

A DESCRIPTION OF THE FISHERY FOR ATLANTIC BLUEFIN TUNA BY UNITED STATES FISHERMEN

by

Fisheries Data Analysis Division, Galveston Laboratory,
Southeast Fisheries Center, NMFS

1. HISTORICAL SUMMARY

Before the 20th century, no directed bluefin tuna fishery existed in the U. S. No market for bluefin existed, and giant fish (≥ 136.4 kg) were regarded as a nuisance because of the damage they caused to fishing gear. In the 1930's, a sport fishery developed for small (6.4-53.3 kg) and medium (53.3-136.4 kg) bluefin off New York and New Jersey, and for giants in the Gulf of Maine. This rod and reel fishery expanded rapidly following World War II, and continues today from Cape Hatteras (North Carolina), to the Canadian border. Occasional sport catches are also made in the Gulf of Mexico and in the straits of Florida.

Until 1958, the U. S. commercial fishery employed only harpoons, handlines, and traps. Much of the catch occurred when tuna were encountered during operations directed at other species. Commercial purse seining began with a single vessel in Cape Cod Bay, (Massachusetts) in 1958, and expanded rapidly into the region between Cape Hatteras and Cape Cod in the early 1960's. The purse seine fishery between Cape Hatteras and Cape Cod has been directed mainly at small and medium bluefin, and at skipjack tuna. North of Cape Cod, purse seining is directed at giant bluefin.

In the early 1970's, the development of the Japanese market for giant bluefin blurred the distinction between sport and commercial fishing. The traditionally recreational catch is now sold for shipment to Japan.

2. FISHING GROUNDS, FISHING SEASONS, GEAR, CATCH DATA, AND REGULATIONS

Table 1 summarizes the traditional gear, area, size of fish, and seasonality of the U. S. bluefin tuna fishery. Figure 1 presents the recent catches for the main components of the fishery. Detailed information is presented in this report for the purse seine and handgear fisheries. Handgear includes rod and reel, harpoon, kepline, and handline. The handgear fishery for small and medium tuna (almost exclusively rod and reel) is distinct enough from the handgear fishery for giant tuna (all types of handgear) that separate statistics are reported for these fisheries. Prior to 1975, giant fish not sold commercially were not included in the U. S. statistics; data before 1975 on the amount caught but not sold are not available. Bluefin tuna are still occasionally captured by trap, gill net, and otter trawl, but the contributions of these types of gear to the total U. S. bluefin catch have become very small. Since 1976, these catches have been combined with the two handgear categories.

The United States established regulations for U. S. bluefin tuna fishermen in 1975, in response to the 1974 ICCAT recommendations for minimum size limits and restriction of fishing mortality. The United States chose to limit fishing mortality to recent levels by setting catch quotas. In order to apportion the catch equitably among the various fisheries, quotas are set

on a gear and geographical area basis. The fishing season for a gear and area combination is closed once its quota is reached. Table 2 summarizes the U. S. regulations from 1975 to 1978.

2.1 U. S. purse seine fishery

U. S. vessels fishing for Atlantic bluefin tuna with purse seine gear have operated from several ports in the northeastern United States, California, and Puerto Rico. The fishery has traditionally fished for small and medium tuna in nearshore waters (rarely outside 200 km) between Cape Hatteras and Cape Cod in the summer, and for giant tuna in the Gulf of Maine in late summer and early fall. Quota regulations have severely contracted the duration of the fishing seasons, and purse seining directed at medium tuna is now illegal.

Currently, only four boats comprise the Atlantic purse seine fleet. They range in size from about 90 to 600 metric ton capacity, and none is less than 8 years old. The typical crew size for these vessels is about 12. Larger, distantwater seiners from the U. S. Pacific coast will sometimes divert operations from the yellowfin and skipjack fisheries to fish for bluefin, but this practice has been intermittent in recent years. These larger vessels are actually less efficient in the shallow shelf waters of the northwest Atlantic than are the smaller vessels historically involved in the fishery.

The fleet's primary interest is Atlantic bluefin tuna. The vessels will fish for other tunas (primarily skipjack) in the summer if the fish are available. During the off-season, the vessels may be rigged to catch other species, particularly herring, weakfish, and little tuna.

Fishing operations are typical purse seining procedures. Spotter aircraft are used to locate fish schools. The vessels themselves may not even leave the docks until suitable concentrations of fish are located.

The start of the fishing season coincides with availability of fish in schools large and dense enough to warrant attention. Once sufficient densities do appear, catch rates are so high (to over 50 tons per set) that the annual quotas are usually met within 2 weeks for the small tuna (early summer fishery) and 3 weeks for the giants (late summer and fall fishery).

The total U. S. purse seine catches for 1960-1978 are included in Figure 1. Prompt reporting of purse seine catches is required under current regulations. Days fished, number of successful sets, catch per day fished, and catch per successful set for each boat have been recorded. No data have been recorded about the effort expended in searching for schools. searching for schools.

The price paid to purse seiners for small bluefin tuna was about \$948 per metric ton in 1978. Small tuna are shipped to canneries in Canada or Puerto Rico, or sold fresh within the United States. The ex-vessel price for giant tuna fluctuates widely during the year, commonly ranging from \$1.20 to 4.40 per kilogram, occasionally reaching even \$8.80 per kilogram, dressed weight (headed, gutted, fins removed). Most giants are exported to Japan, but a few enter the domestic fresh fish market.

2.2 U. S. handgear fishery

The U. S. handgear fishery is a summer and fall fishery. Fishing for small tuna with rod and reel generally begins in early summer off Virginia, and the center of activity moves northward into the New York Bight as the season progresses. Giants are caught in Cape Cod Bay and the Gulf of Maine during late summer and early fall with all types of handgear. Fishing usually takes place between 8 and 200 km from shore. Sporadic rod and reel catches of giants are also reported in late spring from the Gulf of Mexico. Beyond these general patterns, the availability of fish at a specific location and time can be quite unpredictable.

The handgear fishery for bluefin is composed of a diverse collection of boats and fishermen. Probably 10,000 to 20,000 boats actively seek bluefin off the northeastern U. S. Most of these are greater than 7 m in length, and are privately owned by individual fishermen. Charter and party boats are also involved in the fishery. Small bluefin are most typically caught by trolling with artificial lures, using rod and reel. Giants are harpooned, or are caught by trolling, or by chumming and drifting with several types of hook and line gear. Mackerel, whiting, mullet, ballyhoo, and squid are the usual choices for bait.

Bluefin tuna is the intended target on many fishing trips. Other tunas and tuna-like fishes are taken in quantity on trips directed at bluefin. Substantial bluefin catches are also reported from trips directed primarily at sharks.

Details of operations, frequency and duration of trips, distance ventured offshore, tolerance of bad weather, etc., probably vary as widely as the equipment, skill and enthusiasm of the individual fishermen vary. Effort increases sharply with reports of fishing success. Intense efforts with rod and reel may also be mounted during tuna "tournaments".

Rod and reel catches of small bluefin tuna are depicted in Figure 1. Rod and reel catches of giants are included with harpoon, handline, and kepline captures as "Handgear" in the U. S. statistics, and are presented as such in Figure 1.

Since 1975, catch and effort data for the U. S. rod and reel fishery have been collected through a sport fish survey. This program concentrates on the rod and reel fishery for offshore pelagic fish between Cape Hatteras and Cape Cod. Estimates are made of the geographical breakdown of catch by size, number of vessels, hours fished, and number of lines. This program collects information about fishing for both small and giant bluefin, but because of its geographical scope, coverage is more complete for the small fish rod and reel fishery.

Under current regulations, any boat or vessel wishing to fish for giant bluefin must obtain a certificate (free, and unlimited in number) from the National Marine Fisheries Services (NMFS). Any giants caught must be immediately reported to the NMFS and marked with identifying tags, so catches of giants are monitored quite closely. Monthly logbook reports of fishing activity directed at bluefin are also required of vessels holding bluefin fishing certificates.

Small fish caught by rod and reel fishermen are usually retained for home consumption. Because a single giant tuna may be worth perhaps \$2,000, nearly all giants are sold at the dock. These giant tuna are generally exported to Japan.

3. SOURCES AND ACKNOWLEDGEMENTS

Much of the material included in this brief description of the U. S. bluefin fishery was summarized from information published in the documents listed below. Additional information was provided by Grant L. Beardsley (NMFS, Miami, Florida) and Bruce Freeman (NMFS, Gloucester, Massachusetts). Their valuable help is gratefully acknowledged.

BERRY, F. H., P. H. CAHN, M. C. HOLLIDAY, and T. O. BOSWELL

1978 Analysis of the 1977 United States sport fishery catch of Atlantic bluefin tuna. ICCAT Collective Volume of Scientific Papers, Vol. 7, pp287-300.

MATHER, F. J., J. M. MASON and A. C. JONES

1974 Distribution, fisheries and life history data relevant to identification of Atlantic bluefin tuna stocks. ICCAT Collective Volume of Scientific Papers, Vol. 2, pp. 234-258.

SAKAGAWA, G. T.

1975 The purse seine fishery for bluefin tuna in the northwestern Atlantic Ocean. Marine Fisheries Review 37: 1-8.

TYLER, J. C., R. E. BAGLIN, F. H. BERRY, M. I. FARBER and L. R. RIVAS

1979 A review of the Southeast Fisheries Center biological and statistical research on the structure and status of Atlantic bluefin tuna stock. ICCAT Collective Volume of Scientific Papers, Vol. 8, pp 381-390.

Table 1. Summary of traditional patterns of fishing activities directed at Atlantic bluefin tuna in the U.S. Current regulations have altered the duration of the fishing season, and severely restricted exploitation of medium fish. Definitions for small ("school"), medium and giant designations as currently used in the U.S. can be found in Table 2, note 2.

<u>GEAR</u>	<u>AREA</u>	<u>SIZE OF FISH</u>	<u>TRADITIONAL SEASON</u>
Handline, harpoon and rod & reel	Cape Cod Bay & Gulf of Maine	giant medium small	June - September August - October summer (time unpredictable)
	Cape Hatteras to Cape Cod	small medium giants	June - October June - October August - October
	Gulf of Mexico	giants	May - June
Purse seine	Cape Hatteras - Cape Cod	small medium	June - October August - October
	Cape Cod Bay	giants medium	June - September August - October

Table 2. Summary of Atlantic bluefin tuna quota regulations for the United States.

YEAR	SIZE	GEAR	QUOTA OR LIMIT	SEASON
1975	SCHOOL	PS	1100 tons	already filled at enactment (8/13)
		non-PS	4 fish/person/day	
	MEDIUM		NONE ALLOWED	
	GIANT	PS	200 tons	(official openings upon enactment 8/13)
		non-PS	2050 fish N of Chatham, Mass. 200 fish S of Chatham, Mass.	1/1-quota (filled 9/22) 1/1-quota (filled 9/15) 1/1-quota (quota not reached)
	1976	SCHOOL	PS	800 tons 200 tons-incidentals to research
non-PS			4 fish/person/day	
MEDIUM			NONE ALLOWED	
GIANT		PS	180 tons	1/1 to quota (filled 9/21)
		non-PS	1850 fish N&E of Gay Head, Mass. 150 fish W of Gay Head, Mass. with 1 fish/vessel/day 7 fish/vessel/week	(filled 9/15) (quota not reached) 1/1 to 8/13 8/14 to quota
1977		SCHOOL	PS	800 tons 200 tons-incidentals to research
	non-PS		4 fish/person/day	
	MEDIUM	PS	25 tons, research only	
	GIANT	PS	180 tons	9/1 to quota (filled 9/19)
		non-PS	1750 fish N&E of Gay Head, Mass. 150 fish W of Gay Head, Mass. with 1 fish/vessel/day 7 fish/vessel/week 100 fish, research only	(filled 9/15) (closed 9/31) 1/1 to 8/13 8/14 to quota
	1978	SCHOOL	PS	800 tons 200 tons-incidentals to research
non-PS			4 fish/person/day	
MEDIUM		PS	25 tons, research only	
GIANT		PS	180 tons	9/10 to quota (quota not reached)
		non-PS	2000 fish N&E of Gay Head, Mass. 150 fish W of Gay Head, Mass. with 7 fish/vessel/week 1 fish/vessel/day 7 fish/vessel/week 100 fish, research only	(filled 9/10) (quota not reached) 1/1 to 6/24 5/25 to 9/9 9/10 to quota

NOTES:

1) all tonnages are short tons (=0.91 metric tons)

2) Fish sizes are defined by regulation as:

	pounds	kilograms	inches	centimeters
SCHOOL	14-115	6.4 - 53.3	27-56	68-142
MEDIUM	115-300	53.3 -136.4	56-75	142-191
GIANT	≥ 300	≥ 136.4	≥ 75	≥ 191

(if weight not available)

3) Current incidental allowances:

PS directed for smalls: 3% by weight of tuna on board outside small class
 PS directed for giants: 3% by weight of tuna on board <300 lbs
 recreational vessels: within the 4/person/day limit, 1 tuna <14 lbs and
 1 tuna >115 lb

PS and fixed gear vessels directed for other species
 2% by weight of all fish on board (must have
 bluefin certificate)

trap operators: 2% by weight of all fish in preceding 30 days

4) all incidental catches are applied against the appropriate quotas

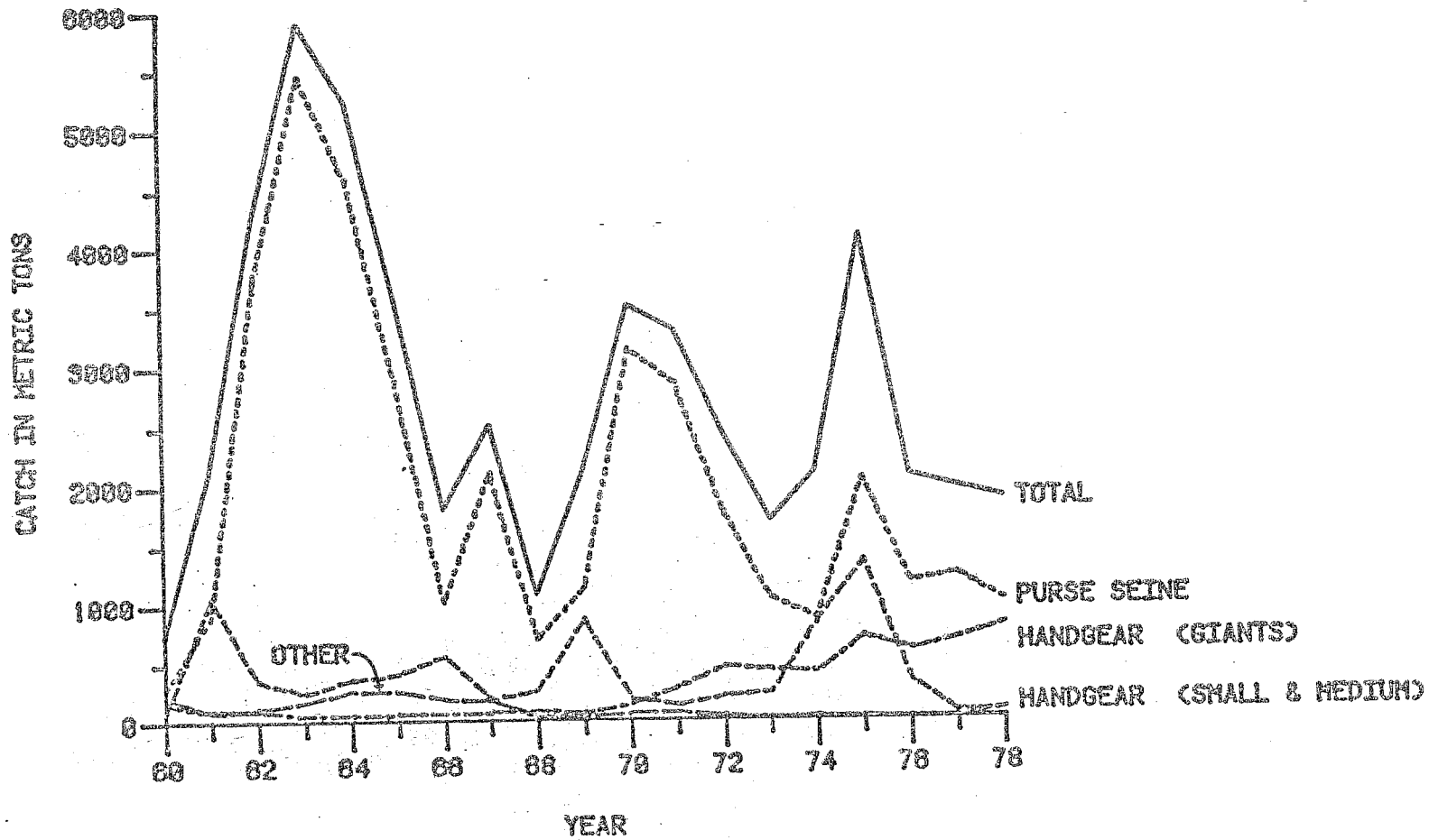


Fig. 1. U.S. Atlantic bluefin tuna catch.