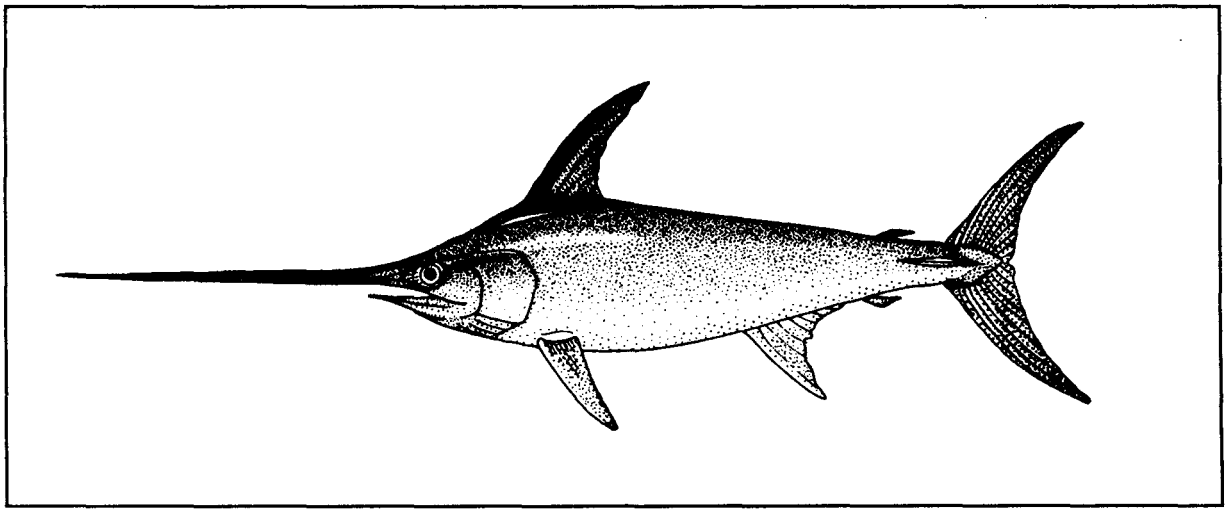
NOAA Technical Memorandum
NMFS-SEFSC-309

SWORDFISH LOGBOOK NEWSLETTER - 1991



Mark I. Farber and Jean L. Cramer

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, FL 33149

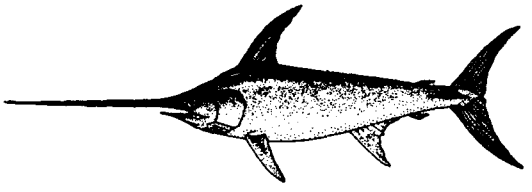
June 1992

NOAA Technical Memorandum
NMFS-SEFSC-309

SWORDFISH LOGBOOK NEWSLETTER - 1991[1]

by

Mark I. Farber and Jean L. Cramer



U.S. DEPARTMENT OF COMMERCE
Barbara Hackman Franklin, Secretary

National Oceanic and Atmospheric Administration
John A. Knauss, Under Secretary For Oceans and Atmosphere

National Marine Fisheries Service
William W. Fox, Jr., Assistant Administrator for Fisheries

June 1992

[1]Contribution MIA-91/92-38 from the Southeast Fisheries Science Center, Miami Laboratory, Oceanic Pelagics Division

NOTICE

This report should be cited as follows:

Farber, M. I. and J. L. Cramer. 1992. Swordfish Logbook Newsletter - 1991. NOAA Technical Memorandum NMFS-SEFC-309, 12p.

Copies may be obtained by writing:

Dr. Mark I. Farber or Dr. Jean L. Cramer
National Marine Fisheries Service
Southeast Fisheries Science Center
Miami Laboratory
75 Virginia Beach Drive
Miami, FL 33149

This is the second annual Swordfish Logbook Newsletter. The primary purpose of this report is to summarize data and activities related to the mandatory large pelagics logbook program. This newsletter serves as a vehicle for dissemination of information to those directly involved in the fishery. In addition to updating catch, effort, CPUE, and location information, and detailing revisions to the 1992 daily logbook forms, this year's newsletter includes sections pertaining to swordfish regulations, mandatory dealer reporting, preliminary monthly landings for 1991, age and growth studies, additional analyses based on logbook data (Farber, 1992; Farber and Turner, 1992), and comments received from Captains.

Regulations now in effect for swordfish have greatly increased the need to keep the swordfish logbook database up to date. In the past, audits were run at the end of the year. Now, because current year data are needed to monitor the fishery throughout the year, initial audits are run, and the database is updated, as the data are received.

A final audit is executed at the end of the year to screen the entire year's data for problems such as inconsistencies in fishing methods or locations within trips. This final audit has increased the accuracy of the database; however, it must be completed before the assessment process can begin. Data received after the final audit is completed can not be used for assessment purposes for that year. For this reason, timely mailing of logbook forms is an important part of maintaining a quality, up to date database.

Comments and suggestions are invited; see section "WHO TO CONTACT FOR WHAT."

REPORTED FISHING LOCATIONS IN 1987, 1988, 1989, AND 1990

The location of reported fishing effort by year for 1987-1990 is shown in Figures 1-4, with the definition of areas presented in Figure 5. The general pattern for reported sets is similar across the four years. There was some exploratory expansion of the fishery towards the central North Atlantic (Area 9-OTHER) in 1989, not found in other years. In 1990, effort was less concentrated around the Virgin Islands and Puerto Rico, and more concentrated in the area of 10°N, 50°W (Area 1-CAR), as well as on the Continental Shelf off the west and northwest coast of Florida (Gulf of Mexico, Area 2-GOM), and in the area of 55°N, 40°W (Area 7-NED).

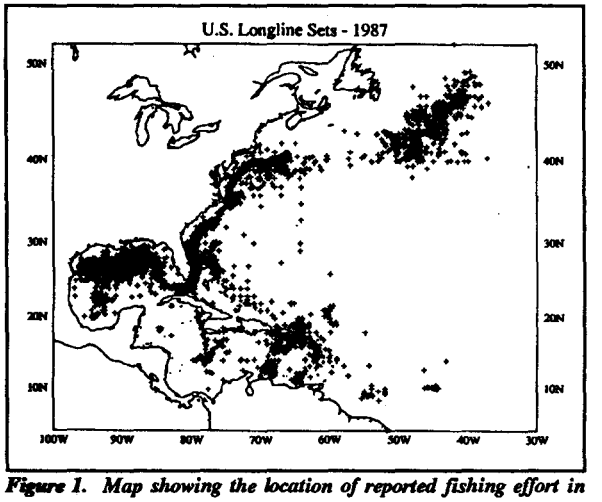


Figure 1. *Map showing the location of reported fishing effort in 1987.*

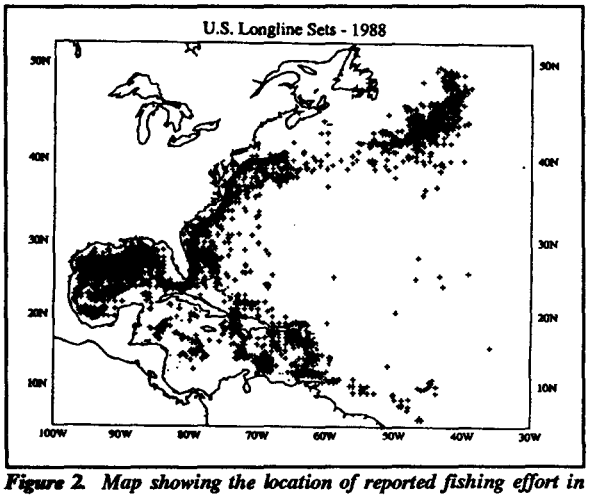


Figure 2. *Map showing the location of reported fishing effort in 1988.*

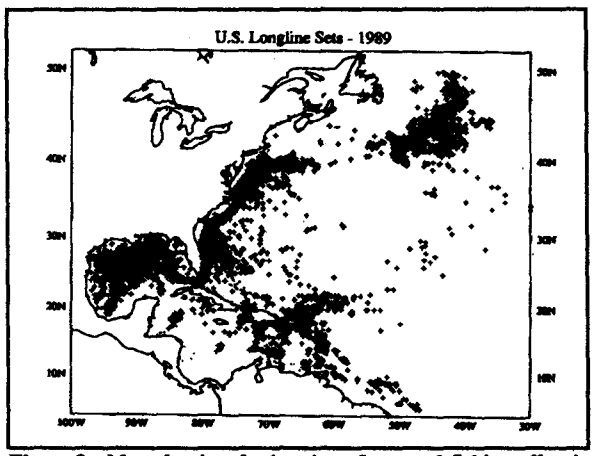


Figure 3. Map showing the location of reported fishing effort in 1989.

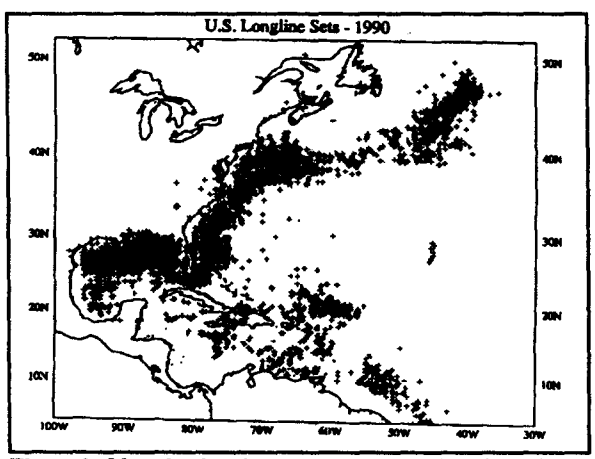


Figure 4. Map showing the location of reported fishing effort in 1990.

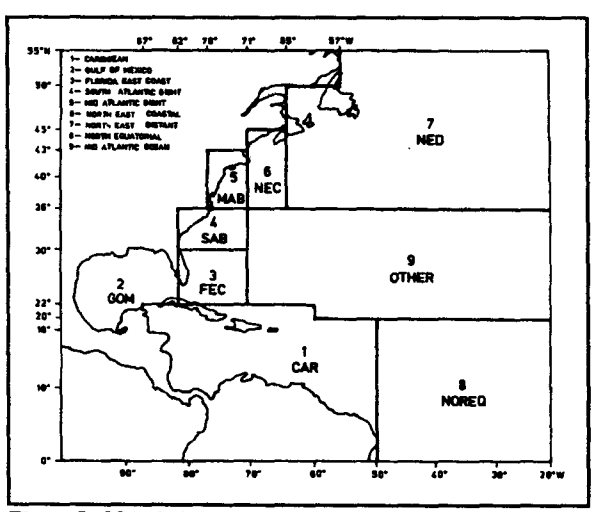


Figure 5. Map designating the nine areas used in analysis of the swordfish logbook data.

COMPARISON OF 1987 - 1990 LOGBOOK CATCH AND EFFORT DATA

Several summary tables are included in this newsletter. Tables 1-4 represent the numbers of swordfish, tunas, and billfish reported caught, by area, with associated reported effort in hooks for 1987, 1988, 1989 and 1990, respectively. These statistics are from logbook reports that were considered to represent single pelagic longline sets; summary records, bottom longline records, and sets with less than 100 hooks were excluded. This accounts for the differences between numbers in Tables 1a-1b from the 1990 Newsletter compared to Tables 1-2 in this Newsletter. (Table 1c was preliminary in 1990.) Some changes in the tabulated data were due to additional revisions in the database.

In 1987 there were approximately 113,000 swordfish tabulated from single set records (caught = kept + discarded). There were approximately 161,000 swordfish in 1988; 179,000 in 1989; and 137,000 swordfish in 1990. The corresponding reported fishing effort for the four years was roughly 6.5, 6.8, 7.3, and 6.8 million hooks, respectively (Tables 1-4). Swordfish catch increased 58% from 1987 to 1989 with an accompanying increase in hooks fished of 12%. From 1989 to 1990, there was a decrease in the swordfish catch of 23%, with a decrease of hooks fished of 6%. This increase in reported annual swordfish catch over the period 1987-1989, followed by a decrease in 1990, is found in the Gulf of Mexico (Area 2-GOM), Florida East Coast (Area 3-FEC), and the North East Distant (Area 7-NED). In the South Atlantic Bight (Area 4-SAB), the reported catch in numbers of swordfish increased each year from 1987 through 1990. The percentage of the total catch of swordfish over all areas increased each year, from 6% in 1987 to 12% in 1990.

Reported effort decreased in each successive year in the GOM; a total decrease of 38% from 1987 to 1990. Reported effort increased in each successive year over the four year period in the SAB (354%) and in the MAB (173%). Reported effort also increased in the North East Coastal (Area 6-NEC; 210%), and in the North Equatorial (NOREQ-Area 8; 592%). Note that the apparent

large increases in reported effort may in part be due to underreporting in earlier years.

The reported yellowfin tuna catch for the four-year period was approximately 61,000, 54,000, 56,000, and 51,000 fish, respectively. This represents a net overall decrease in numbers of reported yellowfin catch of 16% from 1987 to 1990. In the GOM, the reported catch of yellowfin in numbers decreased annually from 1987 through 1990; the percentage of the total reported catch of yellowfin from the GOM compared to all areas also decreased annually, from 72% of the total in 1987 to 43% of the total in 1990. In the Mid Atlantic Bight (Area 5-MAB), the reported yellowfin catch in numbers increased annually from 1987 through 1990; with the percentage of the total catch of yellowfin represented by MAB catches increasing annually, from 10% in 1987 to 28% in 1990.

CPUE DATA

Table 5(a-d) represents 1987, 1988, 1989, and 1990 data, respectively, for swordfish and yellowfin tuna. These data are yearly totals, by areas as (defined in Figure 5) for: number of fish KEPT; number DISCarded; Kept+Discarded; effort in HOOKS; the Number of sets; and the average of the individual catch rates, AV(C/E) (equivalent to average CPUE). (The confusion with the terminology "discarded" and "released" has been addressed with a change on the 1992 logbook form to "thrown back: alive or dead.")

The highest average reported CPUEs for swordfish, on an annual basis, were consistently from the SAB (Area 4) fishery and the NED (Area 7). The catch rates in 1987 for the SAB and the NED were, respectively, approximately 5.8 fish/100 hooks and 4.0 fish/100 hooks (Table 5a); in 1988 approximately 4.1 fish/100 hooks and 4.7 fish/100 hooks (Table 5b); in 1989 approximately 3.9 fish/100 hooks and 4.2 fish/100 hooks (Table 5c); and in 1990 approximately 3.9 fish/100 hooks and 3.8 fish/100 hooks (Table 5d).

The highest average reported CPUEs for yellowfin, on an annual basis, were consistently from the GOM (Area 2) fishery, the MAB (Area 5), and the NEC (Area 6). The reported catch rates in these areas in 1987 were approximately 1.4 fish/100 hooks in the GOM, and 1.1 fish/100 hooks in both the MAB and NEC (Table 5a); in 1988 approximately 1.3 fish/100 hooks in both the GOM and MAB, and 0.8 fish/100 hooks in the NEC (Table 5b); in 1989 approximately 1.3 fish/100 hooks in the GOM and 1.1 fish/100 hooks in both the MAB and NEC (Table 5c); and in 1990 approximately 1.0 fish/100 hooks in both the GOM and NEC and 1.4 fish/100 hooks in the MAB (Table 5d).

NUMBERS OF PERMITTED VESSELS

A compilation of activity related to the vessels permitted during the period 1987 through 1990 is presented below. "Active" refers to vessels that received permits, "Fished" implies a vessel submitted at least one positive fishing report during that year, and "Caught Swordfish" means the vessel reported catching at least one swordfish during that year. These tabulations represent the total database. Therefore, there were no exclusions of logbook records, and the "Hooks Reported" includes all submitted logbooks whether or not they represented single pelagic longline sets, summary records, bottom longline records, or sets with less than 100 hooks. For this reason, these numbers are somewhat higher than the numbers in Tables 1-4.

NUMBERS OF PERMITTED VESSELS

YEAR	ACTIVE	FISHED	CAUGHT SWORDFISH	HOOKS REPORTED
1987	616	320	290	7,301,739
1988	684	390	339	7,032,262
1989	721	457	416	8,013,795
1990	610	420	363	7,524,463
1991	549	345	309	7,978,700

SWORDFISH REGULATIONS

At the 1990 meeting of the ICCAT Standing Committee on Research and Statistics (SCRS), regulatory measures were recommended for the conservation of Atlantic swordfish stocks. The Report of the meeting stated: "Taking into account that the SCRS has determined that the present yield of the swordfish stock cannot be maintained over the long term without decreasing fishing mortality or the unlikely continued increase in recruitment over the next few years, and without decreasing fishing mortality over the next years, there is a significant probability of detrimental effects on future yield." The Commission made several recommendations, the first being "that the Contracting Parties whose nationals have been actively fishing for swordfish in the North Atlantic take measures to reduce the fishing mortality of fish weighing more than 25 kg in the area north of five degrees North latitude by 15 percent from recent levels." Note, "recent" has been determined to mean 1988. The second recommendation was that "in order to protect small swordfish, the Contracting Parties take the necessary measures to prohibit the taking and landing of swordfish in the entire Atlantic Ocean weighing less than 25 kg alive weight (125 cm lower jaw fork length) ..."

The Secretary of the U.S. Department of Commerce issued an emergency ruling effective June 12, 1991 for the purpose of regulating the U.S. Atlantic swordfish fishery for the entire western North Atlantic Ocean, including the Gulf of Mexico and the Caribbean (north of 5°N. latitude). This emergency ruling establishes the following regulations for swordfish:

(1) a minimum size limit of 31 inches (78.7 cm) dressed carcass length or 41 pounds dressed weight with a 15 percent allowance for undersized swordfish based on the number of swordfish landed per trip;

(2) an annual quota for the directed swordfish fishery of 6.0 million pounds, dressed weight, divided equally between the periods January 1 through June 30, 1991, and July 1 through December 31, 1991;

(3) subdivision of the 3.0 million pounds quotas into a drift gillnet quota of 40,785 pounds, dressed weight, for each semi-annual period;

(4) to limit the possession of swordfish after a gear-type closure to a bycatch limit of <u>two</u> swordfish per trip except for vessels using or possessing harpoon gear for which no bycatch is allowed;

(5) an annual bycatch allocation for swordfish at 0.9 million pounds, dressed weight;

(6) to prohibit the sale of swordfish caught in the recreational fishery and to restrict the gear in this fishery to rod and reel; and

(7) to provide for NMFS-approved observers on cooperating permitted vessels.

MANDATORY DEALER REPORTING IN THE ATLANTIC SWORDFISH FISHERY

Mandatory dealer reporting of swordfish and other bycatch species became effective on September 30, 1990. Each dealer must provide information on all swordfish received and on other fish landed in conjunction with swordfish trips. The required information to be reported would include dates of receipt; names and official Coast Guard numbers of the vessels from which swordfish were received; dates and ports of landing of the vessels; total carcass weights (by market category for swordfish and by species for related bycatch species received); prices paid for each market category and species; and individual carcass weights for swordfish and related bycatch species.

Dealers have the option of providing the information on a form available from the National Marine Fisheries Service or through copies of appropriate weigh-out sheets and/or sales receipts. Dealer reports for each month must be submitted no later than the fourteenth day of the following month. Reports should be mailed to:

Science and Research Director
Southeast Fisheries Science Center
National Marine Fisheries Service
75 Virginia Beach Drive
Miami, Florida 33149

Attention: A. Bertolino

<u>except</u> for a dealer whose principal place of business is in an Atlantic coastal state from Maine

through Virginia. The appropriate address for those dealers is:

Science and Research Director
Northeast Fisheries Center
National Marine Fisheries Service
Woods Hole, MA 02543

Overall, dealer reports have been arriving on time and we commend the dealers' efforts in getting the information to us in the allotted time frame. There has been, however, some difficulty getting all the information on various swordfish trips which are split among various dealers. It would be most helpful and greatly appreciated if vessel owners and/or captains would encourage the various dealers that purchase your fish to please submit copies of the weigh-outs of these fish. It would save considerable time and effort to have this information on a real-time basis. In addition to dealer reporting, permitted fishermen in 1992 are required to submit their weigh-out sheets with their daily logbook forms within five days of the end of a trip. This modification to the regulations governing the fishery was made after numerous requests by fishermen and fishery industry representatives to require this form of reporting.

1991 SWORDFISH LANDINGS

The Southeast Fisheries Science Center (SEFSC), Miami Laboratory, is responsible for compiling the landings of swordfish from mandatory dealer reporting. As of February 1992, the total reported swordfish landings for 1991 by all gear types was 6,275,463 million pounds, dressed weight. A total of 2.7 million pounds was reported landed from January 1 - June 30, 1991, and 3.6 million pounds for the period July 1 - December 31, 1991. In previous years, the total landings of swordfish have been revised upward after review of late reports. It is likely that the 6.3 million pounds reported thus far for 1991 will be revised as late reports are received.

Monthly cumulative annual landings of swordfish are compared in Figure 6 for years 1987-1991, with the semi-annual quotas of 3,000,000 pounds (dressed), effective in 1991, annotated to facilitate comparisons. Yearly U.S. swordfish landings declined from 1989 to 1990. Monthly swordfish landings reported (through February 12, 1992) for 1991 are below 1990 levels. However, as noted above, the 1991 reported landings are likely lower than the actual catches and will probably be revised upward on the basis of late reports.

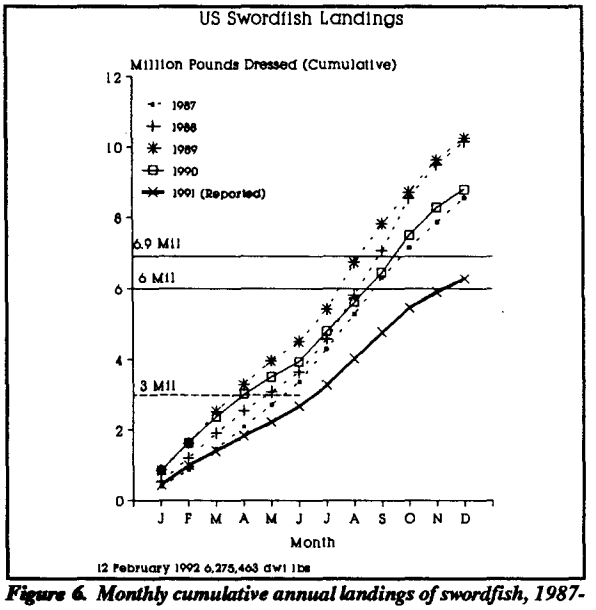


Figure 6. Monthly cumulative annual landings of swordfish, 1987-1991.

SWORDFISH AGE AND GROWTH STUDIES AND RESEARCH

Sex ratio at size data on Atlantic swordfish have been collected since 1989 by NMFS, Miami Laboratory through a voluntary industry cooperative program. Initially, swordfish sampling began in January 1990 with several captains and owners of U.S. longline vessels willing to cooperate with NMFS scientists in swordfish research efforts. In addition, data collection was continued in 1990 through contracted observers placed onboard U.S. gillnet vessels. During 1991, effort was initiated to collect swordfish data from vessels fishing in the Caribbean Sea. Collection of length measurements consisted of lower jaw to fork of tail (LJFL) and cleithrum to anterior rise of caudal keel (CK) <see Figure 7>, in addition to dressed weight (head, gills, internal organs, and external fins removed) which was collected during off-loading of the catch. The sampling of gonadal tissue was required to confirm sex identification, as well as for reproductive analyses.

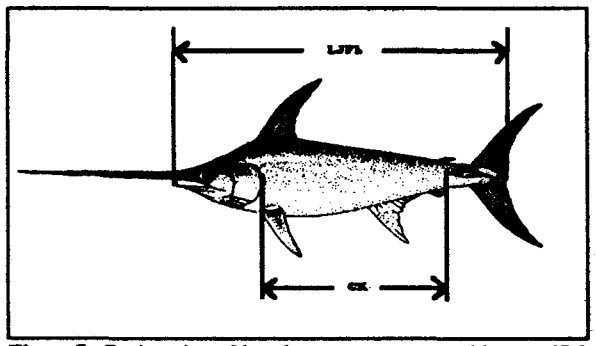


Figure 7. Designation of length measurements used in swordfish research: LJFL - lower jaw to fork of tail; CK - cleithrum to anterior rise of caudal keel.

In association with reproductive sampling, collection of skeletal hardparts (anal fins and heads containing the otoliths) was also initiated to aid in other forms of biological analyses, such as age and growth and stock identification. Since sampling began, otoliths have been extracted from 272 swordfish ranging in size from 15 - 200 pounds, as well as 10 otoliths from swordfish in the 2 - 9 pound range. In addition to these, otoliths have been collected from approximately 16 small juvenile swordfish (less than 12 inches) which were provided primarily by fisherman examining stomach contents of dolphins and tunas. A total of 1,405 samples of swordfish anal spines have been collected from the U.S. gillnet and longline fisheries during 1990-1991 (Lee, 1992). Through this cooperation with the U.S. longline fleet, mainly through the efforts of the Blue Water Fishermen's Association, the Miami Laboratory has a unique opportunity to examine the time of year of growth-zone formation by analyzing thin cross sections of the spines collected over a 12 month period during a single year. This research will be on-going during 1992 and may provide an important piece of information on swordfish growth that has not yet been confirmed.

NEW ANALYSES BASED ON SWORDFISH LOGBOOK DATA

The logbooks from permitted vessels fishing in the Gulf of Mexico and off the Florida East Coast were examined to evaluate annual catch-per-unit-effort (CPUE) of bluefin tuna bycatch by U.S. pelagic longline vessels. The majority of bluefin tuna caught in these areas by longline are considered to be large (i.e., greater than 77 inches straight fork length). The analysis was to determine the utility of these data in estimating annual CPUE indices. These indices were compared to others generated from other segments of the bluefin tuna fishery and were evaluated for use in stock assessment analysis. Conclusions indicated that there were no significant differences in the bycatch CPUE for large bluefin over the period 1987-1990, though there may have been a slight decrease from 1987 to 1988. The index may prove to be more useful in the future as more data are collected.

A summary of the reported bycatch of billfishes was generated based on swordfish logbook data from 1987 through 1990. The report summarized the bycatch of blue marlin, white marlin, and sailfish from U.S. longline vessels fishing in the Caribbean Sea, Gulf of Mexico, off the Florida East Coast, South Atlantic Bight, Mid Atlantic Bight, and North East Coastal areas. The graphical information presented included the monthly reported number of fish caught (kept plus discarded), by species, and the nominal mean CPUE calculated based on individual set records and expressed as fish per 100 hooks.

REVISIONS TO THE LOGBOOK FORMS FOR 1992

In the interest of improving our logbook data collection, several changes have been made to the daily logbook forms and accompanying instructions for 1992, both included in this newsletter as Figures 8 and 9. These changes include:

(1) the layout has been revised in an attempt to make the form, now designated as the "Pelagic Logbook - Daily Form", more logical and easier to complete;
(2) a designation if a line thrower was used;
(3) "RELEASED" category changed to "Thrown Back: Alive or Dead";
(4) additional species of sharks have been added; and
(5) a designation of sea turtles, by species, involved, injured or killed.

Item 3 should help alleviate confusion with respect to whether released fish referred only to those thrown back alive. Items 4 and 5 will allow

for coding of information that was sometimes reported in the comments/notes section, and for further analysis regarding these species. Again, as noted on the new logbook forms last year, use of the current year forms will be necessary for compliance. Further, all old forms should be destroyed upon receipt of the 1992 forms.

COMMENTS RECEIVED FROM CAPTAINS

Many comments were recorded on the 1991 logbook sheets. NMFS appreciates the time people invest in making these comments and solicits them in the future. Where fitting, comments have been brought to the attention of the appropriate individual(s). A significant percentage of the comments concerned the U.S. regulations imposed in 1991. The regulation of U.S. fishermen by the Secretary of Commerce was in response to the regulatory measures recommended by ICCAT during the 1990 meeting, which included the protection of small swordfish (see *Swordfish Regulations* section above). We have paraphrased comments received on logbook forms in several general categories. We recognize that the comments received may not be representative of the views of the entire fleet. However, we also feel that those of you who took the time to offer your views are concerned enough to want to have your opinions shared with others.

Comments - By and large, most comments provided on the logbooks dealt with the minimum size. Most comments offered on the logbooks suggested that the minimum size resulted in a high discard mortality for fish smaller than the minimum size and, for this reason, was wasteful and counterproductive for controlling fishing mortality on swordfish. A number of contributors suggested alternative methods for controlling fishing rates on swordfish including implementing a smaller minimum size and/or substituting a seasonal closure in certain areas for the minimum size. Other contributors reported on the application of gear other than longline, including catches by large mesh otter trawls and pair trawls. At times contributors also provided comment on the apparent abundance or lack of other species of concern including sharks and marine turtles. Needless to say, all of your comments are appreciated and do provide insight to those of us at the SEFSC who analyze the data we receive for indication of large pelagic resource status.

Epilogue

"Water broke up; Weather coming; Too cold; Miss wife; Miss kids; Tired; Had enough; Ready; Out of fuel; Out of water; Out of food; Out of everything. SEE YA!!!!"

WHO TO CONTACT FOR WHAT

Any questions concerning the overall swordfish project at the Southeast Fisheries Science Center, NMFS, can be directed to Dr. Gerald Scott at (305) 361-4596. Questions concerning processing and analyzing the logbook data can be directed to Dr. Jean Cramer at (305) 361-4225. Information concerning permits can be directed to Ed Burgess at (813) 893-3722. Copies of the bycatch reports can be obtained by contacting Dr. Mark I. Farber at (305) 361-4231. Those needing 1992 logbooks can contact Herb Prytherch at (305) 361-4469. If you have comments on this newsletter, or other comments, you can write them on your logbook reports or send them to Dr. Jean Cramer, SEFSC, NMFS, 75 Virginia Beach Drive, Miami, FL 33149.

REFERENCES

Farber, M.I. 1992. Report of the bycatch of billfishes based on swordfish logbook data from 1987 through 1990. Int. Comm. Conser. Atl. Tunas. Col. Vol. Sci. Pap. SCRS/91/99.

Farber, M.I. and S.C. Turner. 1992. An exploratory data analysis of bluefin tuna longline bycatch reported on mandatory swordfish logbooks during 1987-1990 in the Gulf of Mexico and off the Florida East Coast. Int. Comm. Conser. Atl. Tunas. Col. Vol. Sci. Pap. SCRS/91/104.

Lee, D.W. 1992. Update of the 1990 and 1991 data available on swordfish sex ratio at size collected from the U.S. fishery. Int. Comm. Conser. Atl. Tunas. Col. Vol. Sci. Pap. SCRS/91/44.

Figure 8.

NOAA FORM 88-191 (8-91)

O.M.B. Number 0648-0016
Expiration Date 9/30/94

PLACE CARDBOARD FLAP UNDER FORM BEFORE WRITING

DO NOT WRITE IN THIS BOX

CURRENT PERMIT YEAR: 1992

NOTE: Use of Current Permit Year Forms Necessary for Compliance.
DESTROY OLD FORMS.

PELAGIC LOGBOOK - DAILY FORM

Vessel Name _____ Captain's Signature _____

Official Number _____ Swordfish Permit Number _____

To report that this vessel did not fish during a month: fill in the month and year in this box and quit. ⌊_⌋⌊_⌋ month ⌊_⌋⌊_⌋ year

Set Date: Year _____ Month _____ Day _____

Haulback Date: Month _____ Day _____

Position at beginning of set:

LAT: _____° _____'N° LON: _____° _____'W°

Surface Water Temperature _____°F

*NOTE: If vessel fishing south of the equator, please cross out N and enter S. If vessel is fishing in eastern hemisphere, cross out W and enter E.

Begin Set _____ AM __ PM __ Begin Haulback _____ AM __ PM __

End Set _____ AM __ PM __ End Haulback _____ AM __ PM __

Target? Swordfish __ Yellowfin __ Bigeye __ Mixed Tunas __ Sharks __

Other _____

Gear Used: Longline __ Harpoon __ Gillnet __ Rod & Reel __

Other _____

First set of trip? Yes __ No __

►Only Fill in on Last Set◄

Off-loading date: Year _____ Month _____ Day _____

Port _____

Dealer(s) Swordfish Permit No(s): _____ _____

Longline: Number hooks _____ Number hooks between floats _____ Number light sticks _____ Bait: Live __ Dead __

Lengths: Mainline _____ (miles) Gangions _____ (ft) Floatline _____ (ft) Were you bottom longlining? Yes __ No __

Did you use a line thrower? Yes __ No __ Were you tending or rebaiting hooks before haulback? Yes __ No __ If yes, how many times? _____

Gillnet: Mesh size _____ (in) Length of net _____ (ft) Depth of net _____ (ft) Depth fished below surface _____ (ft) No. nets _____

Net material: _____

Comments/Notes:

SWORDFISH AND TUNAS (Numbers Caught)	Kept	Thrown Back	
		Alive	Dead
Swordfish			
Bigeye Tuna			
Bluefin Tuna			
Yellowfin Tuna			
Albacore Tuna			
Blackfin Tuna			
Skipjack Tuna			
Other Tunas			

BILLFISH (Numbers Caught)	Kept	Thrown Back	
		Alive	Dead
White Marlin			
Blue Marlin			
Sailfish			
Spearfish			

OTHER SPECIES (Numbers Caught)	Kept	Thrown Back	
		Alive	Dead
Dolphin (Mahi)			
Wahoo			
King Mackerel			
Greater Amberjack			
Banded Rudderfish			

SHARKS (Numbers Caught)	Kept	Thrown Back	
		Alive	Dead
Bigeye			
Blacktip			
Blue			
Dusky			
Hammerhead: Great			
Hammerhead: Scalloped			
Hammerhead: Smooth			

SHARKS (Numbers Caught)	Kept	Thrown Back	
		Alive	Dead
Mako, Longfin			
Mako, Shortfin			
Night			
Oceanic Whitetip			
Porbeagle			
Silky			
Spinner			
Thresher: Bigeye			
Thresher: Common			
Tiger			
White			
Other Sharks: Please Specify			

SEA TURTLES (Numbers Involved)	Total Number Involved	Number Injured	Number Killed
Leatherback			
Loggerhead			
Green			

SEA TURTLES (Numbers Involved)	Total Number Involved	Number Injured	Number Killed
Kemp's Ridley			
Hawksbill			
Unknown Kind			

MAIL THIS COPY TO NATIONAL MARINE FISHERIES SERVICE

REMOVE TO EXPOSE ADHESIVE

Figure 9.

Revised (8-91)

DATA PROVIDED ARE CONFIDENTIAL.

IMPORTANT INSTRUCTIONS

Please print all information clearly.

DESTROY OLD FORMS. USE ONLY CURRENT YEAR FORMS.

Please use a separate log sheet for each set.

Record the **Vessel Name, Official Number, Captain's Signature,** and **1992 Swordfish Permit Number**.

NOTE: If the vessel did not fish during a calendar month (for example: January 1-31), please mail original form with above information and state on the form (in box under **Swordfish Permit Number**) _ _ month _ _ year". Mail to NMFS on the last day of month.

Record **Set Date** (calendar day when set began) and **Haulback Date.**

Enter Times when using longlines or gillnets for:

- **Begin Set** and **Begin Haulback** (designate AM or PM)
- **End Set** and **End Haulback** (designate AM or PM)

At the start of each set, record the location to the nearest degree of LAT (Latitude) and LON (Longitude), and the **Surface Water Temperature,** in degrees Fahrenheit.

Designate primary **Target** species.

Record **Gear Used.**

Specify if this set was **First set of trip.**

For **Last Set of Trip** record: **Off-loading date, Port, and Dealer(s) Swordfish Permit No(s).**

Enter the following data for each set if using **Longline gear:**

- **Number of hooks set**
- **Number of hooks between floats**
- **Number of light sticks**
- **Bait: indicate Live or Dead**
- **Length of Mainline** (in miles)
- **Length of Gangions** (in feet)
- **Length of Floatline** (in feet)
- **Were you bottom longlining** (for sharks, groupers, etc.)?
- **Did you use a line thrower?**
- **Were you tending or rebaiting hooks before haulback? If yes, specify how many times you did rebait hooks before haulback.**

Enter the following data for each set if using **Gillnet:**

- **Mesh Size** (in inches)
- **Length of net** (in feet)
- **Depth of net** (in feet)
- **Depth fished below surface** (in feet)
- **Number of nets**
- **Net material**

Record **NUMBERS OF SWORDFISH, TUNAS, SHARKS AND OTHER SPECIES KEPT AND THROWN BACK. Specify the number of fish that were thrown back Alive and the number thrown back Dead.**

Record **NUMBERS OF SEA TURTLES INVOLVED**

- **Total Number Involved.** Write down the total number of each sea turtle species that were caught in, or interacted with, your fishing gear for the period of your report.
- **Number Injured.** Write down the number of each sea turtle species that were injured while in, or by, your fishing gear.
- **Number Killed.** Write down the number of each sea turtle species that were killed while in, or by, your fishing gear.

Mail original pre-addressed logs to NMFS at the end of the fishing trip by folding and removing tape to expose self-sealing strip.

Table 1. TOTAL NUMBER OF SWORDFISH, TUNA, AND BILLFISH CAUGHT BY AREA, AND EFFORT IN NUMBER OF HOOKS, FROM THE SWORDFISH MANDATORY LOGBOOKS, FOR 1987. NUMBERS CAUGHT REPRESENT KEPT PLUS DISCARDED. SEE FIGURE 5 FOR DESIGNATION OF AREAS. (SWD=SWORDFISH; YFT=YELLOWFIN; BET=BIGEYE; BFT=BLUEFIN; ALB=ALBACORE; WHM=WHITE MARLIN; BUM=BLUE MARLIN; SAI=SAILFISH.)

Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	Effort
1-CAR	24,043	2,858	2,959	28	192	410	996	66	719,933
2-GOM	16,285	43,678	322	639	84	1,324	523	496	3,132,203
3-FEC	26,184	2,654	3,592	185	511	507	1,098	568	920,927
4-SAB	6,554	707	355	33	22	54	58	19	126,727
5-MAB	11,715	6,163	5,013	105	947	237	54	12	599,253
6-NEC	6,512	4,190	2,159	175	353	92	18	1	393,886
7-NED	21,062	250	1,680	103	188	13	18	1	584,141
8-NOREQ	297	77	124	0	4	2	4	0	8,571
9-OTHER	190	82	39	0	2	5	6	0	10,400
TOTALS	112,842	60,659	16,243	1,268	2,303	2,644	2,775	1,163	6,496,041

Table 2. TOTAL NUMBER OF SWORDFISH, TUNA, AND BILLFISH CAUGHT BY AREA, AND EFFORT IN NUMBER OF HOOKS, FROM THE SWORDFISH MANDATORY LOGBOOKS, FOR 1988. NUMBERS CAUGHT REPRESENT KEPT PLUS DISCARDED. SEE FIGURE 5 FOR DESIGNATION OF AREAS. (SWD=SWORDFISH; YFT=YELLOWFIN; BET=BIGEYE; BFT=BLUEFIN; ALB=ALBACORE; WHM=WHITE MARLIN; BUM=BLUE MARLIN; SAI=SAILFISH.)

Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	Effort
1-CAR	27,813	4,739	4,086	24	149	362	802	161	907,108
2-GOM	26,139	33,725	498	376	146	763	392	583	2,420,495
3-FEC	30,288	1,883	2,138	111	461	360	774	696	1,012,101
4-SAB	10,777	1,014	154	16	32	66	205	78	280,934
5-MAB	10,509	7,281	4,601	228	1,699	209	72	4	635,219
6-NEC	7,852	4,125	1,460	571	431	259	40	2	466,482
7-NED	46,749	670	2,199	128	269	45	42	1	1,008,570
8-NOREQ	483	317	281	0	2	2	8	3	31,690
9-OTHER	154	80	40	1	13	4	10	1	11,025
TOTALS	160,764	53,834	15,457	1,455	3,202	2,070	2,345	1,529	6,773,624

Table 3. TOTAL NUMBER OF SWORDFISH, TUNA, AND BILLFISH CAUGHT BY AREA, AND EFFORT IN NUMBER OF HOOKS, FROM THE SWORDFISH MANDATORY LOGBOOKS, FOR 1989. NUMBERS CAUGHT REPRESENT KEPT PLUS DISCARDED. SEE FIGURE 5 FOR DESIGNATION OF AREAS. (SWD=SWORDFISH; YFT=YELLOWFIN; BET=BIGEYE; BFT=BLUEFIN; ALB=ALBACORE; WHM=WHITE MARLIN; BUM=BLUE MARLIN; SAI=SAILFISH.)

Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	Effort
1-CAR	22,401	2,565	2,114	16	304	454	678	80	740,662
2-GOM	31,889	30,673	1,210	507	124	649	804	474	2,018,787
3-FEC	36,799	3,303	4,691	158	316	401	820	556	1,317,344
4-SAB	12,841	1,874	321	25	34	92	186	125	364,939
5-MAB	13,932	10,885	5,840	272	2,551	538	183	12	1,035,239
6-NEC	11,022	5,541	3,602	370	1,033	224	98	3	528,337
7-NED	46,895	1,124	2,244	158	220	113	64	4	1,144,302
8-NOREQ	1,093	417	348	0	5	9	48	84	45,399
9-OTHER	1,681	91	60	12	41	34	13	0	71,636
TOTALS	178,553	56,473	20,430	1,518	4,628	2,514	2,894	1,338	7,266,645

Table 4. TOTAL NUMBER OF SWORDFISH, TUNA, AND BILLFISH CAUGHT BY AREA, AND EFFORT IN NUMBER OF HOOKS, FROM THE SWORDFISH MANDATORY LOGBOOKS, FOR 1990. NUMBERS CAUGHT REPRESENT KEPT PLUS DISCARDED. SEE FIGURE 5 FOR DESIGNATION OF AREAS. (SWD=SWORDFISH; YFT=YELLOWFIN; BET=BIGEYE; BFT=BLUEFIN; ALB=ALBACORE; WHM=WHITE MARLIN; BUM=BLUE MARLIN; SAI=SAILFISH.)

Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	Effort
1-CAR	21,084	2,689	1,661	16	424	264	451	116	777,824
2-GOM	20,324	21,783	466	311	89	606	667	274	1,942,361
3-FEC	26,562	1,348	2,494	79	351	275	570	855	964,808
4-SAB	16,456	2,038	212	49	90	131	381	143	448,169
5-MAB	12,548	13,957	7,406	229	5,545	339	165	13	1,039,052
6-NEC	10,102	7,379	3,217	867	2,316	378	284	10	826,829
7-NED	27,576	883	1,385	99	166	59	52	0	725,123
8-NOREQ	950	438	323	0	49	22	21	53	50,740
9-OTHER	1,461	191	52	0	32	28	22	3	48,127
TOTALS	137,063	50,706	17,216	1,650	9,062	2,102	2,613	1,467	6,823,033

Table 5. YEARLY TABULATIONS FOR SWORDFISH AND YELLOWFIN TUNA FOR (a) 1987, (b) 1988, (c) 1989, AND 1990. THE AREAS ARE DEFINED IN FIGURE 1. INFORMATION INCLUDES NUMBER OF FISH KEPT; NUMBER OF FISH DISCARDED; KEPT PLUS DISCARDED; EFFORT IN HOOKS; NUMBER OF SETS; AND AVERAGE OF THE INDIVIDUAL CATCH RATES, EQUIVALENT TO CPUE [AVG(C/E)], IN # OF FISH/100 HOOKS.

a.

	SWORDFISH TOTALS FOR 1987						YELLOWFIN TOTALS FOR 1987					
AREA	KEPT	DISC	K+D	HOOKS	N	AVG(C/E)	KEPT	DISC	K+D	HOOKS	N	AVG(C/E)
1	24043	0	24043	719933	1990	3.519	2838	20	2858	719933	1990	0.407
2	16285	0	16285	3132203	5678	0.834	42285	1393	43678	3132203	5678	1.401
3	26184	0	26184	920927	3448	3.028	2601	53	2654	920927	3448	0.258
4	6554	0	6554	126727	460	5.765	699	8	707	126727	460	0.530
5	11715	0	11715	599253	1596	2.033	6091	72	6163	599253	1596	1.101
6	6512	0	6512	393886	971	1.789	4082	108	4190	393886	971	1.118
7	21062	0	21062	584141	966	3.964	249	1	250	584141	966	0.054
8	297	0	297	8571	21	3.519	77	0	77	8571	21	0.893
9	190	0	190	10400	23	2.303	82	0	82	10400	23	0.655
TOTAL	112842	0	112842	6496041	15153	2.229	59004	1655	60659	6496041	15153	0.846

b.

	SWORDFISH TOTALS FOR 1988						YELLOWFIN TOTALS FOR 1988					
AREA	KEPT	DISC	K+D	HOOKS	N	AVG(C/E)	KEPT	DISC	K+D	HOOKS	N	AVG(C/E)
1	27804	9	27813	907108	2425	3.179	4707	32	4739	907108	2425	0.508
2	26107	32	26139	2420495	5038	1.577	33187	538	33725	2420495	5038	1.307
3	30265	23	30288	1012101	3684	3.148	1860	23	1883	1012101	3684	0.182
4	10773	4	10777	280934	927	4.144	1001	13	1014	280934	927	0.382
5	10498	11	10509	635219	1534	1.743	7131	150	7281	635219	1534	1.270
6	7848	4	7852	466482	1012	1.658	4095	30	4125	466482	1012	0.843
7	46747	2	46749	1008570	1688	4.709	669	1	670	1008570	1688	0.077
8	483	0	483	31690	63	1.606	317	0	317	31690	63	1.177
9	154	0	154	11025	26	1.564	80	0	80	11025	26	0.704
TOTAL	160679	85	160764	6773624	16397	2.655	53047	787	53834	6773624	16397	0.724

c.

	SWORDFISH TOTALS FOR 1989						YELLOWFIN TOTALS FOR 1989					
AREA	KEPT	DISC	K+D	HOOKS	N	AVG(C/E)	KEPT	DISC	K+D	HOOKS	N	AVG(C/E)
1	21801	600	22401	740662	1936	3.124	2500	65	2565	740662	1936	0.341
2	29885	2004	31889	2018787	4641	2.292	29822	851	30673	2018787	4641	1.292
3	35392	1407	36799	1317344	4522	2.945	3252	51	3303	1317344	4522	0.251
4	12192	649	12841	364939	1145	3.892	1808	66	1874	364939	1145	0.496
5	13077	855	13932	1035239	2369	1.414	10743	142	10885	1035239	2369	1.056
6	10552	470	11022	528337	1154	2.131	5394	147	5541	528337	1154	1.075
7	45441	1454	46895	1144302	1963	4.231	1102	22	1124	1144302	1963	0.104
8	1047	46	1093	45399	91	2.325	407	10	417	45399	91	0.955
9	1635	46	1681	71636	149	2.419	90	1	91	71636	149	0.112
TOTAL	171022	7531	178553	7266645	17970	2.735	55118	1355	56473	7266645	17970	0.690

d.

	SWORDFISH TOTALS FOR 1990						YELLOWFIN TOTALS FOR 1990					
AREA	KEPT	DISC	K+D	HOOKS	N	AVG(C/E)	KEPT	DISC	K+D	HOOKS	N	AVG(C/E)
1	20127	957	21084	777824	1925	2.812	2648	41	2689	777824	1925	0.340
2	18515	1809	20324	1942361	4018	1.669	21235	548	21783	1942361	4018	0.978
3	24929	1633	26562	964808	3498	2.853	1318	30	1348	964808	3498	0.127
4	15592	864	16456	448169	1477	3.931	2002	36	2038	448169	1477	0.374
5	11501	1047	12548	1039052	2330	1.268	12837	1120	13957	1039052	2330	1.407
6	9412	690	10102	826829	1700	1.272	7216	163	7379	826829	1700	0.902
7	26419	1157	27576	725123	1268	3.774	875	8	883	725123	1268	0.141
8	908	42	950	50740	95	1.955	436	2	438	50740	95	0.975
9	1045	416	1461	48127	93	3.029	190	1	191	48127	93	0.080
TOTAL	128448	8615	137063	6823033	16404	2.333	48757	1949	50706	6823033	16404	0.650