

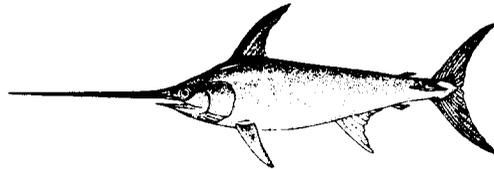


NOAA Technical Memorandum
NMFS-SEFSC-220

LARGE PELAGIC LOGBOOK NEWSLETTER - 1997

by

Jean Cramer and Heather Adams



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January 1999

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Contribution-SDF-98/99-46 from the Southeast Fisheries Science Center, Sustainable Fisheries Division

This report should be cited as follows:

J. Cramer and H.M Adams. 1999. Large Pelagic Logbook Newsletter - 1997. NOAA Technical Memorandum NMFS-SEFSC-420, 26p.

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This is the eighth annual Large Pelagic Logbook Newsletter. The primary purpose of this report is to summarize data and activities related to the mandatory large pelagics logbook and observer programs. 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 logbook reporting in 1999, this year's newsletter includes sections pertaining to swordfish, yellowfin, bigeye and albacore stock status, bycatch, mandatory dealer reporting, the longline observer program, and other related studies.

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

COMPARISON OF 1995 - 1997 LOGBOOK CATCH AND EFFORT DATA

Nine summary tables are included in this newsletter. The numbers of swordfish, tunas, and billfish reported caught, by area, for 1995, 1996 and 1997 (preliminary) are given for longline (Tables 1a-1c) and gillnet (Tables 2a-2b). Longline effort is reported in hooks and numbers of boats and gillnet effort is reported in sets and numbers of boats. The longline boat statistics are from logbook reports that were considered to represent all pelagic longline sets including summary records; bottom longline records were excluded. Exclusion of longline records does not exclude all set targeting species other than swordfish and tuna.

Between 1996 and 1997 reported longline effort (hooks set) decreased by 30% to 50% in the CAR, SAB, and TUN and by 60% to 80% in the NCA and SAR. Effort increased by 29% in the FEC and more than doubled in the TUS. The number of vessels reporting fishing in the TUS went from 10 in 1996 to 21 in 1997. Effort reported in all other areas in 1997 was within 15% of the effort reported in 1996.

Total reported longline effort for 1997 was slightly lower than reported for 1996. The total number of longline boats decreased in 1997 from the levels reported in 1995 and 1996.

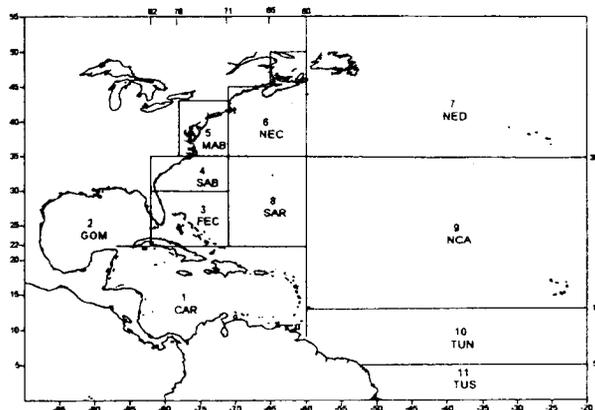


Figure 1. Map designating the eleven areas used in analysis of the swordfish logbook data.

Locations of areas are shown in Figure 1. Definitions are as follows: area 1 - Caribbean¹ (CAR), area 2 - Gulf of Mexico (GOM), area 3 - Florida East Coast¹ (FEC), area 4 - South Atlantic Bight¹ (SAB), area 5 - Mid Atlantic Bight¹ (MAB), area 6 - Northeast Coastal¹ (NEC), area 7 - Northeast Distant¹ (NED), area 8 - Sargasso¹ (SAR), area 9 - North Central Atlantic¹ (NCA), area 10 - Tuna North¹ - (TUN), and area 11 - Tuna South¹ (TUS).

The reported yellowfin tuna catch for the three-year period was approximately 84,000 (1995), 67,000 (1996), and 71,000 (1997) fish, respectively. Numbers of yellowfin tuna reported caught increased by 6% from 1996 to 1997.

In the GOM, the reported catch of yellowfin in numbers increased annually from 1990 through 1992 and decreased annually from 1992 to 1995. GOM catches of yellowfin in 1996 and 1997 were higher than in 1995. In the MAB, the reported yellowfin catch in numbers increased annually from 1992 through 1995. In 1996 yellowfin catches decreased and remained at that level in 1997.

In 1995 there were approximately 103,000 swordfish tabulated from longline records (caught = kept + discarded). There were approximately 96,000 swordfish reported in 1996; and 86,000 reported in 1997 (preliminary). Reported swordfish catch has declined annually from 1995 to 1997. The corresponding reported fishing effort for the

footnote¹

³These are arbitrary areas and do not constitute official geographic areas.

three years was roughly 10.0, 10.3, and 9.0 million hooks, respectively (Tables 1a-1c). The number of reported hooks fished decreased by 13%, in 1997 compared to 1996.

With the exception of the MAB, NEC, and TUS, all other areas (Figure 1), reported decreases in annual swordfish catch by longline boats in 1997 compared to 1996.

The gillnet fishery was closed from December 1996 through August 1998 in order to address a suite of fishery management issues including the reduction of marine mammal interactions. Table 2a and 2b contain the reported gillnet effort and catch for 1995 and 1996.

REPORTED FISHING LOCATIONS IN 1995, 1996, AND 1997

The location of reported commercial pelagic fishing effort by year for 1995-1997 is shown in Figures 2-4. The general pattern for reported sets is similar across the three years along the U.S. coastline. Fishing effort increased and expanded geographically in the southern offshore areas in 1996. This trend has continued with notably increased effort in TUS in 1997.

CPUE DATA

Tables 3a-3c represent 1995, 1996, and 1997 (preliminary) data, respectively, for swordfish and yellowfin tuna. These data are yearly totals, by areas as (defined in Figure 1) for: number of fish Kept; number Discarded dead and Discarded alive; Kept+Discarded; effort in HOOKS; the Number of sets; and the average of the individual catch rates, $AV(C/E)$ (equivalent to average CPUE). This summary includes all gears that reported fishing with hooks that were not thought to be summary records. As such, this would include effort directed at species other than swordfish or tunas.

The totals reported in Tables 1a through 1c are different from the totals in Tables 3a through 3c because different criteria were used in selecting the records to be used. Tables 1a through 1c

represent data from longline boats only, including summary reports filed by longline boats. Tables 3a through 3c represent all records that reported hooks except summary reports. Gears represented include, but are not limited to, longline, bottom longline, and rod and reel boats.

The data summarized here are considered to represent nominal CPUE. No attempt has been made in this summary to standardize the data for factors not related to fish abundance, but known to affect the CPUE values. Those analyses are carried out for the purpose of stock assessments, and are reported elsewhere.

The reported swordfish catch rates in 1995 for the CAR, FEC, SAB, NED and the NCA were, respectively, approximately 2.3 fish/100 hooks, 2.4 fish/100 hooks, 1.3 fish/100 hooks, 2.8 fish/100 hooks and 1.9 fish/100 hooks (Table 3a); in 1996 approximately 2.0 fish/100 hooks, 2.6 fish/100 hooks, 1.2 fish/100 hooks, 2.5 fish/100 hooks and 1.3 fish/100 hooks (Table 3b); and in 1997 (preliminary) approximately 2.0 fish/100 hooks, 2.2 fish/100 hooks, 1.5 fish/100 hooks, 2.1 fish/100 hooks and 1.5 fish/100 hooks (Table 3c). The best reported 1997 swordfish catch rates in an offshore area were in the TUS (2.4 fish/100 hooks).

Average reported CPUEs for yellowfin, on an annual basis, have been consistently high from the GOM fishery until 1996. The reported catch rates in the GOM in 1995 were approximately 2.7 fish/100 hooks (Table 3a); in 1996 approximately 0.8 fish/100 hooks (Table 3b); and in 1997 approximately 1.3 fish/100 hooks (Table 3c). The highest CPUE reported for 1997 was 1.8 fish/100 hooks in the MAB.

Monthly reported CPUEs for swordfish, yellowfin, bigeye, and albacore from 1987 to 1997 are shown in Figures 5a -5d. The error bars represent + 2 standard errors from the mean.

SWORDFISH STOCK STATUS

A summary of the resource status of north and south Atlantic swordfish, updated by the 1998 ICCAT, is shown in the Table 4.

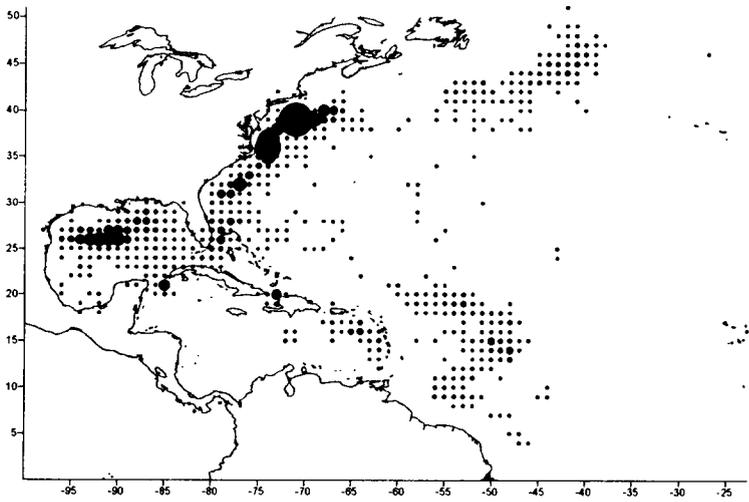


Figure 3. Location and density of reported longline effort in 1995.

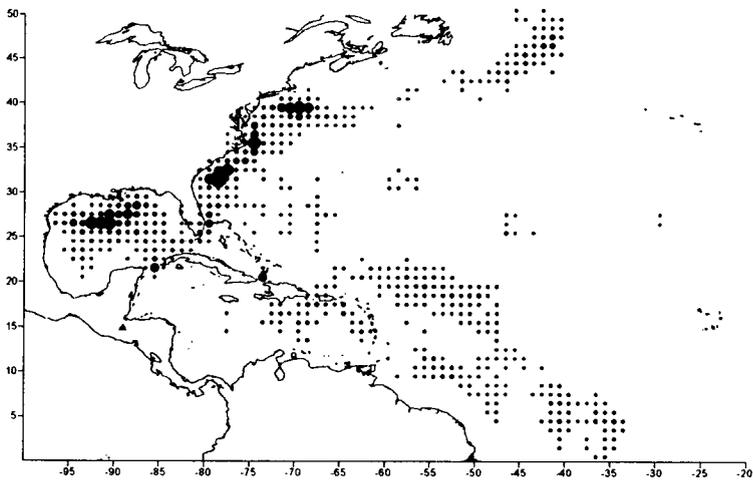


Figure 4. Location and density of reported longline effort in 1996.

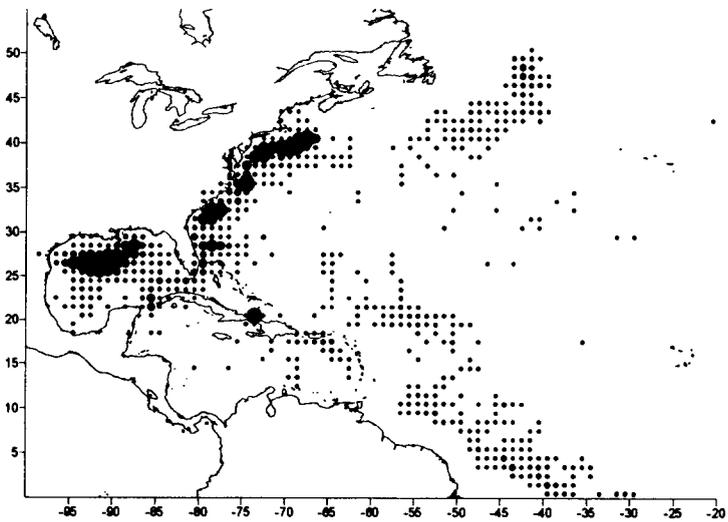
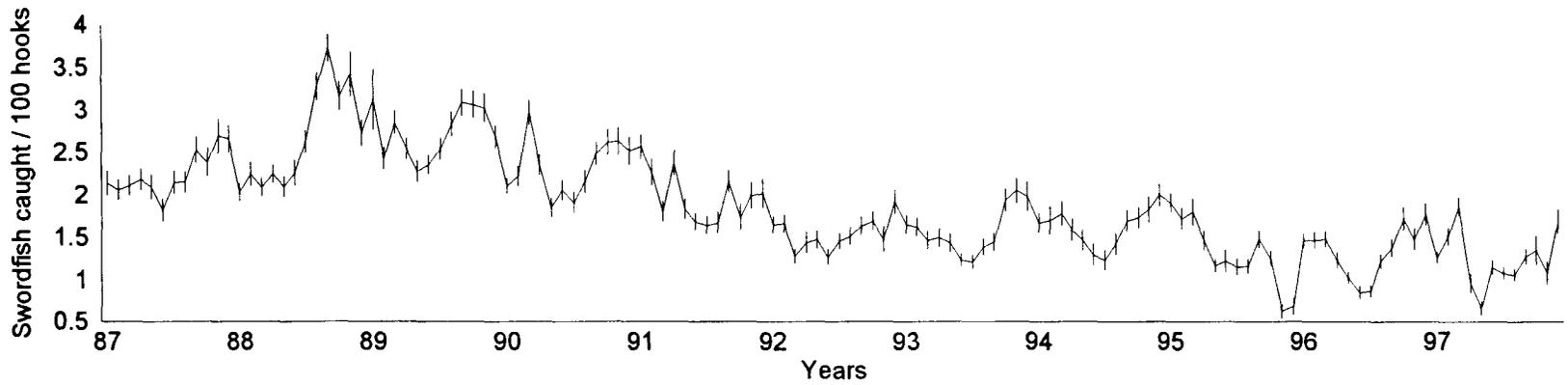
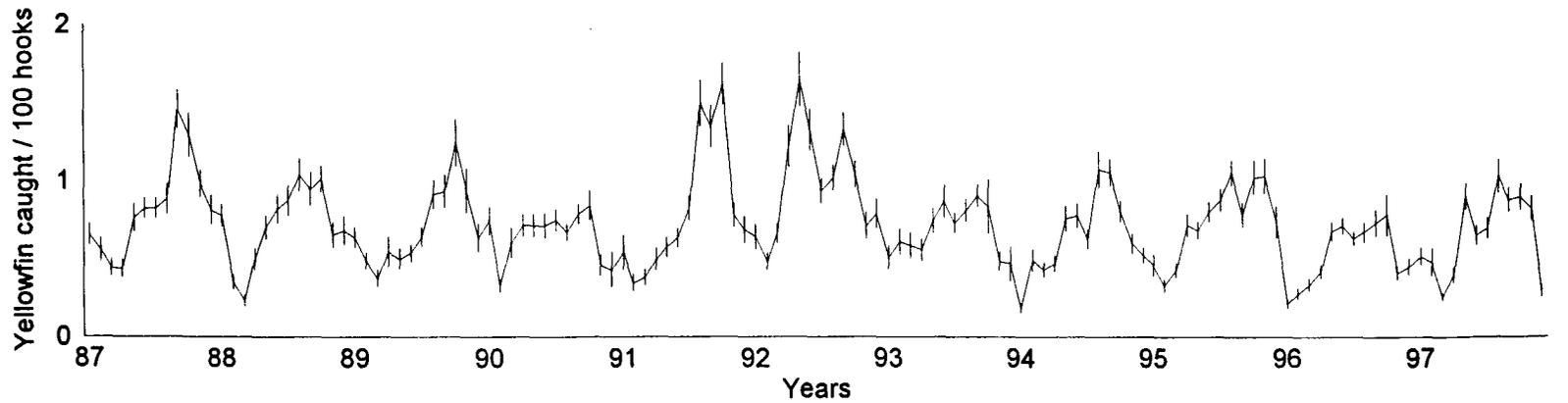


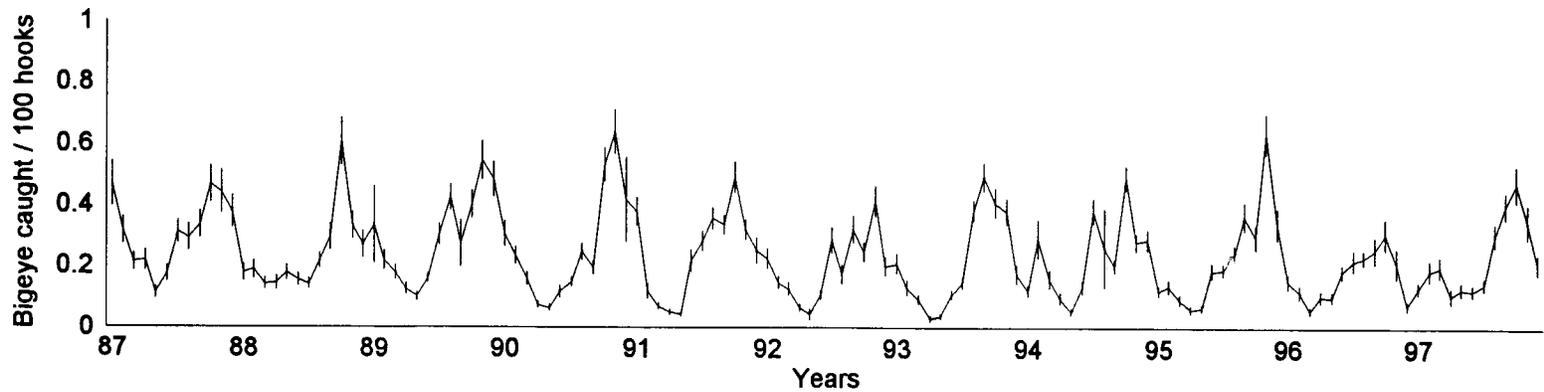
Figure 5. Location and density of reported longline effort in 1997.



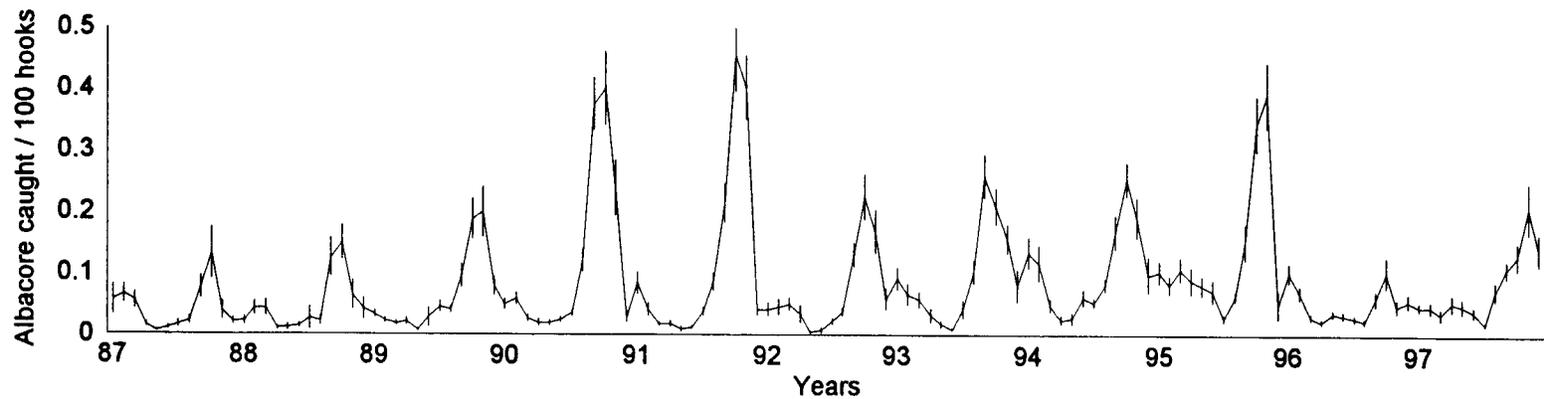
**Figure 5a. Monthly Swordfish CPUE's
1987 -1997**



**Figure 5b. Monthly Yellowfin CPUE's
1987 -1997**



**Figure 5c. Monthly Bigeye CPUE's
1987 -1997**



**Figure 5d. Monthly Albacore CPUE's
1987 -1997**

Projections from the 1996 assessment indicated that large reduction in yield and fishing mortality rate would be required to rebuild the north Atlantic stock in the short or medium term. Most of the updated north Atlantic CPUE data show similar trends as those in recent years with one important exception -- the recruitment index from the Spanish longline fishery used in the last assessment shows substantially higher catch rates for age one fish in 1992. This improvement, should it prove to be real, could allow for increased spawning biomass in the future and a more optimistic outlook, if that year class is permitted to grow to spawning size before harvest.

A quantitative assessment for the South Atlantic stock assumption was conducted for the first time in 1996. This assessment, though, is still considered provisional. Biomass at the beginning of 1996 was estimated to be 99% of the biomass needed to produce MSY, and the surplus production for 1996 was estimated to be about 14,600 MT. Estimated catches since 1996 have exceeded this level and biomass is expected to decline further.

If a total Atlantic stock is assumed, it is unlikely that the view of the status of the stock would be improved from that of the north or south Atlantic status.

ALBACORE STOCK STATUS

The northern and southern Atlantic albacore stocks were assessed in 1998. A summary of these assessments are shown in the Table 5.

The abundance and biomass of adult fish in the north Atlantic appears to have declined from the mid 1970's, then increased from 1988 to 1991 and then declined again to about the 1988 level. Equilibrium yield per recruit analysis made by the SCRS in 1998 indicated that the northern stock is at or above full exploitation. Equilibrium yield analysis, made on the basis of an estimated relationship between stock size and recruitment, indicated that current fishing mortality may be 30% to 50% higher than that which would generate MSY. ICCAT concluded that the northern stock is

probably fully-exploited, but the possibility that it is over-exploited should not be dismissed.

The results from the 1998 assessment of south Atlantic albacore were different from the 1997 results. The main difference was that stock biomass levels are above rather than below MSY levels. Current results indicate that MSY is 28,400 MT and current (1998) replacement yield is 28,200 MT. These differences were probably the result of changes in the estimated trends of several indices of abundance and the revision of recent catch series. Considering the uncertainties of the analysis, and the results of previous assessment, ICCAT concluded that the southern stock is probably being exploited at a high level, close to fully-exploited.

BIGEYE STOCK STATUS

No new assessment for bigeye tuna was conducted in 1998. A summary of the resource status from the 1997 assessment is shown in the Table 6.

From 1993 to 1996, the total bigeye catch was near or greater than 100,000 MT while the upper estimate for MSY is 90,000 MT. This high level of catch represents a substantial increase over the 1989-1990 level by more than 30,000 MT due to increased catch by purse seine, longline and baitboat fisheries. Although MSY levels were not well determined, the recent high catch surpasses estimates from all models considered. It is highly likely that this catch level cannot be sustained in the long term and may result in substantial declines in stock size.

Yield-per-recruit analyses suggests that an increase of yield cannot be expected by intensifying fishing effort of any sector; however, yield-per-recruit can be increased by a reduction of fishing effort in the small-fish fisheries or an increase in the age at first capture. ICCAT recommends that further analysis of the advantages and disadvantages of the 3.2 kg minimum size be conducted.

YELLOWFIN STOCK STATUS

In 1998, the status of the total Atlantic yellowfin stock was assessed by ICCAT using various production models and several types of VPAs. Summary of the resource status from this assessment is shown in the Table 7.

Production model analyses imply that although yellowfin tuna catches are slightly lower than equilibrium MSY levels, effort may be either above or below the MSY level. VPA analyses indicate that fishing mortality of juvenile yellowfin exhibited a pronounced increasing trend in the late 1980's and early 1990's, but estimates for recent years are uncertain. Preliminary deterministic projections from two of the VPA runs indicated that current catches are sustainable if recruitment continues at or above the average magnitude observed over the last decade. Yield-per-recruit analyses indicate that current (1997) fishing mortality may be close to the level of F_{max} and that an increase in effort is likely to decrease the yield-per-recruit, while reductions in fishing mortality on fish less than 3.2 kg could result in substantial gains in yield-per-recruit and modest gains in spawning biomass-per-recruit.

In summary, yellowfin landings appear to be close to MSY level and fishing effort and fishing mortality may be in excess of the levels associated with MSY. ICCAT recommended that there be no increase in the level of fishing effort above that observed in 1992 .

MANDATORY REPORTING IN THE ATLANTIC LARGE PELAGIC FISHERY

Federal regulations require that both fishers and dealers assist the conservation and management of large pelagic species by providing statistics on fishing activity and seafood production respectively. Fishermen are required to submit data on daily fishing activity and catch, which includes individual carcass weights for the swordfish and other large pelagic species. Dealers are required to provide summary data on the landings (purchases) by market or size category and the price or value for the respective categories.

Both fishermen and dealers are required to maintain an active Federal permit to fish for or purchase swordfish.

Fishers Reporting.

All fishers that fish for and land swordfish are required to have an active permit and report the catches from every set or daily trip. In addition to a completed logbook sheet for every set, fishers are required to submit a copy of the weigh-out or sales receipt that provide the weights for the individual swordfish and other large pelagic species that are caught on the fishing trip. If either of these requirements are not met, the vessel is not in compliance and the vessel's permit can be revoked or denied at the annual renewal.

If the vessel did not fish during a calendar month, a "no-fishing" report must be submitted.

All logbook reports and weigh-outs are to be submitted to the

Southeast Fisheries Science Center
Logbook Program
P.O. Box 491740
Key Biscayne, Florida 33149-9915

Questions or requests for clarifications can be directed to Logbook Program at the Southeast Fisheries Science Center, telephone number (305) 361-4581.

During 1997, an active permit for the large pelagic fishery was issued to 1,219 vessels. These permits were not necessarily active during the entire calendar year, nor did all of these vessels actively fish for or catch large pelagic species. If logbooks and weighouts were not submitted for the catch of the 12 months in the reporting period prior to the expiration of the permit, the application for renewal was denied until all reporting was brought up to date.

NUMBERS OF ACTIVE VESSELS

A compilation of activity related to the vessels permitted during the period 1987 through 1997 is presented in Table 8. "Fished" implies a

vessel submitted at least one positive fishing report during that year, "Caught Swordfish" means the vessel reported catching at least one swordfish during that year and "Caught Swordfish in 5 months" means the vessel reported catching at least one swordfish per month in at least five months of that year. "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 fished. For this reason, these numbers are higher than the numbers in Tables 1a-1c.

Dealer Reporting.

Permitted dealers are required to provide reports twice a month to the Science and Research Director for either the Northeast Region or the Southeast Region, depending on the dealer's geographical location. Complete and timely information from dealers is critical because these data are used to monitor the fishery quota for swordfish. Dealers are instructed to provide the U.S. Coast Guard documentation or state registration number for every vessel from which they purchased swordfish during each two week reporting period. This information is used to check the dealer data against the daily catch data submitted by fishermen. This cross reference helps the SEFSC determine that all landings are included in the quota monitoring process and it also guards against potential double counting.

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

except 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:

Northeast Regional Office
National Marine Fisheries Service
1 Blackburn Dr
Gloucester, MA 01930

Attention: Greg Power

For most dealers in the Northeast Region, NMFS port agents contact and collect the dealer reports.

At sometime during calendar year 1997, a Federal dealer permit was held by 258 dealers. Of this total, 89 dealers had their primary location in the Northeast Region and the remaining 169 dealers had their primary location in the Southeast Region, which includes the Caribbean. Overall, compliance with the reporting requirements has been good in this area. However, dealers that do not cooperate with the NMFS and do not submit the required bi-monthly reports will have their application for a permit renewal denied, and NMFS Law Enforcement will be notified. It should be noted that a report is required for every two week period, even if large pelagic species were not purchased. If no purchases were made, the respective Center Director must be informed. In the Southeast Region, a form so-stating must be submitted.

SWORDFISH LANDINGS

The Southeast Fisheries Science Center (SEFSC), Miami Laboratory, is responsible for compiling the landings of U.S caught Atlantic swordfish from mandatory reporting data. The monthly reported landings for 1990 -1997 may be found in Table 9. U.S. Atlantic swordfish landings decreased each year from 1990 to 1994, increased somewhat in 1995, then decreased again in 1996 and 1997.

Monthly cumulative annual landings of U.S. Atlantic swordfish are compared in Figure 6 for years 1990-1997. Yearly U.S. Atlantic swordfish landings from 1991 to 1997 were lower than 1990 landings. These lower levels are, in part, the result of the minimum size regulation and due to fishery closures when allowable landing levels for the directed fishery were achieved.

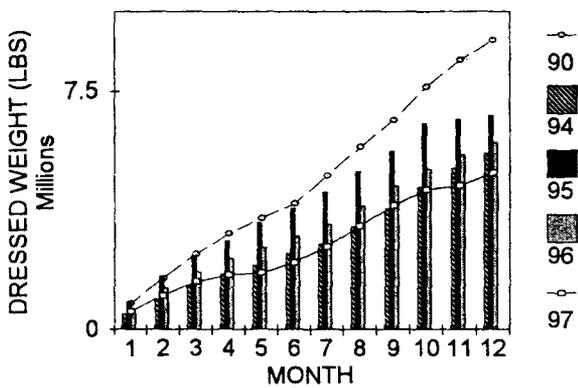


Figure 6. SWORDFISH LANDINGS

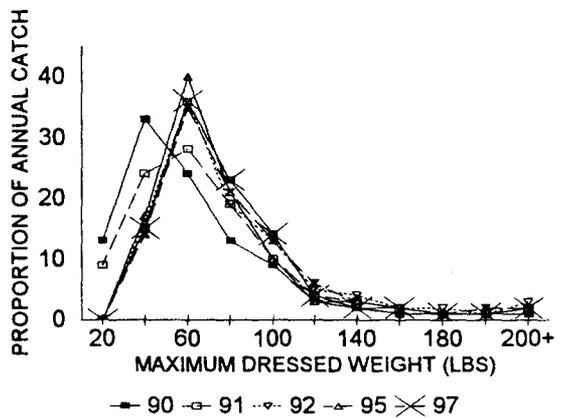


Figure 7. U.S. CATCH AT SIZE

SWORDFISH LANDED IN THE U.S.

Year	1,000 lbs. Dressed wt.	1,000 lbs. Whole wt.
1989	10,582	14,075
1990	9,107	12,112
1991	7,142	9,499
1992	6,383	8,489
1993	6,274	8,345
1994	5,578	7,419
1995	6,764	8,996
1996	5,889	7,832
1997	4,933	6,561

SWORDFISH SIZE FREQUENCY

The proportion of swordfish landed which were less than 41 lbs dressed weight in size frequency samples from U.S. longline vessels, decreased from 1989 through 1995, then went up slightly in 1996 and 1997 (Figure 8a). The initial decrease resulted from the minimum size measure put in place in mid 1991. The increase in 1996 and 1997 is probably the result of lowering the minimum size from 41lbs to approximately 33lbs in mid 1996. The proportion of swordfish landed which were less than 33 lbs dressed weight is shown in Figure 8b.

SWORDFISH < 41 LBS. DRESSED WEIGHT - NUMBER AND PERCENT LANDED BY MONTH BY AREA

The cumulative percent of fish landed less than 41 lbs dressed weight from all areas and all months fell from 38% in 1990 to 13% in 1993 and then went up to 16% in 1997 (Table 11). The within area percentage landed catch of fish less than 41 lbs decreased in most areas between 1991 and 1995, but increased slightly in 1996 and 1997 (Table 11). The highest numbers of undersize fish landed in 1997 were from the GOM region (Tables 10, 11 & 12).

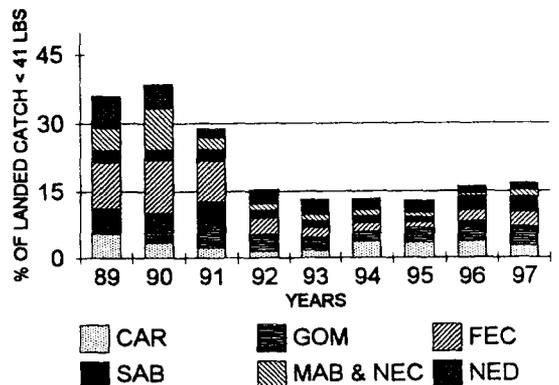


Figure 8a. SWORDFISH SIZE FREQUENCY

SWORDFISH < 41 LBS. DRESSED WEIGHT - PERCENT LANDED

The proportion of U.S. Atlantic swordfish landed which were smaller than 41 lbs dressed weight has decreased since 1990 (Figure 7). In 1990 the highest number of fish landed were in the 21-41 lb category. In 1991 this peak shifted to the 41-60 lb category where it has since remained.

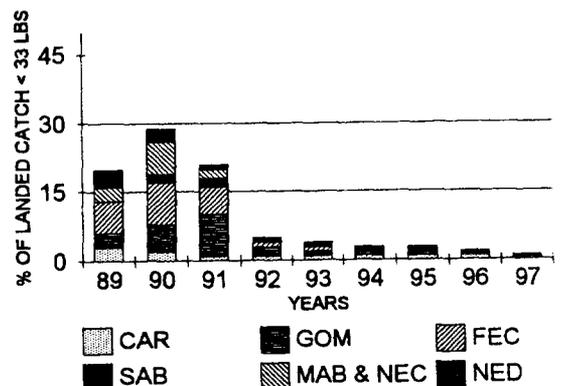


Figure 8b. SWORDFISH SIZE FREQUENCY

BYCATCH ESTIMATION

The 1997 observer and 1997 logbook records were used to estimate the number of discarded dead swordfish (32,058), blue marlin (2,190), white marlin (3,658), and sailfish (2,739), coastal sharks (5,871) and pelagic sharks (9,284).

RECENT RESEARCH TAGGING HIGHLIGHTS

In 1997 researchers from the national Marine Fisheries Service, the New England Aquarium, and Stanford University released 160 bluefin tuna with implanted archival tags and 57 bluefin tuna with pop-off tags. Four of the archival tags have been recaptured and data has been recovered from 52 of the pop-off tags (Turner, 1998). Conventional tags were attached to 2,974 bluefin tuna in 1996 and 2,436 bluefin tuna in 1997 by a catch and release fishery off the coast of North Carolina.

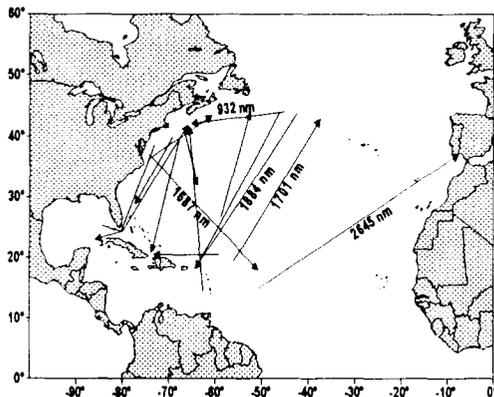


Figure 9. Long range swordfish migrations from 1996 and 1997 tag returns.

Annual releases of tagged swordfish decreased to an average of about 650 fish per year for the period of 1995 to 1997 compared to an annual average of about 1,200 fish for years 1991 to 1994. U.S. longline vessels reported 13 recoveries of tagged swordfish in 1996 and 19 recoveries of tagged swordfish in 1997. In Figure 9 straight lines are drawn between release and recovery locations of swordfish that were recovered in 1996 or 1997 in cases where release and recovery locations were significantly different

GENETICS

Results from research projects related to swordfish stock hypothesis were presented at the 1998 SCRS. Genetic analysis of Mitochondrial (Alvarado et. al., 1998a) and nuclear DNA (Greig et. al., 1998) supported differentiation between Pacific, Atlantic, and Mediterranean swordfish populations. There is also evidence of genetic differentiation between the Northwest Atlantic (Georges Banks and the Caribbean) and the South Atlantic (Gulf of Guinea and Brazil-Uruguay) (Alvarado et. al., 1998b). These studies support the stock hypotheses currently being used by ICCAT. Spanish scientists are examining parasite infestation levels in swordfish in different regions with the goal of finding biological tags that can be used to identify geographical locations for different stocks of swordfish (Castro and Mejuto, 1998). Three parasites (*Tentacularia coryphaenae*, *Penella filosa*, and *Anisakis simplex*) have been identified which may be useful in differentiating between north and south Atlantic swordfish stocks.

Research related to bluefin tuna stock hypotheses was also presented. Preliminary genetic analysis of mitochondrial DNA from bluefin tuna caught in the western Atlantic and in the Mediterranean Sea suggests that fish from these areas may have genetic differences that can be used to separate western Atlantic and Mediterranean sub-populations (Alvarado Bremer, 1998c). More extensive analyses are underway which should provide a more accurate picture of the northern bluefin tuna population substructure.

PELAGIC OBSERVER PROGRAM

The National Marine Fisheries Service (NMFS) continues its scientific observer sampling of the U.S. large pelagic fleet, as mandated by the U.S. Swordfish Fisheries Management Plan. Scientific observers are placed aboard vessels participating in the Atlantic large pelagic fisheries by the Southeast Fisheries Science Center (SEFSC) and the Northeast Fisheries Science Center (NEFSC) since 1992. Until 1996, coverage by the SEFSC Pelagic Observer Program (POP) took place, but is not limited, to vessels fishing in the

Atlantic south of Virginia. The scientific observer program contracted and monitored by the NEFSC was responsible for large pelagic fleet fishing the waters of the Mid-Atlantic Bight¹ to the Grand Banks. Beginning in 1996, the SEFSC assumed the responsibility of covering all of the geographical areas of the northwest Atlantic.

A scientific observer is placed on board the vessel to record detailed information on gear characteristics, the location and time of the gear set and retrieval, environmental conditions, the condition and status of the animals caught by the gear (alive or dead, kept or discarded), as well as morphometric measurements (length and weight) and sex identification when possible (Figure 10). Observers also record the occasional interaction of marine mammals and sea turtles. The collection of biological samples (anal finrays, heads, reproductive, heart tissue, etc.) from some animals are used to support research studies to learn more about fish biology and life history behavior.

Catch data collected between May of 1992 and December of 1996 by the POP has been summarized in a newsletter (NOAA Technical Memorandum, NMFS-SEFSC-408) which are available upon request. The POP continued its coverage through 1997 and data through 1998 are now computerized for analysis. Of the fish recorded by observers from 1992-1997 and summarized in various species groups, (Figure 10) swordfish was the highest percent occurrence (27%) species.

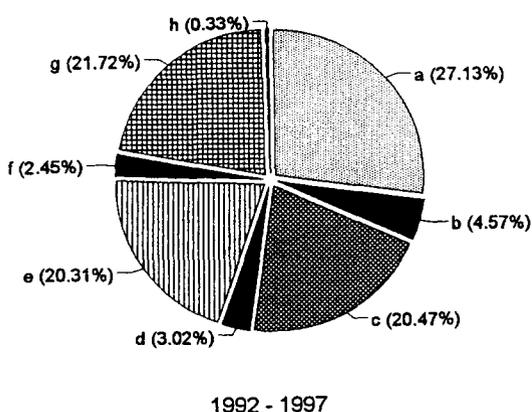


Figure 10. Catch reported by scientific observers on U.S. longline vessels: swordfish (a), billfish (b), yellowfin, bigeye and bluefin tuna (c), other tunas (d), sharks and rays (e), unknown species (f),

finfish (g), marine turtles, marine mammals, and birds (h).

INSTRUCTIONS FOR USING THE PELAGIC LOGBOOKS FOR 1998

Samples of forms and directions for filling out forms are presented in Figures 11 - 16. There are 4 forms used for pelagic logbook reports in 1999: (1) a "trip summary" form, (2) a voluntary cost and earnings form, (3) a "set" form, and (4) a "no fishing" form. The trip summary form must be completed for every fishing trip when swordfish are caught and retained on board. A set form must be completed for ever set made. A trip summary, set forms and a "tally" sheet must be submitted for every completed trip.

The voluntary cost and earnings form is used to provide information on the costs associated with the fishing trip. This information is voluntary.

The "no-fishing" form may be used to report no fishing in the swordfish/large pelagic, South Atlantic snapper-grouper, Gulf of Mexico reef fish, and shark fisheries. If the vessel did not fish in more than one of these fisheries, **ONLY SUBMIT ONE "NO-FISHING" FORM**. Check the space by each of the fisheries in which the vessel did not fish. Do NOT check fisheries for which your vessel does not have an active permit.

All forms are to be mailed in the pre-addressed, postage-paid envelopes that are included. If you mail the forms in another envelope, please use the following address:

NATIONAL MARINE FISHERIES SERVICE
 ATTN: LOGBOOK PROGRAM
 P.O. BOX 491500
 KEY BISCAYNE, FLORIDA 33149-9916

If there are question regarding completion of this form, please contact the Logbook Program at (305) 361-4581.

Monthly reporting for individuals holding a Swordfish permit will be considered complete and in compliance with the regulations only if 1) the trip summaries for each trip completed during the month, individual set records for each set made during the trip(s), and tally records for all fish sold are provided or, 2) a no fishing report is provided.

Again, as noted on the new logbook forms, **use of the current year forms will be necessary for compliance.** Further, **all old forms should be destroyed** upon receipt of the 1999 forms.

WHOM TO CONTACT FOR WHAT

Any questions concerning Atlantic large pelagic resources swordfish projects at the Southeast Fisheries Science Center, NMFS, can be directed to Dr. Gerald Scott at (305) 361-4220 questions concerning processing and analyzing the logbook data can be directed to Dr. Jean Cramer at (305) 361-4493. Information concerning permits can be directed to (727) 570-5326 Those needing 1999 logbooks can contact the logbook program at (305) 361-4581. Questions about the observer program should be directed to Dennis Lee (305) 361-4247 or Cheryl Brown (305) 361-4275. 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

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Turner, S. C., 1998. Review of the bluefin tuna release and recapture information from the ICCAT tagging data base. SCRS/98/69

Use Black Pen Only !

OMB# 0648-0016 Exp. 9/30/2000

1999 PELAGIC LOGBOOK TRIP SUMMARY

Noaa Received Date:

NOAA Schedule #

Vessel Name: _____

Contact Phone Number: () - _____

Vessel No.:

<input type="text"/>									
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Capt. Signature: _____

Port & State Departure: _____

<input type="text"/>	<input type="text"/>
----------------------	----------------------

Port & State of Landing: _____

<input type="text"/>	<input type="text"/>
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Date of Departure:

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
						←Year→			

Date of Landing:

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
						←Year→			

First Day of Offloading:

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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Last Day of Offloading:

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	---	----------------------	----------------------	---	----------------------	----------------------	----------------------	----------------------

Number of Sets Placed:

<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------

Date of First Set:

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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Number of Days Fished:

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Date of Last set:

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	---	----------------------	----------------------	---	----------------------	----------------------	----------------------	----------------------

Dealer Name(s):

Federal Dealer Permit No.

<input type="text"/>	<input type="text"/>	-	<input type="text"/>						
<input type="text"/>	<input type="text"/>	-	<input type="text"/>						
<input type="text"/>	<input type="text"/>	-	<input type="text"/>						

Figure 12. INSTRUCTIONS FOR PELAGIC LOGBOOK TRIP SUMMARY FORMS

Instructions for the Trip Summary Form

Please use a ball point pen and print clearly.

On the blue form (top page), record the following:

- Vessel Name
- Vessel No.: U.S. Coast Guard vessel identification number or state registration number as recorded on permit application
- Capt. Signature: signature of the captain for the trip
- Contact Telephone: telephone number of person responsible for the records
- Port & State of Departure: location of port from which the trip commenced
- Date of Departure: calendar day on which the trip was started
- Port & State of Landing: location of port that vessel arrived in
- Date of Landing: calendar day that vessel returned to port
- First day of Offloading: calendar day(s) that vessel began offloading fish
- Last day of Offloading: calendar day(s) that vessel finished offloading fish
- No. of Sets Placed: number of times the fishing gear was set during the trip
- No. of Days Fished: number of days that fishing gear was used
- Date of First Set: calendar day that fishing gear was first set
- Date of Last Set: calendar day that fishing gear was last used
- Dealer Name(s): list of names of dealers purchasing the harvest
- Federal Dealer Permit Number(s)

Remove page, attach corresponding set forms and tally sheet, and mail within 7 days.

The trip summary information recorded on the blue form will be transferred to the following green form where the expenditures and payments information is requested.

NOTE: All data provided are *CONFIDENTIAL* and will be used to determine the impact of existing and proposed management policies on fishery participants. Consistent and accurate reporting is critical to the success of future policies in achieving the stated objective of increasing net benefits.

On the green form (second page), record the following:

- Expenditures on Supplies: quantity and total cost of bait, fuel, and ice used during the trip and the total costs of docking and unloading fees, tackle/gear (e.g., light sticks, line, gangions, hooks, buoys), groceries, and other miscellaneous expenses.

Note: If any of these supplies were not purchased for this trip (e.g. light sticks are left over from previous trips, bait is harvested prior to fishing in the directed fisheries, or the vessel has an ice machine on board) please estimate and enter the value of the quantities used during the trip. If this is not possible, please make a note of this on the green form.

- End of Trip Payments: total payments made to the owner (if not owner-operated), captain, and crew, also note the total number of crew members (excluding the captain) that will share the crew payment.

This page should be sent when all the information is available, but no later than 45 days after the sale of the fish.

Figure 13. 1999 PELAGIC LOGBOOK - VOLUNTARY COST AND EARNINGS QUESTIONS

Trip Expense Summary (confidential)		\$ Per Unit	Quantity	Total Cost
Fuel	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> gallons	\$ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
Bait (If purchased by boxes, please convert to pounds)	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> pounds	\$ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
Ice (If purchased by boxes, please convert to pounds)	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> pounds	\$ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
Docking / Unloading Fee	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00		\$ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
Tackle / Gear Expenses (Total for trip including light sticks, line gangions, hooks, etc.	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00		\$ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
Grocery Expenses	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00		\$ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
Other Expenses	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00		\$ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
TOTAL TRIP COSTS (All costs incurred for this trip excluding End of Trip Payment Summary listed below)				\$ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00

End of Trip Payment Summary (confidential)		Total Payment
Owner:	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
Captain:	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00
Crew:	\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> .00 (Total)
Number of Crew	<input type="text"/> <input type="text"/>	(Number of people that share the crew payment listed above)

Figure 15. INSTRUCTIONS FOR PELAGIC LOGBOOK SET FORM

Revised (9-98)

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, **Official Vessel Number.**

Designate primary **Target species.**

Record **Gear Used.**

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.

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

- **Number of hooks set**
- **Number of hooks between floats**
- **Number of light sticks**
- **Length of Mainline** (in miles)
- **Length of Gangions** (in fathoms)
- **Length of Floatline** (in fathoms)
- **Did you use a line thrower?**
- **Were you tending or rebaiting hooks before haulback? If yes, specify how many hooks were rebaited.**
- **Bait:** indicate Live, Dead or Artificial.

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

- **Mesh Size** (in inches)
- **Total drift gillnet net length** (in fathoms)
- **Fishing Depth Range** (Depth of top and of Bottom of net in fathoms)

Record **Estimated total dressed weight** (in pounds) of fish kept.

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 Dead.** Write down the number of each sea turtle species that were observed to be dead while in, or by, your fishing gear.

Mail original logs to NMFS at the end of the fishing trip in pre-addressed envelopes along with the Trip Summary Form and weighout slip.

Mailing should be postmarked not later than the 7th day after the sale of the catch. Monthly reporting for individuals holding a Swordfish permit will be considered complete and in compliance with the regulations only if 1) the trip summaries for each trip completed during the month, individual set records for each set made during the trip(s), and tally records for all fish sold are provided or 2) a no fishing report is provided.

Figure 16. NO FISHING FORM.

Form # NOF2000

OMB# 0648-0016 Exp. 9/30/2000

NMFS Use Only: Opened:	Schedule #
---------------------------	------------

NO FISHING REPORTED FORM

Vessel ID. NO. Vessel Name: _____

During the entire month of , year this vessel DID NOT FISH in the fisheries checked below:

- > more than one fishery may be checked
- > DO NOT check any fishery if your vessel does not have a permit for it
- > Use **Black Ink**

- Pelagic (Swordfish)
- South Atlantic Snapper-Grouper
- Gulf of Mexico Reef Fish
- Shark
- King Mackerel
- Spanish Mackerel

Signature _____

Phone () _____



Retain for you Reocrds



Table 1. TOTAL NUMBER OF SWORDFISH, TUNA, AND BILLFISH REPORTED CAUGHT BY LONGLINE BOATS, BY AREA, AND EFFORT IN NUMBER OF HOOKS, FROM THE SWORDFISH MANDATORY LOGBOOKS, FOR (a) 1995, (b) 1996 and (c)1997 (PRELIMINARY). NUMBERS CAUGHT REPRESENT KEPT PLUS DISCARDED (DEAD OR ALIVE). SEE FIGURE 1 FOR DESIGNATION OF AREAS. (SWD=SWORDFISH; YFT=YELLOWFIN; BET=BIGEYE; BFT=BLUEFIN; ALB=ALBACORE; WHM=WHITE MARLIN; BUM=BLUE MARLIN; SAI=SAILFISH.)

Ia. 1995										
Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	HOOKS	BOATS
CAR	13572	1857	1309	0	181	272	699	89	598704	42
GOM	16626	25717	880	116	128	645	553	666	2648273	140
FEC	13560	1017	1355	44	494	120	134	159	643091	67
SAB	10234	7373	125	41	116	191	262	164	853595	77
MAB	7149	35770	8437	1764	5181	834	166	18	2385664	108
NEC	4026	7137	6378	1163	4187	363	63	1	1054433	56
NED	21615	526	3731	22	323	22	16	0	766685	24
SAR	206	40	88	18	142	3	4	1	25480	12
NCA	14987	1599	954	13	3534	338	385	42	854809	38
TUN	1154	3215	351	0	173	378	594	97	224784	15
TUS	8	75	7	0	0	0	21	1	3000	1
TOTAL	103137	84326	23615	3181	14459	3166	2897	1238	10058518	299

Ib. 1996										
Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	HOOKS	BOATS
CAR	12784	792	842	0	294	171	463	44	643388	57
GOM	19064	36130	405	112	126	919	848	566	3619064	140
FEC	13516	765	1433	29	264	109	203	304	592186	72
SAB	16003	6193	1051	81	594	287	386	248	1657008	86
MAB	1988	10138	2268	197	479	275	50	20	1029311	84
NEC	1670	5890	4980	1465	930	408	252	10	1092673	62
NED	14570	363	3572	15	896	12	3	0	599900	22
SAR	731	79	380	16	389	33	6	2	78985	12
NCA	6607	1350	585	1	872	161	135	21	490109	34
TUN	4513	4577	1718	0	219	422	824	188	385431	16
TUS	4423	752	851	0	85	35	122	39	170032	10
TOTAL	95959	67029	1808	1916	5148	2832	3292	1442	10331087	270

1c. 1997										
Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	HOOKS	BOATS
CAR	8060	326	549	2	209	153	292	40	425025	45
GOM	15388	35009	426	114	290	359	497	600	3109363	115
FEC	13224	1935	2913	44	746	96	171	191	761500	72
SAB	11462	2739	188	18	260	140	154	121	915961	67
MAB	4247	10356	5173	155	1816	269	38	3	1117324	80
NEC	5379	14780	6066	465	2635	416	53	0	1218386	56
NED	14262	85	3060	45	969	8	3	1	676026	23
SAR	336	23	57	1	30	5	1	0	19020	6
NCA	2935	194	220	2	174	89	69	7	192614	26
TUN	1520	1839	522	0	78	251	605	222	198696	21
TUS	9182	3702	3222	0	201	505	353	495	383600	21
TOTAL	85995	70988	22396	846	7408	2291	2236	1680	9017515	253

Table 2. TOTAL NUMBER OF SWORDFISH, TUNA, AND BILLFISH REPORTED CAUGHT BY GILLNET BOATS, BY AREA, AND EFFORT IN NUMBER OF SETS AND NUMBER OF BOATS, FROM THE SWORDFISH MANDATORY LOGBOOKS, FOR (a) 1995, (b) 1996 (PRELIMINARY). GILLNET FISHERY WAS CLOSED IN 1997. NUMBERS CAUGHT REPRESENT KEPT PLUS DISCARDED (DEAD OR ALIVE). SEE FIGURE 1 FOR DESIGNATION OF AREAS. (SWD=SWORDFISH; YFT=YELLOWFIN; BET=BIGEYE; BFT=BLUEFIN; ALB=ALBACORE; WHM=WHITE MARLIN; BUM=BLUE MARLIN; SAI=SAILFISH.)

2a. 1995										
Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	SETS	BOATS
NEC	1007	141	61	108	129	4	0	0	149	12
TOTAL	1007	141	61	108	129	4	0	0	149	12

2b. 1996										
Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	SETS	BOATS
MAB	3	0	1	0	0	0	0	0	11	2
NEC	877	64	10	35	20	0	0	0	135	9
TOTAL	880	64	11	35	20	0	0	0	146	11

Table 3. YEARLY TABULATIONS FOR SWORDFISH AND YELLOWFIN TUNA FOR (a) 1995, (b) 1996 AND (c) 1997 (PRELIMINARY). THE AREAS ARE DEFINED IN FIGURE 1. INFORMATION INCLUDES NUMBER OF FISH KEPT PLUS DISCARDED (K&D); PERCENTAGE KEPT (%K), PERCENTAGE DISCARDED DEAD (%D DEAD, PERCENTAGE DISCARDED ALIVE (%D LIVE); EFFORT IN HOOKS (HOOKS); NUMBER OF SETS (N); AND AVERAGE OF THE INDIVIDUAL CATCH RATES [AVG(C/E)] , EQUIVALENT TO CPUE IN # OF FISH/100 HOOKS.

3a. 1995			SWORDFISH					YELLOWFIN				
AREA	HOOKS	N	K&D	%K	%D DEAD	%D LIVE	AVG C/E	K&D	%K	%D DEAD	%D LIVE	AVG C/E
CAR	603874	1362	13498	81	10	8	2.297	1865	89	1	8	0.292
GOM	3205894	4311	17444	60	25	14	1.134	27078	97	1	0	2.649
FEC	677955	2119	13519	53	30	15	2.375	1016	93	2	3	0.127
SAB	1046666	1945	10211	63	23	13	1.278	7367	97	1	1	1.275
MAB	2552893	3618	7115	50	28	20	0.293	35633	96	1	1	1.457
NEC	1061338	1291	4020	53	24	22	0.396	7129	95	2	1	0.709
NED	775395	986	21548	78	12	8	2.830	769	96	0	3	0.097
SAR	25480	41	206	80	7	11	0.904	40	97	0	2	0.162
NCA	862328	1216	14938	92	4	3	1.983	1755	95	0	3	2.722
TUN	224784	319	1154	69	11	19	0.510	3215	97	1	0	1.465
TUS	3000	5	8	25	25	50	0.263	75	100	0	0	2.531
TOTAL	11039607	17213	103661	70	18	11	1.308	85942	96	1	1	1.432

3b. 1996			SWORDFISH					YELLOWFIN				
AREA	HOOKS	N	K&D	%K	%D DEAD	%D LIVE	AVG C/E	K&D	%K	%D DEAD	%D LIVE	AVG C/E
CAR	643388	1231	12775	80	10	9	2.027	792	85	0	13	0.122
GOM	3576704	5102	18773	68	18	13	0.863	31671	97	0	1	0.778
FEC	592669	1915	13461	55	31	12	2.635	762	96	1	1	0.121
SAB	1655766	2911	15955	69	18	12	1.220	6135	95	1	3	0.438
MAB	1022217	1623	1930	78	9	11	0.212	10223	96	1	2	2.673
NEC	1092754	1345	1668	81	8	10	0.165	5882	97	0	1	0.537
NED	599900	711	14531	87	7	5	2.462	363	96	0	2	0.068
SAR	78985	131	731	90	4	5	1.059	79	97	0	2	0.107
NCA	484731	674	6592	93	2	3	1.349	890	98	0	0	1.325
TUN	362431	495	4519	87	5	6	1.188	4762	96	0	2	1.348
TUS	170032	199	4423	94	2	2	2.678	752	90	1	8	0.436
TOTAL	10279577	16337	95358	75	14	9	1.223	62311	96	1	2	0.758

3c. 1997			SWORDFISH					YELLOWFIN				
AREA	HOOKS	N	K&D	%K	%D DEAD	%D LIVE	AVG C/E	K&D	%K	%D DEAD	%D LIVE	AVG C/E
CAR	425025	855	8029	84	7	7	1.958	326	88	3	8	0.074
GOM	3433067	4858	16260	68	18	13	0.719	36615	98	1	0	1.281
FEC	775749	2312	13200	66	20	13	2.163	1903	96	2	1	0.218
SAB	969556	1736	11438	72	16	10	1.485	2732	96	0	3	0.280
MAB	1169368	1813	4240	53	24	21	0.423	10332	97	2	0	1.753
NEC	1218591	1492	5360	69	15	14	0.469	14694	98	1	0	1.222
NED	676026	744	14200	88	7	4	2.131	85	88	9	2	0.012
SAR	21020	27	336	91	4	4	1.575	23	100	0	0	0.101
NCA	192724	247	2931	94	2	3	1.518	167	100	0	0	0.077
TUN	198696	255	1519	85	7	7	0.782	1830	91	7	0	0.930
TUS	383600	464	9114	92	4	3	2.420	3696	98	0	0	0.982
TOTAL	9463422	14803	86627	76	13	10	1.185	72403	97	1	0	0.87

Table 4. ATLANTIC SWORDFISH RESOURCE STATUS SUMMARY

	North Atlantic	South Atlantic
Maximum Sustainable Yield ¹	13,000(5,300-16,500MT) ³	14,200 MT (5,200-16,900MT)
Current (1996) Yield	12,961 MT	17,565 MT
Current (1996) Replacement Yield ²	11,300 MT (7,120-16,710 MT)	14,620 MT (8,400-17,140 MT)
Relative Biomass(B_{1996}/B_{msy}) ³	0.58 (0.41-1.04 MT)	0.99 (0.82-1.18)
Relative Fishing Mortality:		
F_{1996}/F_{msy} ¹	2.05 (1.07-3.82)	1.24 (0.94-1.93)
F_{1996}/F_{min} ²	2.4	not estimated ⁴
$F_{1996}/F_{0.1}$ ²	3.5	not estimated ⁴
Management Measures in Effect	125/119 cm LJFL minimum size; Country-specific quotas	125/119 cm LJFL minimum size; Limit catch to 1993 or 1994 levels

¹ Base case production model results based on catch data 1950-1995

² Base case VPA results based on catch data through 1995

³ 80% confidence intervals are shown

⁴ Production model results do not provide basis for these estimates

Table 5. ATLANTIC AND MEDITERRANEAN ALBACORE RESOURCE STATUS SUMMARY

	North Atlantic	South Atlantic
Maximum Sustainable Yield	32,000 (30,600-33,400)	28,400 (15,800-51,100)
Current (1997) Yield	27,526	26,788
Current (1998) Replacement Yield	-	28,200 (17,200-46,300)
Relative Biomass		
B_{1997}/B_{MSY}	0.47 (0.34-0.63)	1.28 (0.37-4.3)
$R_{1998-1997}/R_{75-88}$	0.72	0.98
Relative Fishing Mortality:		
F_{1997}/F_{MSY}	1.39 (uncertain)	0.75 (uncertain)
F_{1997}/F_{max}	0.91	0.62
$F_{1997}/F_{0.1}$	1.60	1.80
Management Measures in Effect	none	Limit catches to 90% of the average 1989-1993 levels

¹In effect since January 1, 1998 for countries/entities/fishing entities fishing (more than 1,000 MT) albacore in the south Atlantic

- = not estimated

Table 6. BIGEYE TUNA RESOURCE STATUS SUMMARY

Maximum Sustainable Yield (likely range)	70,000-90,000 MT*
Current (1997) Yield	89,600 MT
Current (1997) Replacement Yield**	60,000-80,000 MT
Relative Biomass(B_{1997}/B_{max})	0.6 - 0.8
Relative Fishing Mortality: F_{1997}/F_{MSY} **	1.5 - 2.2
$F_{1997}/F_{0.1}$ ***	1.1 - 1.5
F_{1997}/F_{max} ***	0.8 - 1.2
Management Measures in Effect	3.2 kg minimum size

*This range is representative of MSY ranges predicted by ASPIC and PRODFIT models.

** Non-equilibrium production model (ASPIC)

*** Assumes a range of average fishing mortalities in 1996 for age 1 fish, based on VPA analyses

In this table, ranges of point estimates were given for replacement yields and relative ratios.

Table 7. YELLOWFIN TUNA RESOURCE STATUS SUMMARY

	Results of the 1998 Assessment
Maximum Sustainable Yield (MSY) ¹	147.5-155.8
Current (1995) Yield	130.8
Current (1994) Replacement Yield	May be close to current yield
Relative Biomass(B_{1997}/B_{MSY}) ²	92-135%
Relative Fishing Mortality (F_{1997}/F_{MSY})	variable between models; probably exceeds 1
Management Measures in Effect	3.2 kg minimum size Effective effort not to exceed 1992 level

1. 147.5-155.8 for the PRODFIT model and 151.7 for the ASPIC model.

2. Result from ASPIC model

Table 8. NUMBERS OF ACTIVE VESSELS

<u>YEAR</u>	<u>FISHED</u>	<u>CAUGHT SWORDFISH</u>	<u>CAUGHT SWORDFISH IN 5 MONTHS</u>	<u>HOOKS REPORTED</u>
1987	296	273	180	6,556,416
1988	387	337	210	7,009,508
1989	455	415	250	7,941,675
1990	416	362	209	7,500,450
1991	342	308	175	7,744,997
1992	337	303	183	9,075,451
1993	432	305	175	9,724,645
1994	498	304	176	10,323,542
1995	488	314	197	11,253,430
1996	357	271	184	10,464,875
1997	347	261	163	9,649,315

Table 9. MONTHLY SWORDFISH LANDINGS IN LBS DRESSED WEIGHT FROM 1990 TO 1997.

YEAR	MONTH						TOTAL
	JAN	FEB	MAR	APR	MAY	JUN	
1990	839,178	794,926	760,177	631,254	493,183	449,220	
1991	613,177	619,188	554,422	465,789	416,747	432,630	
1992	514,101	575,942	520,299	374,432	358,252	317,612	
1993	561,698	648,585	470,918	341,690	365,752	337,134	
1994	484,972	472,599	458,475	327,608	299,262	383,626	
1995	889,512	811,460	630,410	488,293	554,793	467,913	
1996	596,262	738,304	509,953	388,765	363,694	351,284	
1997	578,730	502,856	435,735	213,070	72,897	325,980	
YEAR	MONTH						TOTAL
	JUL	AUG	SEPT	OCT	NOV	DEC	
1990	895,303	888,258	851,158	1,053,476	806,843	644,159	9,107,135
1991	709,718	773,515	816,558	766,909	527,175	446,311	7,142,139
1992	561,906	731,830	727,037	891,336	423,457	387,010	6,383,214
1993	582,835	585,084	647,994	755,021	589,865	387,627	6,274,203
1994	290,811	539,202	560,993	672,465	592,585	495,542	5,578,140
1995	493,062	651,421	654,380	850,667	145,897	126,307	6,764,115
1996	370,895	568,722	635,336	525,918	455,680	384,352	5,889,165
1997	496,323	649,695	630,832	499,048	125,042	403,040	4,933,248

Table 10. PERCENTAGE OF ANNUAL U.S. SWORDFISH LANDED CATCH BY AREAS (TOTAL ANNUAL CATCH OF SWORDFISH IN AREA/ TOTAL ANNUAL CATCH OF SWORDFISH IN ALL AREAS).

YEAR	CAR ¹	GOM	FEC	SAB	MAB	NEC	NED
1989	20	13	21	6	7	8	24
1990	15	11	22	4	12	11	25
1991	15	19	23	4	10	4	24
1992	14	15	18	8	6	8	31
1993	18	14	15	10	7	7	30
1994	28	10	14	10	10	4	25
1995	34	17	10	8	5	5	21
1996	31	21	11	15	2	3	16
1997	30	19	13	11	4	5	18

1. CAR includes SAR, NCA, TUN, and TUS

Table 11. PERCENTAGE OF ANNUAL US SWORDFISH LANDED CATCH < 41 LBS BY AREAS (ANNUAL OF CATCH OF SWORDFISH < 41 LBS IN AREA / TOTAL ANNUAL CATCH OF SWORDFISH IN ALL AREAS).

YEAR	CAR ¹	GOM	FEC	SAB	MAB	NEC	NED	SUM
1989	5	6	11	3	3	2	7	37
1990	3	7	12	2	6	3	5	38
1991	2	10	9	3	2	0	2	28
1992	1	4	4	2	1	1	3	16
1993	2	3	2	1	1	1	3	13
1994	4	2	2	2	1	0	2	13
1995	3	3	1	1	0	1	3	12
1996	4	4	3	3	0	0	2	16
1997	3	4	3	3	1	1	1	16

1. CAR includes SAR, NCA, TUN, and TUS

Table 12. PERCENTAGE OF SWORDFISH LANDED CATCH < 41 LBS WITHIN AREAS (ANNUAL CATCH OF SWORDFISH < 41 LBS IN AREA / ANNUAL CATCH OF SWORDFISH IN AREA).

YEAR	CAR ¹	GOM	FEC	SAB	MAB	NEC	NED
1989	27	43	49	41	51	24	29
1990	22	60	54	60	52	31	21
1991	15	54	39	56	24	10	8
1992	10	26	21	23	11	11	11
1993	9	20	15	16	14	8	12
1994	13	21	15	16	13	11	10
1995	10	19	13	15	10	11	13
1996	12	21	24	21	19	11	9
1997	9	23	26	30	22	13	8

1. CAR includes SAR, NCA, TUN, and TUS