to fish in a manner that diminishes the effectiveness of ICCAT's conservation and management measures for both Atlantic bluefin tuna and Atlantic swordfish. In recent years, while other countries have reduced catch levels in response to the overfished status of North Atlantic swordfish, Honduras and Belize have recorded significant swordfish exports. In 1999, ICCAT received unsatisfactory responses from both governments regarding actions taken to rectify the situation. ICCAT recommended additional trade restrictions to address the concerns over swordfish landings. Therefore, consistent with the 1999 ICCAT recommendation, NMFS proposes to prohibit the importation of Atlantic swordfish and its products from Honduras and Belize. The prohibition of imports of Atlantic bluefin tuna and its products from these countries remains in effect.

In 1999, ICCAT also identified Equatorial Guinea (a Contracting Party to ICCAT) as a country whose vessels were diminishing the effectiveness of ICCAT conservation and management measures for Atlantic bluefin tuna. Import data from 1997-1999 reveal significant exports of Atlantic bluefin tuna by Equatorial Guinea despite the fact that the country had a zero catch limit during that time period. The Government of Equatorial Guinea has not responded to ICCAT inquiries and has reported no bluefin tuna catch data to ICCAT. As a result, ICCAT recommended trade restrictions as a penalty for non-compliance. Therefore, consistent with the 1999 ICCAT recommendation, NMFS proposes to prohibit the importation of Atlantic bluefin tuna and its products from Equatorial Guinea.

Ten countries were identified to be "hosting" illegal, unreported, and unregulated fishing vessels. These countries may be subject to trade sanctions in subsequent years. Thus, it is important to monitor international trade in HMS as these data can provide detailed information about unreported catches. The role of trade data in identifying countries which are fishing in a

manner that diminishes the effectiveness of ICCAT conservation and management measures will be increased as per the discussions and recommendations from the 1999 ICCAT meeting; dependent on the availability of data.

## **6.5 Conclusions and Future Plans**

NMFS recognizes the limitations of using trade data to monitor conservation and management of HMS. However, NMFS has been successful at using these tools to collect more information about fisheries, harvesting practices, markets, and processors related to these species. Improved data collection depends on all harvesting nations and their ability and willingness to monitor fisheries and submit complete data sets to regional and global organizations such as FAO. These nations could potentially be assisted by the development of guidelines or standards for monitoring trade.

NMFS monitors trends in trade for all federally managed species and will identify any need for additional harmonized tariff codes. While a request for an additional tariff code is not always fulfilled, NMFS has been successful in the past to solicit a code for shark fins, and specific product codes for swordfish (e.g., fillets and steaks). The use of more detailed bluefin and swordfish trade data has recently proved to be an effective tool for monitoring international activities. Combined with vessel sighting information, these data provide clues about illegal, unreported, and unregulated fishing activities on the high seas. NMFS expects that ICCAT will continue to use trade data to monitor international fishing of Atlantic HMS.

*Section 6 References:*

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