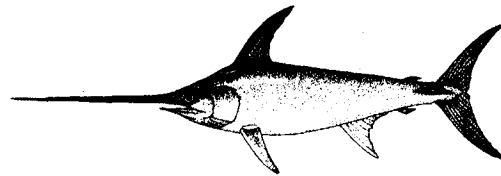


NOAA Technical Memorandum
NMFS-SEFSC- 471

LARGE PELAGIC LOGBOOK NEWSLETTER - 2000

by

Jean Cramer



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This is the eleventh 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 2002, this year's newsletter includes sections pertaining to swordfish, yellowfin, bigeye and albacore stock status, bycatch, time area closures, 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 1998 - 2000 LOGBOOK CATCH AND EFFORT DATA

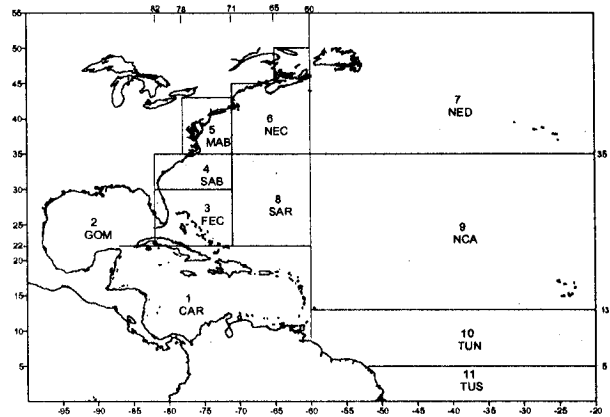
Four summary tables are included in this newsletter. The numbers of swordfish, tunas, and billfish reported caught, by area, for 1998, 1999 and 2000 (preliminary) are given for longline (Tables 1a-1c). Longline effort is reported in hooks and numbers of boats. The longline boat statistics are from logbook reports that were considered to represent all pelagic longline sets including summary records; bottom longline records were excluded. Exclusion of bottom longline records does not exclude all sets targeting species other than swordfish and tuna.

Between 1999 and 2000 reported longline effort (hooks set) increased in the CAR and NED by 55% and 61% respectively. There was very little change in effort in the GOM, FEC, SAB and NEC. All other areas reported a decrease in effort of 20% to 61%.

Total reported longline effort for 2000 was lower than reported for 1999. The total number of longline boats decreased each year from 1998 to 2000.

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 56,000 (1998), 87,000 (1999), and 71,000 (2000) fish. Numbers of yellowfin tuna reported caught decreased by 18% from 1999 to 2000 (Tables 1a-1c).

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 increased from 1996 through 1999, with the exception of a slight decrease in 1998. GOM yellowfin tuna catches decreased in 2000, but remained above 1998 levels (Tables 1a-1c).

In 1998 there were approximately 92,000 swordfish tabulated from longline records (caught = kept + discarded). There were approximately 87,000 swordfish reported in 1999; and 77,000 reported in 2000 (preliminary). Except for a slight increase in 1998, reported swordfish catch has declined annually from 1995 to 2000. The reported fishing effort for the 1998, 1999, and

footnote¹
These are arbitrary areas and do not constitute official geographic areas.

2000 was roughly 7.8, 7.8, and 7.6 (preliminary) million hooks, respectively (Tables 1a-1c). The preliminary number of reported hooks fished decreased by 3%, in 2000 compared to 1999.

Vessels operating in the CAR, GOM, NEC, and NED (Tables 1a-1c), reported increases in annual swordfish catch by longline boats in 2000 compared to 1999. All other areas reported a decrease in annual swordfish catch in 2000.

REPORTED FISHING LOCATIONS IN 1998, 1999, AND 2000

The location of reported commercial pelagic fishing effort by year for 1998-2000 is shown in Figures 2-4. The general pattern for reported sets is similar across the three years along the U.S. coastline. Effort was reported off the coast of Africa in 2000. Overall reported effort was reduced since 1998 with the greatest reductions in the offshore areas (SAR, TUN, TUS, and NCA).

CPUE DATA

Tables 2a-2c represent 1998, 1999, and 2000 (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 2a through 2c 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 2a through 2c 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 1998 for the CAR, FEC, SAB, NED and the NCA were, respectively, approximately 2.0 fish/100 hooks, 2.9 fish/100 hooks, 3.2 fish/100 hooks, 3.2 fish/100 hooks and 1.9 fish/100 hooks (Table 2a); in 1999 approximately 2.2 fish/100 hooks, 2.9 fish/100 hooks, 2.7 fish/100 hooks, 4.1 fish/100 hooks and 2.0 fish/100 hooks (Table 2b; and in 2000 (preliminary) approximately 2.1 fish/100 hooks, 2.2 fish/100 hooks, 1.8 fish/100 hooks, 3.1 fish/100 hooks and 2.6 fish/100 hooks (Table 2c). The highest reported 2000 swordfish catch rates (3.1 fish/100 hooks) was in the NED.

Average reported CPUEs for yellowfin, on an annual basis, were consistently high and increasing in the GOM from 1996 through 1998. Yellowfin CPUEs in the GOM decreased slightly in 1999 and continued to decrease in 2000. In 2000 the highest yellowfin CPUE reported was in the MAB approximately 2.9 fish/100 hooks (Table 2c). The reported catch rates in the GOM in 2000 were approximately 1.1 fish/100 hooks (Table 2c).

Monthly reported CPUEs for swordfish, yellowfin, bigeye, and albacore from 1987 to 2000 are shown in Figures 5a -5d. The error bars represent ± 2 standard errors from the mean.

SWORDFISH STOCK STATUS

No new stock assessments for swordfish were conducted in 2001. However, some updated North and South Atlantic CPUE data were available. The available time series for the north stock continue to show signs of optimism as observed in 1999 and 2000. Recent improvements in recruitment have already manifested in several age classes and in the biomass index of some fisheries, and should allow for increases in spawning biomass in the future. Biomass at the beginning of 1999 was estimated to be 65% (range: 51 to 105%) of the biomass needed to

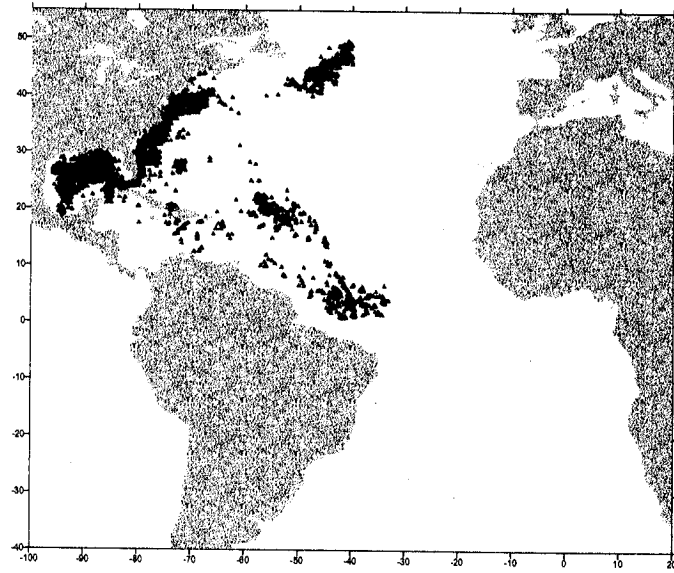


Figure 2. Location and density of reported longline effort in 1998.

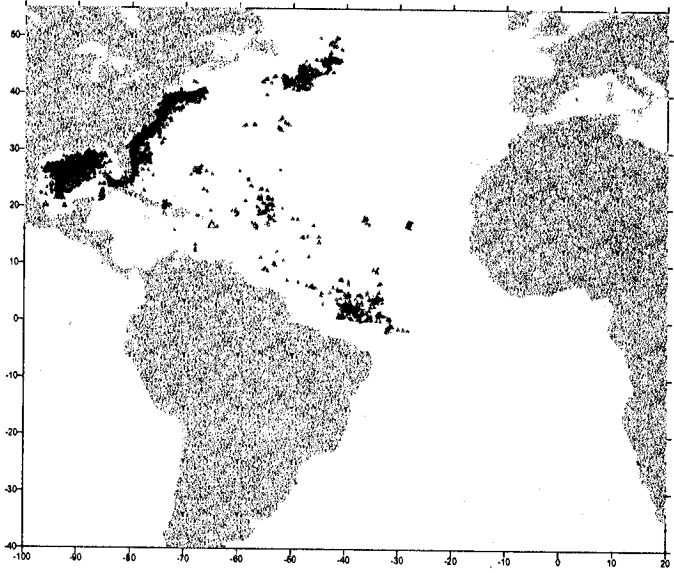


Figure 3. Location and density of reported longline effort in 1999.

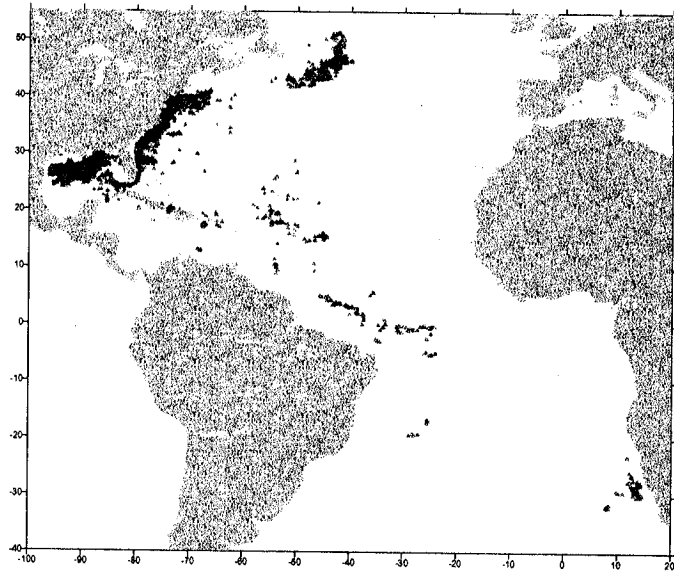
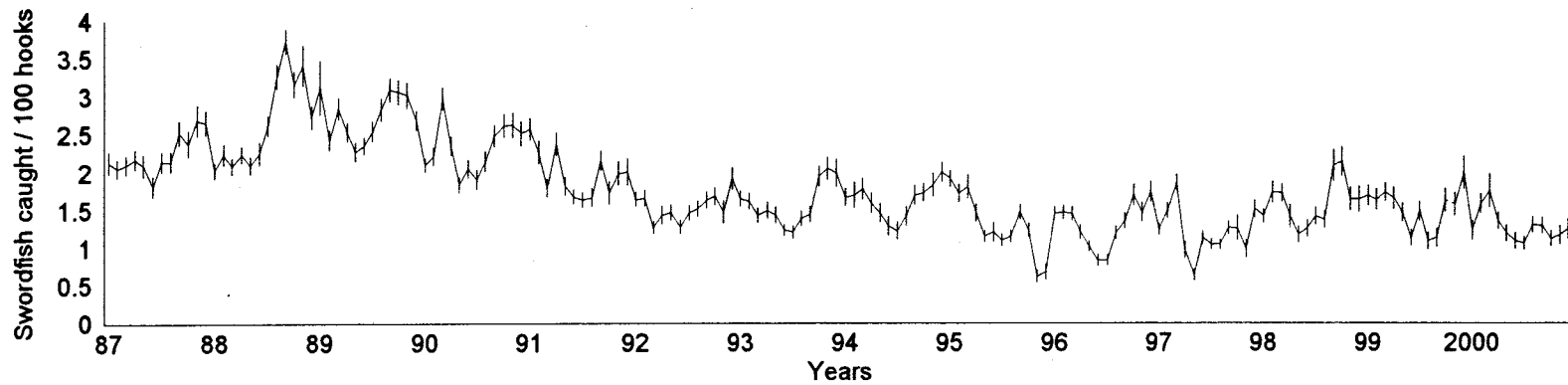
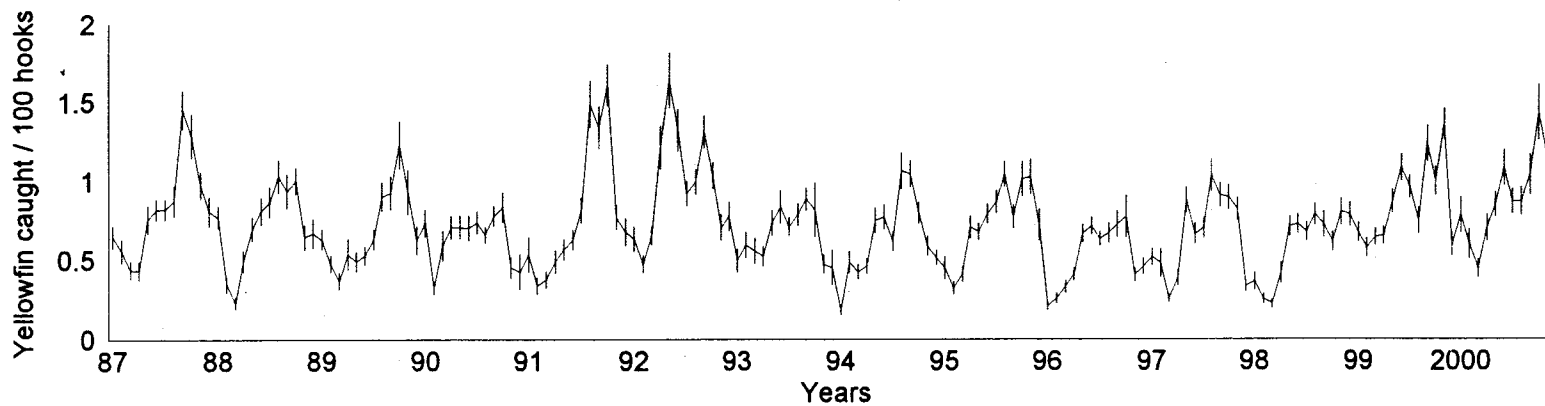


Figure 4. Location and density of reported longline effort in 2000.



**Figure 5a. Monthly Swordfish CPUE's
1987 - 2000**



**Figure 5b. Monthly Yellowfin CPUE's
1987 - 2000**

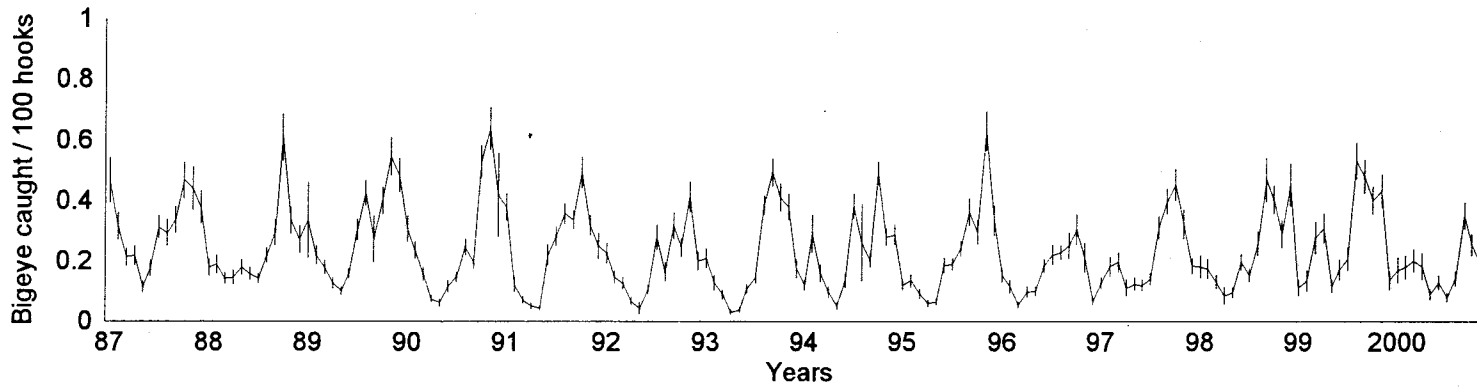


Figure 5c. Monthly Bigeye CPUE's
1987 - 2000

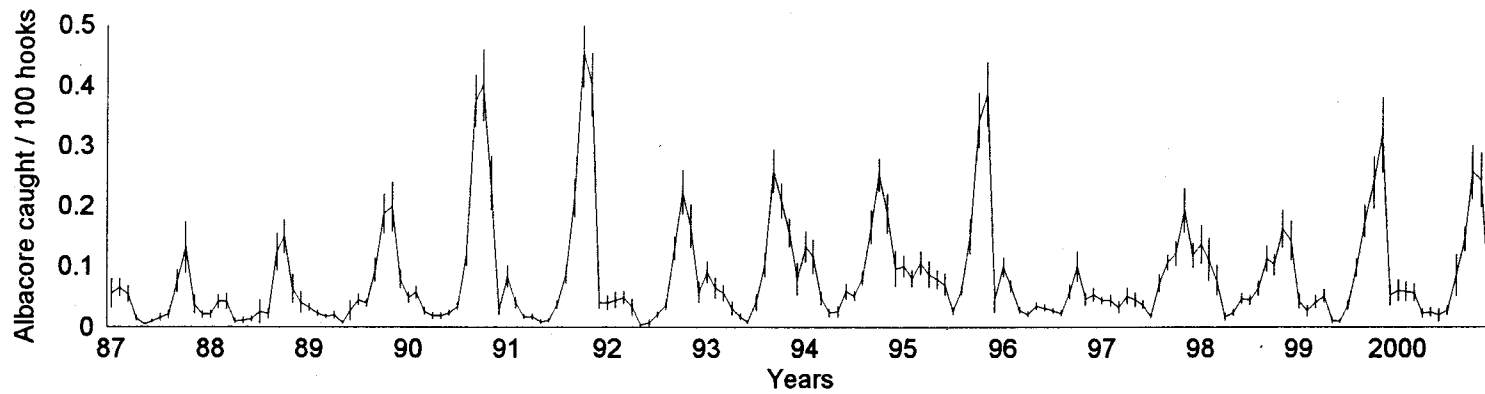


Figure 5d. Monthly Albacore CPUE's
1987 - 2000

produce MSY, and the 1998 fishing mortality rate was estimated to be 1.34 (range: 0.84 to 2.05) times the fishing mortality at MSY (Table 3). The replacement yield for the year 2000 was estimated to be about 11,720 MSY. Anticipated 2001 catches are expected to be close to replacement levels given the recent fishery performance and current regulations.

The status of the south Atlantic stock is more uncertain than the status of the north Atlantic stock due to the limitations of the indices of abundance and the absence of age and growth data. The one CPUE series examined for the South Atlantic was stable over the time series. Biomass at the beginning of 1999 was estimated to be 110% (range: 84% to 104%) of the biomass needed to produce MSY, and the 1998 fishing mortality rate was estimated to be 0.81 (range: 0.47 to 2.54) times the fishing mortality at MSY (Table 3).

ALBACORE STOCK STATUS

No new stock assessment for albacore tuna was conducted in 2001. Northern and Southern albacore stock assessments were conducted in 2000. A summary of the resource status from those assessments are shown in the Table 4.

The 2000 assessment of the North Atlantic albacore stock was consistent with previous assessments. Equilibrium yield analysis, made on the basis of an estimated relationship between stock size and recruitment, indicated that current stock biomass is about 30% below that associated with MSY. However, the equilibrium yield per recruit analysis did not indicate growth over fishing of this stock. ICCAT concluded that the northern stock is probably below B_{MSY} , but the possibility that it is above B_{MSY} could not be dismissed.

The South Atlantic albacore assessment indicated that the stock is not being over fished and that the recent (1997-2000) level for landings can probably be maintained into the near future without causing a substantial decline in spawning stock biomass. Estimated biomass levels were above those at MSY and fishing mortality levels were about 50% below F_{MSY} . These estimates were based on models that did not fit the data well. Therefore it is possible that current fishing mortality has been underestimated.

BIGEYE STOCK STATUS

No new stock assessment for bigeye tuna was conducted in 2001. A summary of the resource status of bigeye from the 1999 assessment is shown in the Table 5.

The outlook for this stock remains highly uncertain. While the Japanese longline index indicated some recovery beginning in 1999, the annual catches for 1998-2000 were still larger than the upper range of the MSY estimate. The 2000 catch was, however, the lowest since 1993 and new quotas are being applied for the major fishing countries.

YELLOWFIN STOCK STATUS

No new stock assessment for yellowfin tuna was conducted in 2001. A full assessment was conducted for yellowfin tuna in 2000. A summary of the assessment and updated yields are shown in the Table 6.

The 2000 production model analyses imply that although yellowfin tuna catches could be slightly lower than MSY levels, effort may be either above or below the MSY level depending on assumptions made about changes in fishing power. Consistent with the production model results, yield-per-recruit analyses also indicate that current (1999) fishing mortality rates could be above or about levels which produce MSY. Yield-per-recruit analyses further indicate 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. It is important to ensure that effective effort does not increase further.

MANDATORY REPORTING IN THE ATLANTIC LARGE PELAGIC FISHERY

Federal regulations require that both fishermen 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.

Fishermen Reporting.

All fishermen 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, fishermen 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 2000, an active permit for the large pelagic fishery was issued to 556 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.

As of July 1, 1999 access to swordfish permits was restricted to individuals qualifying on the basis of historic catch in the fishery. As of November 8, 2001, there are 522 active swordfish vessel permits, and of those, 209 are directed, 113 are incidental, and 100 are hand gear swordfish permits.

Numbers of Active Vessels.

A compilation of activity related to the vessels permitted during the period 1987 through 2000 is presented in Table 7. "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 2000, a Federal dealer permit was held by 385 dealers. Of this total, 111 dealers had their primary location in the Northeast Region and 190 dealers had their primary location in the Southeast Region, which includes the Caribbean. In addition, there were 84 dealers that are located in other areas of the United States that have been issued swordfish dealer permits because they import swordfish. 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 -2000 in the

North Atlantic may be found in Table 8. U.S. North Atlantic swordfish landings decreased each year from 1990 to 1994, increased somewhat in 1995, then decreased again from 1996 to 2000.

Monthly cumulative annual landings of U.S. swordfish in the North Atlantic are compared in Figure 6 for even years from 1992 to 2000. Yearly U.S. North Atlantic swordfish landings from 1994 to 2000 were lower than 1992 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.

SWORDFISH COMMERCIAL LANDINGS IN THE U.S NORTH ATLANTIC.

Year	1,000 lbs. Dressed wt.	1,000 lbs. Whole wt.
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
1998	5,061	6,731
1999	4,783	6,362
2000	4,720	6,278

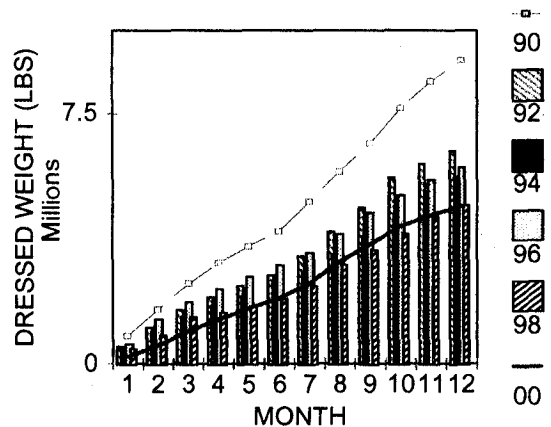


Figure 6. SWORDFISH LANDINGS IN THE NORTH ATLANTIC

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 12% in 1995, went up to 21% in 1998, and fell to 18% in 2000 (Table 10).

The within area percentage landed catch of fish less than 41 lbs decreased in most areas between 1991 and 1995, but increased from 1996 to 1998, and has declined in 1999 and 2000 (Table 10). The highest numbers of undersize fish landed in 2000 were from the SAB region (Tables 9, 10, & 11).

SWORDFISH SIZE FREQUENCY

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.

SWORDFISH < 41 LBS. DRESSED WEIGHT -

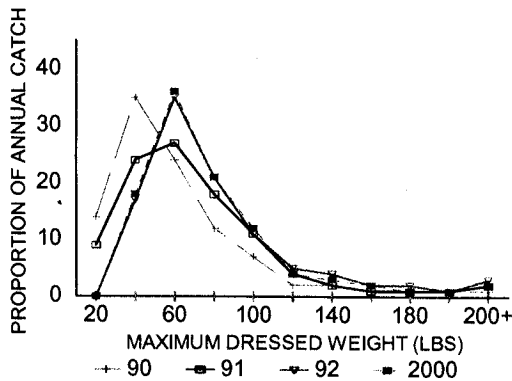


Figure 7. U.S. CATCH AT SIZE

PERCENT LANDED

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, but has increased since 1996 (Figure 8a). The initial decrease resulted from the minimum size measure put in place in mid 1991. The increase since 1996

is probably the result of lowering the minimum size from 41 lbs to approximately 33 lbs in mid 1996. The proportion of swordfish landed which were less than 33 lbs dressed weight is shown in Figure 8b. The percentage of landed fish below 33 lbs dressed weight were equal to 0.0% in each area in 1998, 1999 and 2000.

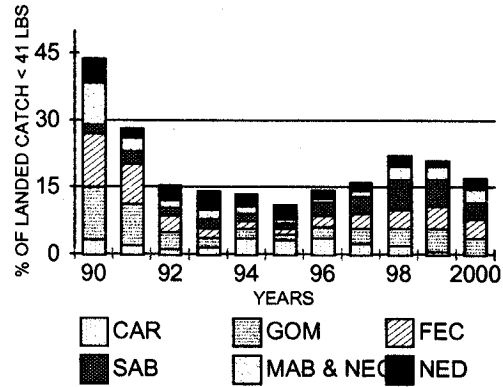


Figure 8a. SWORDFISH LANDED < 41 LBS

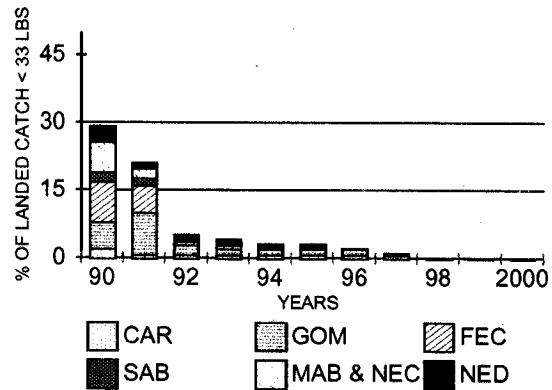


Figure 8b. SWORDFISH LANDED < 33 LBS

BYCATCH ESTIMATION

The 2000 observer and 2000 logbook records were used to estimate the number of discarded dead swordfish (36,902), blue marlin (1,064), white marlin (2,145), and sailfish (2,953), dusky sharks (539), silky sharks (3,005), hammerhead sharks (805), night sharks (4,100), coastal sharks (977), blue sharks (6,298) and pelagic sharks (1,196).

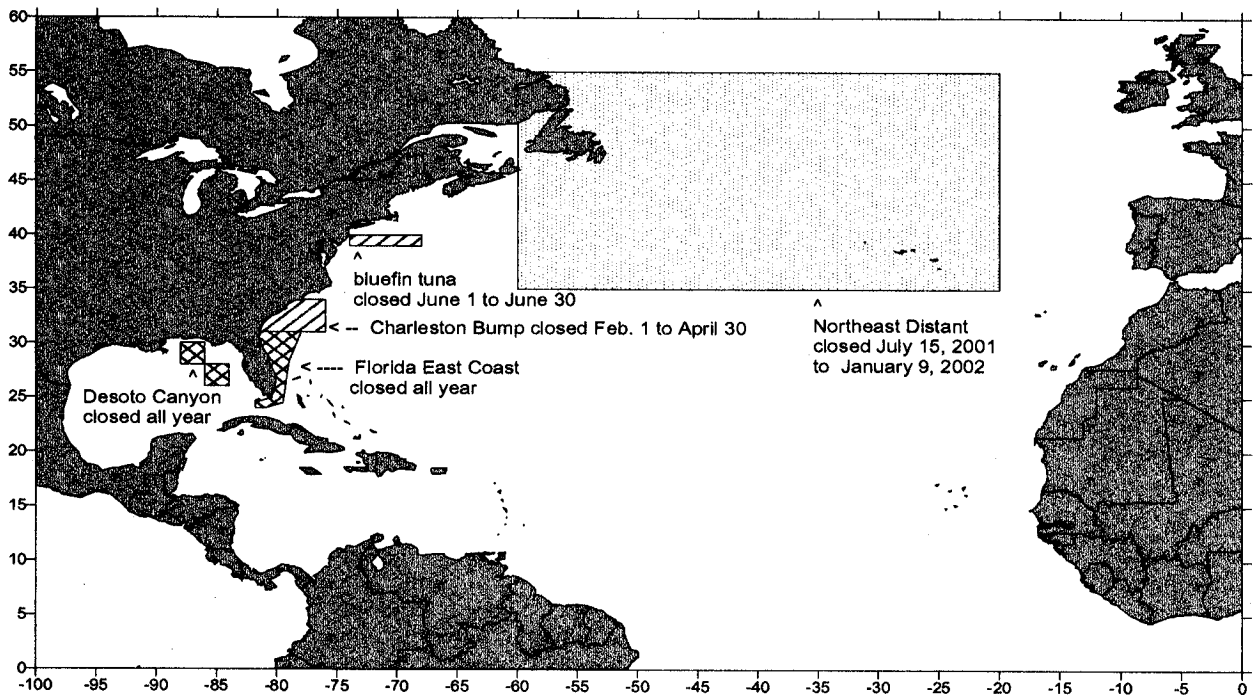


Figure 9. Atlantic pelagic longline fishery time area closures

REGULATIONS

Regulations affecting pelagic longline fishing for highly migratory species include: prohibition of the use of live bait on longline gear in the Gulf of Mexico, the requirement to have on board and use a dipnet and a line clipper to reduce mortality of captured sea turtles, and time area closures in the five areas as defined below (Figure 9).

The DeSoto Canyon area has been closed year-round since November 1, 2000. This area, composed of two squares offshore of the west coast of Florida, is defined as the area within the following coordinates: 30° 00' N. lat., 88° 00' W. long.; 30° 00' N. lat., 86° 00' W. long.; 28° 00' N. lat., 86° 00' W. long.; 28° 00' N. lat., 84° 00' W. long.; 26° 00' N. lat., 84° 00' W. long.; 26° 00' N. lat., 86° 00' W. long.; 28° 00' N. lat., 86° 00' W. long.; 28° 00' N. lat., 88° 00' W. long.; 30° 00' N. lat., 88° 00' W. long.

The East Florida Coast has been closed closed year-round since March 1, 2001. This area includes the Atlantic Ocean area seaward of the inner boundary of the U.S. EEZ from a point intersecting the inner boundary of the U.S. EEZ at 31° 00' N. lat. near Jekyll Island, Georgia, and proceeding due east to connect by straight lines the following coordinates in the

order stated: 31° 00' N. lat., 78° 00' W. long.; 28° 17' N. lat., 79° 12' W. long.; then proceeding along the outer boundary of the EEZ to the intersection of the EEZ with 24° 00' N. lat.; then proceeding due west to the following coordinates: 24° 00' N. lat., 81° 47' W. long.; then proceeding due north to intersect the inner boundary of the U.S. EEZ at 81° 47' W. long. near Key West, Florida. (The graphic representation of this area is approximate.)

The Charleston Bump area is closed every year from February 1 to April 30. This area includes the Atlantic Ocean area seaward of the inner boundary of the U.S. EEZ from a point intersecting the inner boundary of the U.S. EEZ at 34° 00' N. lat. near Wilmington Beach, North Carolina, and proceeding due east to connect by straight lines the following coordinates in the order stated: 34° 00' N. lat., 76° 00' W. long.; 31° 00' N. lat., 76° 00' W. long.; then proceeding due west to intersect the inner boundary of the U.S. EEZ at 31° 00' N. lat. near Jekyll Island, Georgia.

The bluefin tuna area is closed during the month of June as of June 1, 1999. This area is a rectangle bounded by the coordinates: 40° 00' N. lat., 68° 00' W. long.; 40° 00' N. lat., 74° 00' W. long.; 39° 00' N. lat., 74° 00' W. long., and 39° 00' N. lat., 68° 00' W. long.

The Northeast Distant area is closed from July 15, 2001 to January 9, 2002. "The emergency rule implementing this closure is based on the Reasonable and Prudent Alternative outlined in the June 2110 Biological Opinion (Biop). The Biop concluded that the Atlantic pelagic longline fishery is likely to jeopardize the continued existence of the leatherback and loggerhead turtles." This area is bounded by the following coordinates: 35° 00' N. lat., 60° 00' W. long.; 55° 00' N. lat., 60° 00' W. long.; 55° 00' N. lat., 20° 00' W. long., 35° 00' N. lat., 20° 00' W. long.

TAGGING HIGHLIGHTS².

During 2000 a total of 72 swordfish were tagged and released by NMFS, Cooperative Tagging Center (CTC) participants. Of the 72 releases, 10 fish were recaptured and reported to the CTC during 2000. There were 50 fish tagged and released using longline gear and 22 fish were tagged and released by rod and reel. Eight of the ten swordfish recaptures were recovered using longline gear. Rod and reel was used to recapture one fish and one fish return did not have its gear reported. The longest time at large for a tagged swordfish recaptured in 2000 was 2,674 days. This fish was released on 5/14/93 off Daytona Beach, Florida (29° 14' N 79° 56' W) and recaptured on 9/8/00, fifteen miles east of Dania Beach, Florida (26° 00' N 80° 00' W).

There were many significant billfish recaptures reported in 2000. Four white marlins were recaptured during 2000. Two of these fish exhibited interesting movement. One fish was released on 3/9/92 east of the island of Dominica (15° 20' N 50° 20' W) in the West Indies. This white marlin was recaptured eight years later in the Hell Hole (42° 30' N 64° 40' W) off Canada. Another white marlin was released near Norfolk Canyon (37° 19' N 74° 28' W) and retrieved four months later by gill net off La Guaira, Venezuela (11° 00' N 66° 50' W). The longest reported sailfish movement (i.e. minimum straight distance traveled) was from a fish released off Juno Beach, Florida (26° 50' N 80° 00' W) and recaptured 689 days later off Oregon Inlet, North Carolina (35° 50' N 75° 30' W). The longest distance traveled for a

blue marlin recaptured in 2000 was by a fish released near the Southwest Shoal (40° 10' N 70° 17' W) on 7/13/99 and recaptured less than seven months later on 2/1/00 off Chub Cay, Bahamas (25° 24' N 78° 06' W).

Twenty-nine tagged bluefin tuna were recaptured during 2000. During the month of May, two of these fish were recaptured by purse seine vessel near the Balearic Islands (39° 30' N 03° 00' E) in the Mediterranean Sea. These present the longest reported movements. One fish was released on 2/2/97 off Hatteras, North Carolina (35° 50' N 75° 30' W) the other was released off Portsmouth, New Hampshire (43° 10' N 69° 30' W) on 7/25/94.

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.

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. 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.

Of the 178,512 fish and protected species recorded by POP observers from 1992-2001 and summarized in various species groups, (Figure 10), swordfish was the most frequently caught (28%).

²Section provided by David Rosenthal, Southeast Fisheries Center Cooperative Tagging Center

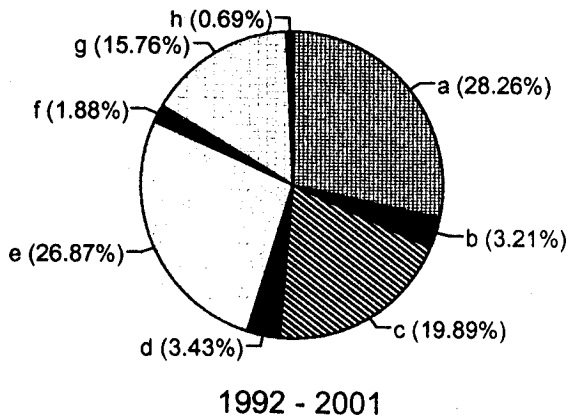


Figure 10. Catch reported by scientific observers on U.S. longline vessels: swordfish (a); billfish (b); yellowfin, bigeye and bluefin tuna (c); other tunas (d); sharks and rays (e); unknown species (f); finfish (g); marine turtles, marine mammals, and birds (h).

INSTRUCTIONS FOR USING THE PELAGIC LOGBOOKS FOR 2002

Samples of forms and directions for filling out forms are presented in Figures 12 - 17. There are 4 forms used for pelagic logbook reports in 2002: (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 every 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 BISCAIYNE, FLORIDA 33149-9916

If there are questions 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 2002 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 2002 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.

FIGURE 12. INSTRUCTIONS FOR PELAGIC LOGBOOK TRIP SUMMARY FORMS

Please use a ballpoint pen and print clearly to record the following:

- Vessel No.: U.S. Coast Guard vessel identification number or state registration number as recorded on permit
- Vessel Name
- Contact Name and Telephone: Printed name and telephone number of the person completing the form
- Captain Signature and Name: signature of the person completing the form (normally, this should be the captain for the trip)
- Port & State of Departure: location of port from which the trip commenced
- Port & State of Landing: location of port that vessel arrived in
- Number of Crew Members: number of persons paid as crew (excluding captain)
- Dealer Name(s): list of names of dealers purchasing the harvest
- Date of Departure: calendar date (mm/dd/2002) on which the trip was started
- Date of First Set: calendar date (mm/dd/2002) of first set made on trip
- Date of Last Set: calendar date (mm/dd/2002) of last set made on trip
- Trip ticket number – For States that require trip tickets, please include the ticket # from your sales receipt.
- Number of Sets Placed: number of times the fishing gear was set during the trip
- Number of Days Fished: number of days that the fishing gear was used
- Date of Landing: the date the vessel arrived back at port. This can be different from the offloading date.
- First Day Offload: calendar date (mm/dd/2002) that vessel began offloading fish
- Federal Dealer Permit Number(s)

The trip expense and payment data are not mandatory unless your vessel has been selected and you have been notified in writing by NMFS that this information is required of you. Vessels not selected are encouraged to supply the information on a voluntary basis.

- Fuel: price per gallon paid for fuel used during trip. (*If you did not refuel for the trip, record price paid when fuel was last purchased.*); indicate gallons actually used during the trip. (*Exclude fuel purchased but not used.*)
- Bait: record amount of bait used during trip by count or pounds and total cost of bait purchased
- Light sticks: price per light stick; number of light sticks used during trip (*If a light stick was re-used, only count it once.*)
- Ice: indicate unit size of ice purchased; price per unit; and the number of units purchased.
- Grocery expense
- Total Shared Costs: Record the sum of all costs incurred for this trip that are subtracted from gross revenues prior to calculating crew share payments, **including** (*estimated*) shared gear, repair and maintenance costs. If vessel does not use crew shares, record zero.
- Other Trip Costs: other costs incurred for this trip **excluding** items listed elsewhere on this trip summary form. For example, include docking/offloading fees (if separate from broker fee), crew travel/lodging, fishing supplies.

Crew Shares: If you did not use crew share system on a trip, then calculate payments as percentage of (*estimated*) gross revenues.

- Owner Crew Share: Percentage of net revenue (gross revenue less total shared costs) paid to owner.
- Captain Share: Percentage of net revenue paid to captain.
- Crew Share: Average share (percentage of net revenue) paid to crew, excluding captain.
- Broker/Dealer Selling Expense or Broker/Dealer Percentage: Report either the (*estimated*) broker/dealer fee or the percentage of gross revenue charged by the broker. (*If catch is sold to multiple brokers/dealers, please report for broker/dealer handling majority of catch or report the average charged across brokers/dealers.*)
- Captain License Number: Record license number and issuing state.

Use **BLACK** Ink Only !

OMB 0648-0371 Exp 3/31/2002

2002 ATLANTIC HIGHLY MIGRATORY SPECIES TRIP SUMMARY FORM

<i>NMFS</i> USE Only	Received Date	Schedule #
		202006151

Vessel No: _____
 Vessel Name: _____
 Contact Phone Number (____) _____ - _____
 Contact Name (Please Print) _____

	Month	Day	Year
Date of Departure	<input type="text"/>	<input type="text"/>	/ 2002
Date of First Set	<input type="text"/>	<input type="text"/>	/ 2002
Date of Last Set	<input type="text"/>	<input type="text"/>	/ 2002

I certify the information contained on this form is accurate and complete to the best of my knowledge.

Captain Signature: _____
 Captain Name (Please Print) _____

State Trip Ticket #: _____

Port & State Departure: _____

Number of Sets

Number of Fishing Days

Port & State of Landing: _____

	Month	Day	Year
Date of Landing:	<input type="text"/>	<input type="text"/>	/ 2002

Number of Crew Members (excluding captain)

	Month	Day	Year
First Day Offload:	<input type="text"/>	<input type="text"/>	/ 2002

Dealer Names: _____

Federal Dealer Permit No. -

-

-

FIGURE 14. 2002 PELAGIC LOGBOOK - VOLUNTARY TRIP EXPENSE & PAYMENT SUMMARY

TRIP EXPENSE & PAYMENT SUMMARY

UNIT COST		QUANTITIES USED	
Fuel	Price per gallon \$ <input type="text"/> . <input type="text"/> <input type="text"/>	Gallons used	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Bait Usage: Pounds	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	AND/OR Count	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
		Trip bait cost \$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Light Sticks	Price per stick \$ <input type="text"/> . <input type="text"/> <input type="text"/>	Light Sticks used	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Ice	Unit: Tons <input type="text"/> Blocks <input type="text"/> Pounds <input type="text"/>	Price per unit \$	<input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/>
		Quantity	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Grocery Expense		\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/>
Total Shared Costs <i>(includes only those costs subtracted from gross revenues to calculate crew payments. See instructions.)</i>		\$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/>
Other Trip Costs <i>(Other costs incurred on this trip excluding items listed elsewhere on this trip summary form. See instructions.)</i>			<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/>

Crew Share	Owner	<input type="text"/> <input type="text"/> <input type="text"/>	Share	%
	Captain	<input type="text"/> <input type="text"/> <input type="text"/>		%
	Crew (average)	<input type="text"/> <input type="text"/> <input type="text"/>		%
Broker/Selling Expense \$	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	OR Broker Percentage	<input type="text"/> <input type="text"/> %	By Weight <input type="text"/> Revenue <input type="text"/>
Captain License Number				State <input type="text"/> <input type="text"/>

FIGURE 15. INSTRUCTIONS FOR PELAGIC LOGBOOK SET FORM

Please use a separate log sheet for each set. If using a gear that is not fished in sets, use one sheet for each day of fishing.

Signature, each set form must be signed by the captain or a person responsible for maintaining the records for the vessel.

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 and minutes 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 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. For the Est. Lbs Kept., write down the estimated dressed weight in pounds of fish kept for each species. For catches of species not listed on the form, print the species name in the blank spaces and record the appropriate catch information.

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.

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

NO FISHING REPORTING 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 **Blackink**

- Atlantic Highly Migratory Species (swordfish/tunas)
- South Atlantic Snapper-Grouper
- Gulf of Mexico Reef Fish
- Shark
- King Mackerel
- Spanish Mackerel

Signature _____ Phone () _____ - _____



MAIL THIS COPY TO NMFS LOGBOOK PROGRAM, MIAMI FL



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) 1998, (b) 1999 and (c)2000 (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.)

1a. 1998

Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	HOOKS	BOATS
CAR	5269	319	386	1	205	118	156	38	293046	30
GOM	12684	37953	415	174	82	419	566	445	2992684	98
FEC	14206	996	2916	54	742	200	246	183	648972	68
SAB	19974	1656	92	16	93	126	130	108	708225	53
MAB	8275	8451	6592	934	3905	166	25	8	1221940	64
NEC	5921	4691	5415	312	1512	146	44	4	859309	40
NED	15677	96	1552	27	103	18	3	1	503579	15
SAR	159	29	219	24	278	10	0	0	22045	9
NCA	4495	150	278	3	332	112	46	3	246517	12
TUN	1117	722	784	0	97	138	58	30	104741	12
TUS	4431	956	656	0	31	42	29	26	174525	11
TOTAL	92208	56019	19305	1545	7380	1495	1303	846	7775583	210

1b. 1999

Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	HOOKS	BOATS
CAR	3220	116	250	2	120	166	60	32	158340	18
GOM	13080	60636	811	324	107	670	703	882	3577412	92
FEC	16854	1589	2767	63	496	229	198	292	709503	53
SAB	19711	5678	118	14	47	148	143	166	764908	45
MAB	7896	13496	11433	202	5696	370	51	3	1271713	68
NEC	4408	3962	4768	203	1448	338	51	0	587225	39
NED	13877	13	1063	54	116	16	3	0	338719	10
SAR	208	162	45	4	49	10	1	4	17795	3
NCA	2253	76	172	0	151	15	3	1	116331	9
TUN	568	302	282	0	13	5	5	0	41241	9
TUS	5099	547	1685	0	42	13	38	32	189520	8
TOTAL	87174	86577	23394	866	8285	1980	1256	1412	7772707	195

1c. 2000

Area	SWD	YFT	BET	BFT	ALB	WHM	BUM	SAI	HOOKS	BOATS
CAR	4996	193	285	2	157	82	72	7	244829	18
GOM	14533	41280	867	474	131	584	841	355	3490005	79
FEC	12325	1513	3175	47	627	210	255	230	687050	52
SAB	13198	3090	93	15	121	128	135	84	797504	46
MAB	6629	21090	3147	267	4493	108	27	13	1018230	59
NEC	5343	3423	2364	115	1652	62	19	0	608503	36
NED	17162	67	1670	43	189	4	0	0	543699	13
SAR	49	33	4	0	18	0	0	0	7567	5
NCA	1811	104	125	1	169	60	64	0	80218	6
TUN	106	149	121	0	10	3	14	4	17695	5
TUS	1396	365	815	0	29	5	12	14	74315	3
TOTAL	77548	71307	12666	964	7596	1246	1439	707	7569615	174

Table 2. YEARLY TABULATIONS FOR SWORDFISH AND YELLOWFIN TUNA FOR (a) 1998, (b) 1999 AND (c) 2000 (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.

2a. 1998		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	292546	536	5259	81	10	7	1.90334	319	92	2	5	0.10154
GOM	2863022	3860	11953	72	15	11	0.59616	32765	97	1	1	1.46315
FEC	634203	1804	13842	65	19	14	2.88277	992	93	0	5	0.12639
SAB	737563	1419	19979	71	15	12	3.23456	1656	92	1	6	0.20142
MAB	1222291	1766	7933	62	17	19	0.671281	8562	94	1	3	2.79105
NEC	859309	1037	5894	69	16	14	0.67154	4658	97	0	1	0.54161
NED	501679	616	15638	85	7	7	3.21384	96	96	0	3	0.01878
SAR	22045	36	159	86	3	10	0.74031	29	100	0	0	0.09799
NCA	240837	315	4378	93	3	3	1.90652	137	97	0	1	0.0644
TUN	104741	126	1117	79	11	9	1.09164	722	97	1	1	0.69460
TUS	174525	221	4431	91	4	3	2.61829	956	96	0	3	0.53786
TOTAL	7652761	11736	90583	74	13	11	1.6099	50892	96	1	2	1.01810

2b. 1999			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	155340	275	3212	82	11	6	2.20071	116	77	16	6	0.07947
GOM	3440700	4585	11781	69	18	12	0.46056	48083	97	1	0	1.36888
FEC	708923	2034	16799	73	14	12	2.91370	1567	95	1	3	0.19232
SAB	818018	1452	19681	75	13	11	2.75496	5663	95	1	3	0.73120
MAB	1301275	1855	7855	62	18	18	0.66848	13439	96	0	2	1.25871
NEC	587225	733	4380	72	13	13	0.78260	3942	84	3	12	0.68795
NED	338719	408	13874	86	6	6	4.08161	13	100	0	0	0.00432
SAR	16795	22	208	82	11	6	1.25121	2	100	0	0	0.01264
NCA	116331	156	2218	89	5	4	1.99336	76	86	0	13	0.06834
TUN	41241	52	568	81	9	9	1.34807	302	100	0	0	0.69767
TUS	189520	233	5099	91	4	4	2.83218	547	98	0	0	0.29806
TOTAL	7714087	11805	85675	76	12	10	1.45625	73750	96	1	2	0.90713

2c. 2000			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	244829	410	4985	92	3	4	2.14656	193	97	1	1	0.07361
GOM	3502155	4582	14489	66	19	13	0.58837	41160	97	1	1	1.14603
FEC	687050	1956	12313	76	13	10	2.22068	1513	96	0	2	0.17640
SAB	869024	1343	13153	78	10	10	1.82302	3084	62	3	4	0.37328
MAB	1064617	1662	6606	65	21	13	0.65235	21006	98	1	0	2.90015
NEC	608503	742	5298	81	8	10	0.88844	3401	98	0	0	0.56495
NED	543699	603	17162	87	6	6	3.14718	67	97	0	2	0.01242
SAR	7567	10	49	91	2	6	0.62696	33	100	0	0	0.41224
NCA	80218	125	1800	91	5	3	2.58540	99	100	0	0	0.10060
TUN	17695	21	106	83	3	12	0.56510	149	97	0	2	0.86199
TUS	74315	84	1386	84	6	8	1.88964	360	99	0	0	0.47023
TOTAL	7699672	11538	77347	78	11	9	1.25751	71065	97	1	1	0.99226

Table 3. ATLANTIC SWORDFISH RESOURCE STATUS SUMMARY

	North Atlantic	South Atlantic
Maximum Sustainable Yield ¹	13,370(7,625-15,900MT) ⁴	13,650 MT (5,028-19,580MT)
Current (2000) Yield	11,210 MT	14,340 MT
Current (2000) Replacement Yield ²	11,720 MT (6,456-15,040 MT)	14,800 MT (5,328-16,240 MT)
Relative Biomass(B_{1999}/B_{msy}) ¹	0.65 (0.51-1.05 MT)	1.10 (0.84-1.40)
Relative Fishing Mortality:		
F_{1998}/F_{MSY} ¹	1.34 (0.84-2.05)	0.81 (0.47-2.54)
F_{1998}/F_{max} ³	1.60 (1.52-1.68)	not estimated ⁵
$F_{1998}/F_{0.1}$ ³	3.52 (3.44-3.70)	not estimated ⁵
Management Measures in Effect	125/119 cm LJFL minimum size; Country-specific quotas	125/119 cm LJFL minimum size; Country-specific quotas

¹ Base case production model results based on catch data 1950-1998

² For next fishing year

³ Base case sex-specific SPA results based on catch data 1978-1998; Statistics computed based on females only.

⁴ 80% confidence intervals are shown

⁵ Production model results do not provide basis for these estimates

Table 4. ATLANTIC AND MEDITERRANEAN ALBACORE RESOURCE STATUS SUMMARY

	North Atlantic ¹	South Atlantic ²	Mediterranean
Maximum Sustainable Yield	32,600(32,400-33,100)	30,200 (50-31,400)	Unknown
Current (2000) Yield	33,134	26,310	Uncertain
Current (2000) Replacement Yield	Not Estimated	29,200 (12,100-31,400)	Not Estimated
Relative Biomass			
B_{1999}/B_{MSY}	0.68 (0.52-0.86)	1.60 (0.01-1.98)	Not Estimated
Relative Fishing Mortality ³			
F_{1999}/F_{MSY}	1.10 (0.99-1.30)	0.57 (0.34-556)	Not Estimated
F_{1999}/F_{max}	0.71 (0.66-0.78)	0.31 (0.28-0.33)	Not Estimated
$F_{1999}/F_{0.1}$	1.25 (1.14-1.39)	0.84 (0.74-0.89)	Not Estimated
Management Measures in Effect	Limit number of vessels to average number 1993- 1995	Limit catches to 29,200 MT	None

¹ VPA results based on catch data (1975-1999). 80% confidence intervals from bootstrap.

² ASPM results based on catch data (1956-1999). 80% confidence intervals from bootstrap.

³ $F_{99} = (F_{current})$ North Atlantic Geometric Mean 1996-1998. South Atlantic, Geometric Mean 1994-1996

Table 5. BIGEYE TUNA RESOURCE STATUS SUMMARY

Maximum Sustainable Yield (likely range)	79,000-94,000 MT*
Current (2000) Yield	98,608MT
Current (1998) Replacement Yield**	72,000-85,000 MT***
Relative Biomass(B_{1998}/B_{msy}) **	0.57 - 0.63****
Relative Fishing Mortality: F_{1998}/F_{MSY} **	1.50-1.82***
$F_{0.1}$ ***	0.22
F_{max} ***	0.35
Management Measures in Effect	<ul style="list-style-type: none"> - 3.2 kg minimum size - 25% of FADs fishing vessels and 5% others to be covered with observers -Provide a list of vessels (>80 GRT) fishing Atlantic bigeye. -Limit on number (associated with GRT) of Atlantic BET fishing vessels (>24 m LOA) to average number in 1991-1992. Not applicable to countries catching less than 2,000 MT average over recent five years. -Provide a list of vessels (> 24 m LOA) fishing Atlantic BET by August 31. -Limit number of Chinese Taipei BET fishing vessels to 125. -Catch limit (16,500 MT) for Chinese Taipei. -Moratorium on FAD fishing, Nov. 1 to Jan 31 in eastern tropical area. -Limit catch to the average of the catch of 1991 and 1992 for those whose reported 1999 catch was larger than 2,100 MT. -Limit number of fishing vessels fro Philippines to five.

- * This range is representative of MSY ranges predicted by the non-equilibrium production model and equilibrium production model.
- ** Non-equilibrium production model estimate
- *** These area ranges of point estimates obtained and no confidence limits are given.
- **** Yield-per-recruit estimate based on the 1998 selectivity pattern

Table 6. YELLOWFIN TUNA RESOURCE STATUS SUMMARY

Maximum Sustainable Yield (MSY) ^{1,3}	144.6-152.2
Current (2000) Yield	135.2
Current (1999) Replacement Yield	may be close to current yield
Relative Biomass(B_{1999}/B_{msy}) ^{2,3}	103%
Relative Fishing Mortality (F_{1999}/F_{MSY}) ^{1,3}	88-116%
Management Measures in Effect	<ul style="list-style-type: none"> 3.2 kg minimum size Effective effort not to exceed 1992 level

¹ These are ranges of point estimates and no confidence limits are given.

² No estimate of uncertainty was calculated around this point estimate during the assessment. Point estimates during the 1998 assessment ranged from 92-135%

³ Result from 2000 SCRS

Table 7. NUMBERS OF ACTIVE VESSELS

YEAR	FISHED	CAUGHT SWORDFISH	CAUGHT SWORDFISH IN 5 MONTHS	HOOKS REPORTED
1987	297	273	180	6,557,776
1988	387	337	210	7,010,008
1989	455	415	250	7,929,927
1990	416	362	209	7,495,419
1991	333	303	175	7,746,837
1992	337	302	183	9,056,908
1993	434	306	175	9,721,036
1994	501	306	176	11,270,632
1995	489	314	198	10,976,048
1996	367	276	189	10,213,223
1997	350	264	167	10,212,823
1998	286	231	134	7,886,088
1999	224	199	140	7,768,790
2000	199	181	129	7,876,642

Table 8. MONTHLY NORTH ATLANTIC ESTIMATED COMMERCIAL SWORDFISH LANDINGS IN LBS DRESSED WEIGHT FROM 1991 TO 2000.

YEAR	MONTH					
	JAN	FEB	MAR	APR	MAY	JUN
1991	613,177	619,188	554,422	465,789	416,747	432,630
1992	514,101	575,942	520,099	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
1998	456,681	541,023	547,553	145,441	170,875	285,073
1999	315,097	391,668	467,724	327,471	324,915	364,551
2000	208,729	353,898	406,805	367,792	318,839	310,434

YEAR	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
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	6,383,014
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
1998	355,779	713,691	460,237	505,809	500,340	378,625	5,061,127
1999	395,564	520,769	436,360	351,722	540,324	347,315	4,783,480
2000	447,465	635,918	525,254	540,394	335,448	269,125	4,720,101

Table 9. 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	32	21	11	14	2	3	16
1997	30	19	13	11	4	5	18
1998	19	14	14	20	7	7	19
1999	13	16	19	22	8	4	18
2000	11	17	16	16	8	7	25

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

Table 10. 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
1998	2	3	4	7	2	2	2	21
1999	1	3	5	6	2	1	1	19
2000	1	3	4	4	2	1	2	18

1. CAR includes SAR, NCA, T3UN, and TUS

Table 11. 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	20	24	21	19	10	9
1997	8	22	26	30	21	13	8
1998	8	21	29	35	25	22	13
1999	7	18	25	28	28	18	6
2000	8	20	24	28	25	21	9

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