
Atlantic Highly Migratory Pelagic Fisheries

INTRODUCTION

Oceanic pelagic fish are highly migratory species that include swordfish, bluefin tuna, yellowfin tuna, bigeye tuna, albacore, skipjack tuna, blue and white marlin, sailfish, longbill spearfish, and others. In the Atlantic Ocean, swordfish and bluefin tuna have long provided important fisheries, while in recent years yellowfin tuna and bigeye tuna have increased in significance to U.S. fishermen. Many recreational anglers target yellowfin and bluefin tuna, blue marlin, white marlin, and sailfish in U.S. waters and occasionally longbill spearfish. All commercial retention of the latter four billfish species is now banned in U.S. waters; however, they are still incidentally caught in tuna and swordfish longline fisheries.

Because these large pelagic fish migrate widely and are harvested over broad ocean areas by U.S. and foreign fishermen, both national and international management measures are necessary. In all cases, stock assessments are conducted using aggregate data and provide the basis for regulations. U.S. fleets operate in the western Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. These fleets are regulated under the Magnuson-Stevens Fishery Conservation and Management Act and the Atlantic Tunas Convention Act, which provides authority to implement international agreements reached by the International Commission for the Conservation of Atlantic Tunas (ICCAT). A draft Fishery Management Plan (FMP) for Atlantic tunas, sharks, and swordfish, and Amendment One to the Atlantic Billfish FMP (which addresses blue marlin, white marlin, sailfish, and spearfish) were proposed in 1998 and are slated to

be finalized in 1999. Management of Atlantic tunas and swordfish has been based largely on recommendations by ICCAT and implemented via regulatory articles under the Atlantic Tunas Convention. ICCAT has set and allocated western bluefin tuna quotas by country since 1982 and eastern bluefin quotas since 1994. ICCAT first established catch limitations for north Atlantic swordfish in 1991 and south Atlantic swordfish in 1994; country-specific quotas have since been adopted for both stocks.

SPECIES AND STATUS

From the early 1960's through 1977, U.S. fishermen caught an average of about 5,000 metric tons (t) per year (2,000–12,000 t/year) of the highly migratory pelagic species (Figure 5-1). During the late 1970's and early 1980's, U.S. fishermen caught 8,000 t or more per year, and since 1985 they have caught 15,000–20,000 t/year. The U.S. share of current potential yield for the highly migratory pelagic resource is 16,400 t/year, and long-term potential yield to the U.S. fleet is estimated at 18,100 t/year (Table 5-1) (ICCAT, 1998a).

Since 1960, the top species by volume in the U.S. harvest has changed from bluefin tuna to swordfish to yellowfin tuna (Figure 5-1) as each species declined due to fishing pressure and U.S. fishing effort shifted. During 1961–73, bluefin tuna represented 45–80% of the U.S. western Atlantic catch of large pelagics. But since 1980, the percentage has dropped to less than 15%, reflecting the decline in the bluefin tuna population, catch restrictions, and the increasing harvests of

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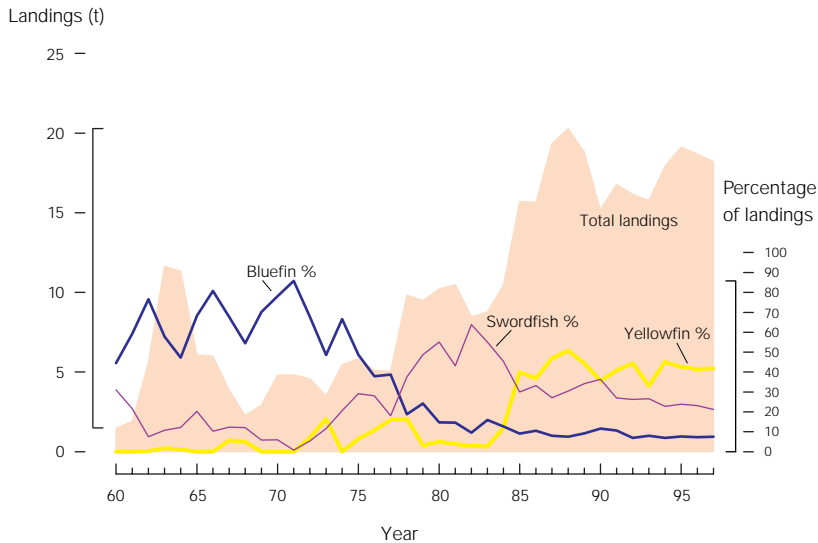


Figure 1

Landings in metric tons (t) and percentage of landings of bluefin tuna, yellowfin tuna, and swordfish in U.S. waters of the Atlantic Ocean, 1961–96.

alternative species. During 1961–73, swordfish represented 5–20% of the U.S. catch, rose to 65% in 1982, but has since dropped to about 25%. During 1961–83, the percentage of yellowfin tuna in the U.S. north Atlantic catch was usually less than 10%, but that has since risen to 35–45%.

The U.S. dockside ex-vessel revenue from these fishes soared from about \$20 million (early 1980's) to nearly \$100 million in 1988. The average annual commercial ex-vessel value has continued at about this level since.

Angler harvests of large pelagic fishes are estimated from dockside and telephone surveys. The average annual catch by recreational anglers for 1995–97 is estimated conservatively at 7,500 t. Fishing tournament surveys indicate a substantial increase in billfish fishing since 1972. Although the practice of tagging and releasing of large pelagics has grown in recent years, more data are needed to quantify the recreational fishery trends for these fishes in U.S. Atlantic and Gulf of Mexico waters.

The value of the recreational fisheries for highly migratory species has not been estimated for all species; however, preliminary estimates indicate that they are highly valued.

NMFS has classified the following Atlantic highly migratory species (HMS) as overfished: west Atlantic bluefin tuna, north Atlantic swordfish, bigeye tuna, blue marlin, white marlin, and sailfish. Other oceanic pelagics in the HMS FMP are considered fully fished. The HMS FMP and Bill-

fish Amendment include rebuilding plans for the overfished species as well as measures designed to maintain healthy stocks at the optimum yield. Catch of blue and white marlin by domestic and foreign fleets has resulted in overharvesting these stocks. Fishing mortality rates on swordfish have been excessive in recent years, prompting the development of international agreements to substantially reduce catches beginning in 1991. U.S. harvests since July 1991 are consistent with ICCAT's recommendations designed to reduce the risk of further declines. While yellowfin and bigeye tunas are fully and over utilized respectively, no catch quotas are in place for either of these species. Western Atlantic bluefin tuna have been overharvested to the point of being severely depleted, and as a result the harvest of this species has been restricted since 1982. The most recent assessment indicates that current quotas may result in a gradual rebuilding of the spawning stock in the future.

ISSUES

Transboundary Stocks

Regulation of species that migrate across international boundaries is difficult. Domestic regulation without international agreements inherently is limited, but international agreements can be difficult to achieve. The latter is particularly true if the primary fishing nations cannot agree on fishing and conservation objectives, or do not abide by agreements once they are adopted. An additional problem is that not all fishing nations are members of ICCAT. The recent United Nations agreement on straddling fish stocks and highly migratory fish stocks may help to resolve these problems.

Bycatch and Multispecies Interactions

Marlin and sailfish bycatch in tuna and swordfish fisheries are a major concern, especially as commercial fisheries encounter concentrations of billfish important to recreational anglers. Expansion of the U.S. longline fishery for Gulf of Mexico yellowfin tuna and Spanish longline fishing in the tropical eastern Atlantic have heightened concern

Species and Area	Recent average yield (RAY) ^{1,2}	Current potential yield (CPY) ³	Long-term potential yield (LTPY) ³	Fishery utilization level	Stock level relative to LTPY
Yellowfin tuna (Atlantic)	137,500	~137,500	147,500–155,800	Full	Near
Bigeye tuna (Atlantic)	100,700	60,000–80,000	70,000–90,000	Over	Below
Albacore (N. Atlantic)	31,900	Unknown	32,000	Over	Below
Skipjack tuna (W. Atlantic)	27,100	Unknown	Unknown	Possibly full	Near
Bluefin tuna (W. Atlantic)	2,300	2,000–2,500	2,800–7,700	Over	Below
Other tunas (Atlantic)	31,900	Unknown	Unknown	Unknown	Unknown
Swordfish (N. Atlantic)	14,800	11,400	13,000	Over	Below
Blue marlin (Atlantic)	4,100	1,920	4,500	Over	Below
White marlin (Atlantic)	1,600	900	2,200	Over	Below
Sailfish (W. Atlantic)	900	600	700	Over	Below
Total	352,800	315,470	348,300		
U.S. subtotal	18,300	16,400	18,100		

Table 5-1

Productivity in metric tons and status of highly migratory pelagic fisheries in U.S. waters of the Atlantic Ocean

¹Total LTPY, CPY, and RAY under present fishing patterns by U.S. and foreign nationals.

²1995–97 average from ICCAT (1998a) (1994–96 average used for billfishes).

³ICCAT (In press (a)).

⁴Individual LTPY's, CPY's and RAY's based on entire stock regardless of harvesting nation.

for distressed stock of Atlantic tunas, swordfish, and the billfish sought by recreational anglers.

Domestic Management

Although the number of permits for large pelagics increased substantially during the 1990s, actual levels of effort in the longline fishery have declined in recent years. NMFS has proposed a limited access system for the swordfish, shark, and tuna longline fisheries as part of the draft HMS FMP in order to reduce latent effort and prevent future expansion of these fleets.

Progress

In recent years scientists from the United States and several other nations have made substantial progress towards improving our understanding of the biological basis for managing Atlantic highly migratory fisheries. Analyses of the genetic structure of Atlantic and Mediterranean swordfish have been completed and have corroborated some of the stock structure assumptions made by ICCAT. Genetic studies of other large pelagic species, and bluefin tuna in particular, are underway. Additional studies of bluefin tuna stock structure using various tagging methods and biological mark-

ers are in various stages of implementation. Several years of research on the growth and reproductive biology of male and female swordfish is being used to increase the understanding of the effect of fishing on the north Atlantic and Mediterranean management units. At recent ICCAT meetings (1996–98), several recommendations and resolutions have been adopted that, if fully implemented, will result in substantial progress in conserving stocks and achieving the following management objectives: 1) adoption of recovery plans and rebuilding strategies for bluefin tuna and swordfish, 2) establishment of country-specific quotas for swordfish and eastern bluefin tuna, 3) reduction of blue and white marlin catches, and 4) adoption of measures facilitating the monitoring of catch by both member and nonmember countries, and the use of trade measures for nonmember nations that fish in a manner that diminishes the effectiveness of management measures (ICCAT, 1997, 1998b, and In press (b)).

At the domestic level, discussions on procedures to establish limited access for some large pelagics are currently well underway.

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