U.S. National Report to ICCAT, 2003

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1. NATIONAL FISHERIES INFORMATION

Total (preliminary) reported U.S. catch of tuna and tuna-like fishes (including swordfish, but excluding other billfishes) in 2002 was 17,793 MT, a decrease of about 28% from 26,384 MT in 2001. However, reported U.S. catches of king mackerel and spanish mackerel include only estimates for the period January-April and January-May, 2002, respectively. Estimated swordfish catch (including estimated dead discards) increased 39 MT to 2,715 MT, and provisional landings from the U.S. fishery for yellowfin in the Gulf of Mexico increased in 2002 to 2,333 MT from 2,045 MT in 2001. The estimated 2002 Gulf of Mexico landings of yellowfin tuna accounted for about 40% of the estimated total U.S. yellowfin landings in 2002. U.S. vessels fishing in the northwest Atlantic landed an estimated 1,913 MT of bluefin, an increase of 299 MT compared to 2001. Provisional skipjack landings increased by 21 MT to 90 MT from 2001 to 2002, estimated bigeye landings decreased by 529 MT compared to 2001 to an estimated 575 MT in 2002, and estimated albacore landings increased from 2001 to 2002 by 175 MT to 499 MT.

2. STATISTICS AND RESEARCH

In addition to monitoring landings and size of swordfish, bluefin tuna, yellowfin tuna, billfish, and other large pelagic species through continued port and tournament sampling, logbook and dealer reporting procedures, and scientific observer sampling of the U.S. fleet, major research activities in 2002 and 2003 focused on several items. Research on development of methodologies to identify genetically discrete populations of large pelagic fishes in the Atlantic was continued as were larval surveys for bluefin tuna and other large pelagics in the Gulf of Mexico. Research on development of robust estimation techniques for population analyses and on approaches for characterization of uncertainty in assessments and methods for translating that uncertainty into risk levels associated with alternative management approaches was further conducted. U.S. scientists also continued to coordinate efforts for the ICCAT Enhanced Research Program for Billfish and for the Bluefin Year Program. Participants in the Southeast Fisheries Science Center's Cooperative Tagging Center (CTC) and the Billfish Foundation tagging program tagged and released 8,489 billfishes (swordfish, marlins, sailfish, and spearfish) and 664 tunas in 2002. This represents an increase of 9% for billfish and a 34% increase for tunas from 2001 levels. Electronic tagging studies of bluefin tuna and of marlins were substantially enhanced. Cooperative research was conducted with scientists from other nations on development of assessment methodologies, on biological investigations and on development of indices of abundance for species of concern to ICCAT.

2.1 Fisheries Statistics

2.1.1 Tropical Tuna Fishery Statistics

Yellowfin Tuna. Yellowfin is the principal species of tropical tuna landed by U.S. fisheries in the western North Atlantic. Total estimated landings decreased to 5,845 MT in 2002, from the 2001 landings estimate of 6,703 MT (Appendix Table 2.1-YFT). The 2002 estimate is considered provisional and may change owing to incorporation of late reports of commercial catches as they become available and to possible revisions in estimates of rod & reel catches made by recreational anglers. A high proportion of the landings were due to estimated rod & reel catches of recreational anglers in the NW Atlantic (2,878 MT). Estimates of U.S. recreational harvests for tuna and tuna-like species continue to be reviewed. Therefore future revisions of these estimates may be necessary. Nominal catch rate information from logbook reports (longline catch per 1,000 hooks) for yellowfin by general fishing areas is shown in Appendix Figure 2.1-YFT.

Skipjack Tuna. Skipjack tuna also are caught by U.S. vessels in the western North Atlantic. Total reported skipjack landings (preliminary) increased from 69 MT in 2001 to 90 MT in 2002 (Appendix Table 2.1-SKJ). The largest increase in catch was in the estimates for the recreational fishery in the Caribbean (Area 93). Estimates of recreational harvests of skipjack continue to be reviewed and could be revised again in the future. Appendix Figure 2.1-SKJ presents nominal catch rate information (longline catch per 1,000 hooks) based on fishing logbook reports.

Bigeye Tuna. The other large tropical tuna reported in catches by U.S. vessels in the western North Atlantic is bigeye tuna. Total reported catches and landings (preliminary) for 2002 decreased by 52% from 1104 MT in 2001 to 575 MT (Appendix Table 2.1-BET). Note that like yellowfin, the estimates of rod & reel catch are considered provisional and may be revised based on results of a future review of recreational harvest estimates. Appendix Figure 2.1-BET presents nominal catch rate information (longline catch per 1,000 hooks) based on fishing logbook reports.

2.1.2 Temperate Tuna Fishery Statistics

Bluefin Tuna. The U.S. bluefin fishery continues to be regulated by quotas, seasons, gear restrictions, limits on catches per trip, and size limits. To varying degrees, these regulations are designed to restrict total U.S. landings and to conform to ICCAT recommendations. U.S. vessels fishing in the northwest Atlantic (including the Gulf of Mexico) in 2002 landed an estimated 1,875 MT of bluefin tuna. Those estimated landings represent an increase of 292 MT from the 2001 landings. The 2002 landings by gear were: 208 MT by purse seine, 55 MT by harpoon, 4 MT by handline, 50 MT by longline (of which 20 33 MT were from the Gulf of Mexico), 1,557 MT by rod and reel (of which, 548 MT was the preliminary estimate for bluefin less than 145cm SFL from off the northeastern U.S.).

Regulations limit the allowable catch of small fish by U.S. fishermen in conformity with ICCAT recommendations. The preliminary landing estimates for the 2002 rod and reel fishery off the northeastern U.S. (including the North Carolina winter fishery) for fish < 66 cm were 559 fish totaling 2 MT; estimates for fish between 66-114 cm were 13,245 fish totaling 168 MT. Regulations also prohibit the sale of fish less than 178 cm; an estimated 1926 fish 145-177 cm (122 MT) were primarily landed by recreational anglers using rod and reel. For longline gear, logbook tallies of dead discarded bluefin for 2002 amount to 301 fish which were estimated to weigh 38 MT.

Albacore. Albacore are landed by U.S. vessels; however, historically, albacore has not been a main focus of the U.S. commercial tuna fisheries operating in the North Atlantic. Reported commercial catches were relatively low prior to 1986; however, these catches increased substantially and have remained at higher levels throughout the 1990s, with nearly all of the production coming from the northeastern U.S. coast. Caribbean landings increased in 1995 to make up over 14% of the total, but U.S.

landings from the Caribbean have remained below 4% of the total each year during 1996-2002. Nominal catch rate information from U.S. longline logbook reports are shown in Appendix Figure 2.1-ALB. Estimated total catches of albacore were 499 MT in 2002, an increase of 175 MT from 2001 which was primarily due to an increase in estimated rod and reel catches from 122 MT in 2001 to 342 MT in 2002 (Appendix Table 2.2-ALB).

2.1.3 Swordfish Fishery Statistics

For 2002 the provisional estimate of U.S. vessel landings and longline dead discards of swordfish was 2,709 MT (Appendix Table 2.3-SWO). This estimate is larger than the estimate of 2,656 MT for 2001. The provisional landings, excluding discard estimates, by ICCAT area for 2002 (compared to 2001) were: 556MT (426 MT) from the Gulf of Mexico (Area 91); 1,187 MT (1,040MT) from the northwest Atlantic (Area 92); 325 MT (347 MT) from the Caribbean Sea (Area 93); and 593 MT (402 MT) from the North Central Atlantic (Area 94A), and 54 MT (149 MT) from the SW Atlantic (Area 96).

U.S. swordfish landings are monitored in-season from reports submitted by dealers, vessel owners and captains, NMFS port agents, and mandatory daily logbook reports submitted by U.S. vessels permitted to fish for swordfish. This fishery is also being monitored via a scientific observer sampling program, instituted in 1992. Approximately 5% of the longline fleet-wide fishing effort is randomly selected for observation during the fishing year. The observer sampling data, in combination with logbook reported effort levels, support estimates of approximately 24,800 fish discarded dead in 2002. For the North Atlantic, the estimated tonnage discarded dead in 2002 is 261 MT, of which 240 is estimated due to longline gear. Overall, the estimates of dead discarded catch declined by 15% (45 MT) compared to the 2001 level. These are thought to in large part be due to the effects of time-area closures and other domestic management actions in place during 2002 (see Appendix).

Total weight of swordfish sampled for sizing U.S. landings by longline, harpoon, otter trawl, and handline were 2,286 MT, 3 MT, 0.4 MT, and 7 MT in 2002, respectively. The weight of sampled swordfish landings in 2002 represented substantial percentages of to total landings: longline 98%, harpoon 100%, otter trawl 10%, and handline 69%. Again, incorporation of late reports into the estimated 2002 landings figure will likely result in changes in the sampled fraction of the catch. Recent estimates of rod and reel landings of swordfish based on statistical surveys of recreational anglers, range from about 5-48 MT per year for the period 1996-2002.

2.1.4 Marlins and Sailfish Fishery Statistics

Blue marlin, white marlin, and sailfish are landed by U.S recreational rod and reel fishermen and are a discarded by-catch of the U.S. commercial tuna and swordfish longline fisheries. The U.S. Fisheries Management Plan for Atlantic Billfishes was implemented in October, 1988. The Plan allows billfish that are caught by recreational gear (rod and reel) to be landed only if the fish is larger than the minimum size specified for each species covered by the Plan. Recreational landings of each billfish species can be estimated using: (a) the SEFSC Recreational Billfish Survey (RBS) which provides the number of billfish caught during tournaments held along the southeastern U.S. coast (south of 35^0 N latitude), in the Gulf of Mexico, and U.S. Caribbean Sea regions (i.e., U.S. Virgin Islands and Puerto Rico); (b) the Large Pelagics Recreational Survey (LPS) conducted by the National Marine Fisheries Service which provides estimates of recreational billfish harvest from waters along the northeastern U.S. (north of 35^o N latitude); (c)Marine Recreational Fishery Statistics Survey (MRFSS); (d) a Headboat survey (large multi-party charter boats); and/or (e) a coastal sportfishing survey of the Texas recreational fishery (TPW). Studies conducted indicate that use of a time-series running average from the US general marine recreational fishing survey (MRFSS) in combination with data from the RBS or other surveys may provide the most reliable estimates of overall recreational catch and landings for marlins. These methods have been applied for white marline and sailfish.

Two recent ICCAT papers (i.e., SCRS/2000/057 and SCRS/02/074) report the US recreational harvest of Atlantic blue marlin and white marlin as well as the methodologies used to arrive at these estimates. Annual white marlin and blue marlin recreational harvest estimates for the years 1960 through 1999 are presented in SCRS/2000/057. Estimates for white marlin (only) were then updated through 2001 in SCRS/02/074. From the year 1981 forward, a ratio-based estimation process is employed using data from the RBS and the MRFSS. The RBS is assumed to be accurate, but limited in scope because it covers only tournament landings. Conversely, the MRFSS covers most of the entire US Atlantic fishery, but is low in precision with highly variable landings from one year to the next. Best estimates of Atlantic marlin harvests, therefore, are derived through integration of both surveys in a way that adjusts for their respective weaknesses. It is important to note that application of both the "scalar expansion" and the "dual regression" techniques used in the above papers necessarily results in changes to the historical time series of harvests of each species. This transpires because performing both techniques as described in SCRS/2000/057 involves: (1) incorporating the most recent year's survey data in calculations (or regressions) that span the entire post-1981 time-series; and (2) applying the new relationships that emerge in (1) to the last 20+ years in the data set. Here, we provide estimates for 2002 that resulted after applying the scalar expansion technique on RBS/MRFSS ratios data pertaining to white marlin. Further methodolgical development is needed for blue marlin catch estimation. Several possible steps could be taken to limit revision of post-1981 landings with each new year of data, but discussion of these is beyond the scope of this report. Sailfish harvest estimates were revised in 2001 (SCRS/01/138). Confirmed landings from the three surveys (MRFSS, Headboat and TPW) were used to estimate average catch per trip for each stratum. The variability in estimated retention rates was reduced by applying the annual fraction of fish retained to estimates of the annual harvest. These estimates are considerably higher than the number of sailfish landings counted through the RBS since tournaments monitored by the RBS are known to represent only a small component of the recreational fleet that catches sailfish; therefore these estimates are thought to better reflect the magnitude of the total US Atlantic recreational sailfish harvest.

Given the considerations above, the preliminary estimates of 2002 U.S. recreational catches for these billfish species, combining the geographical areas of the Gulf of Mexico (Area 91), the northwestern Atlantic Ocean west of the 60º W longitude (Area 92), and the Caribbean Sea (Area 93) are: 17.1 MT for blue marlin, 5.6 MT for white marlin, and 103 MT for sailfish. The estimates for 2001 were 16.4 MT, 3.1 MT, and 61.7 MT, respectively, for the three species. The estimates of the U.S. recreational catch (landings) do not include any estimates of mortality of released (or tagged and released) fish. Table 2.4-BIL provides estimates of white marlin and sailfish landings using the estimation methods noted above. For blue marlin the estimates in Table 2.4-BIL represent RBS results and have not yet been adjusted for non-tournament fishing since the most appropriate estimation methodology is still under evaluation.

In addition to restrictions on U.S. recreational harvest, the Management Plan also imposed regulations on commercial fisheries by prohibiting retention and sale of the three species at U.S. ports. For this reason, no U.S. commercial landings were reported for any of the three Atlantic species. However, estimates of by-catch mortality in the U.S. longline fleet are made using the data from mandatory pelagic logbooks and scientific observer data collected on this fleet. The procedure for estimating the historical by-catch of blue marlin, white marlin, and sailfish was detailed in SCRS/96/97-Revised. This procedure was implemented for estimating by-catch mortalities from the U.S. longline fleet. Revisions to historical landings of billfish previously reported to ICCAT were based on review of the estimates conducted at the 1996 ICCAT Billfish Workshop held in Miami. Estimates of the billfish by-catch discarded dead in the U.S. commercial longline and other commercial fisheries for 2001 were 22.4 MT for blue marlin, 16.9MT for white marlin, and 10.8 MT for sailfish. The estimated 2002 U.S. discarded dead bycatch was 49 MT, 33 MT, and 7 MT, respectively for the three species. These estimates for 1999-2002 are also presented in Appendix Table 2.4-BIL.

2.1.5 Mackerels Fishery Statistics

Significant catches of king and Spanish mackerels by U.S. fishermen have occurred since the 1850's for Spanish mackerel and since the 1880's for king mackerel. The major gears currently exploiting these species are handlines and gillnets. Purse seines were also used to harvest king mackerel during the 1980's. Gillnets have historically been the main commercial gear for Spanish mackerel however in recent years, recreational removals have become an important component in total catches for both species. The majority of king mackerel catches are taken off North Carolina and Florida and it is believed that a major production area off Louisiana, is recovering. The primary Spanish mackerel catch areas include the Chesapeake Bay and Florida. Current fisheries are co-managed under the Coastal Migratory Pelagic Resources FMP enacted in 1983 and regulations adopted by the South Atlantic and Gulf of Mexico Fishery Management Council and implememe nted by NMFS. Annual catches are monitored closely by NMFS and within season management measures include commercial trip limits, size limits, seasonal and area quotas, and recreational per person daily bag limits. Because these species occur in both federal and state territorial zones of the U.S., successful management has required participation by both federal and state management agencies. At present, none of the king or Spanish mackerel stocks are considered overfished.

Annual yields of king mackerel have ranged from 4,365 MT to 8,772 MT between 1983 and 2001 with an average production of about 7,000 MT since 1995. Annual catches of Spanish mackerel have ranged from 2,784 MT to 5,957 MT from 1983 to 2001 with the average catch of about 4,500 MT since 1995. Reported 2002 U.S. catches of king mackerel and spanish mackerel are preliminary and only include estimates for the period January-April and January-May, 2002, respectively. The reported landings of king mackerel and spanish mackerel were 2,344 mt and 1,061 MT, respectively. Harvest of both species has stabilized in recent years although large fluctuations in estimates of recreational catches in some years have occurred, and commercial and recreational landings have exceeded quotas in some years. The stabilization in yields is thought to be the direct impact of regulations which have been implemented in an effort to sustain future production. The primary management factors contributing to fluctuations in annual recreational harvests include difficulties of enforcement of differential bag limits imposed in individual states, large inter-annual variances in recreational harvest estimates, and regulations that permit the sale of king mackerel from recreational charter boats after the closure of commercial fisheries.

2.1.6 Shark Fishery Statistics

The U.S. Federal Fisheries Management Plan (FMP) for Atlantic sharks implemented in 1993 identified three management groups: large coastal sharks, small coastal sharks, and pelagic sharks. The pelagic complex included ten species: shortfin mako (*Isurus oxyrinchus*), longfin mako *(Isurus paucus*), porbeagle (*Lamna nasus*), thresher (*Alopias vulpinus*), bigeye thresher (*Alopias superciliosus*), blue (*Prionace glauca*), oceanic whitetip (*Carcharhinus longimanus*), sevengill (*Heptranchias perlo*), sixgill (*Hexanchus griseus*), and bigeye sixgill (*Hexanchus vitulus*). The 1993 FMP classified the status of pelagic sharks as unknown because no stock assessment had been conducted for this complex. The Maximum Sustainable Yield (MSY) for pelagic sharks was set at 1,560 mt dressed weight (dw), which was the 1986-1991 commercial landings average for this group. In 1997, as a result of indications that the abundance of Atlantic sharks had declined, commercial quotas for large coastal, small coastal, and pelagic sharks were reduced and the quota for pelagic sharks was set at 580 mt. In 1999, the U.S. FMP for Atlantic Tunas, Swordfish, and Sharks (NMFS 1999) proposed the following measures affecting pelagic sharks: (A) a reduction in the recreational bag limit to 1 Atlantic shark per vessel per trip, with a minimum size of 137 cm fork length for all sharks, (B) an increase in the annual commercial quota for pelagic sharks to 853 mt dw, apportioned between porbeagle (92 mt), blue sharks (273 mt dw), and other pelagic sharks (488 mt dw), with the pelagic shark quota being reduced by any overharvest in the blue shark quota, and (C) making the bigeye sixgill, sixgill, sevengill, bigeye thresher, and longfin mako sharks prohibited species that cannot be retained. All these regulations were implemented in 1999 and have been in effect since then.

The U.S. shark statistics reported to ICCAT (task 1) only include (1) landings by US longline fishermen with Atlantic swordfish and tuna permits and (2) estimates of dead discards of sharks from the US tuna and swordfish longline fishery. Additional catches and landings of Atlantic pelagic sharks are made by US fleets, including recreational fisheries. These total catches reported in Tables 2.6.a-2.6.c include all U.S. catches (although some of the data for 2002 are preliminary and subject to change) in anticipation of an assessment of pelagic sharks by ICCAT in 2004. Commercial landings (MT) of pelagic sharks steadily increased from the early 1980's, peaked in 1995, and have shown a declining trend since that year (Appendix Table 2.6a-SHK). Recreational landings in numbers estimated from the MRFSS survey during 1981-2002 peaked to a maximum of 93,000 fish in 1985, and showed a declining trend since that year, fluctuating between about 42,600 fish in 1986 to about 4,700 fish in 2002 (Appendix Table 2.6a-SHK). Pelagic longline dead discards also fluctuated between 1987 and 2002, with a minimum of about 3,500 fish in 1999 and a maximum of about 30,500 fish in 1993, but show a declining trend overall. Total catches ranged from about 12,500 fish in 1981 (no commercial landings or discard estimates were available for that year) to about 95,000 fish in 1985, as a result of the peak in recreational landings that year.

Blue shark (*Prionace glauca*) commercial landings were generally very low (Appendix Table 2.6b-SHK). Recreational landings in numbers ranged from about 500 fish in 1994 and 1995 to over 20,000 fish in 1987. Pelagic longline discards reached 29,000 fish in 1993, but otherwise oscillated between a minimum of about 2,800 fish in 1999 to a maximum of about 19,000 fish in 1996 (Appendix Table 2.6b-SHK). The trends in recreational landings and dead discards were very similar from 1992 to 1997. Total catches ranged from 0 fish in 1982 (a year in which no commercial or recreational landings were reported) to about 43,500 fish in 1993, the year in which dead discard estimates peaked (Appendix Table 2.6b-SHK).

Shortfin mako (*Isurus oxyrinchus*) commercial landings never exceeded 5,000 fish according to available estimates (Appendix Table 2.6c-SHK). Commercial landings from 1995 to 2002 in the quota monitoring and general canvass data collection programs are also assigned to an unclassified "mako" category, in addition to the "shortfin mako" category. Adding these landings of unclassified makos, which are likely to be shortfin makos, would increase commercial landings for this species, but would not affect significantly total catches. Most of the landings were attributable to the recreational fishery, whose landings in numbers peaked in 1985 to about 80,000 fish, and ranged from less than 1,400 fish to over 31,000 fish in the remaining years. Pelagic longline discards of shortfin makos were negligible. Total catches ranged from about 3,500 fish in 1999 to almost 82,000 fish in 1985, when recreational catches peaked (Appendix Table 2.6c-SHK).

Catches of other pelagic species, such as longfin mako (*Isurus paucus*), oceanic whitetip shark (*Carcharhinus longimanus*), porbeagle (*Lamna nasus*), bigeye thresher (*Alopias superciliosus*), and thresher shark (*Alopias vulpinus*) were very small. Only for thresher shark, did total landings exceed 1,000 fish for more than one year in a row.

2.2. Research Activities

Research continued on genetic identity of large pelagic fishes in the Atlantic, larval surveys for bluefin tuna and other large pelagics in the Gulf of Mexico, new methods for estimating and indexing abundance, robust estimation techniques for sequential population analyses, and estimating discards based on direct observations by scientific fishery observers. Research was also conducted on approaches for characterization of uncertainty in assessments and methods for translating that uncertainty into risk levels associated with alternative approaches. U.S. scientists also continued to coordinate efforts for the ICCAT Enhanced Research Program for Billfish and for the Bluefin Year Program. Collaborative research with scientists from ICCAT member nations and cooperating parties continues.

2.2.1 Bluefin Tuna Research

As part of its commitment to the Bluefin Program, research supported by the U.S. has concentrated on ichthyoplankton sampling, reproductive biology, methods to evaluate hypotheses about movement patterns, spawning area fidelity and stock structure investigations.

Ichthyoplankton surveys in the Gulf of Mexico during the bluefin spawning season were continued in 2002 and 2003. Data resulting from these surveys which began in 1977 are used to develop a fishery-independent abundance index of spawning west Atlantic bluefin tuna. This index has continued to provide one measure of bluefin abundance that is used in SCRS assessments of the status of the resource (SCRS/02/91). U.S. scientists participated in both the 2002 and 2003 Spanish TUNIBAL experiments to coordinate research approaches. W. J. Richards, J.T. Lamkin and D. Johnson are reviewing the distribution and abundance of larval bluefin tuna from the 20+ years of plankton tows (bongo and neuston) in the Gulf of Mexico in relation to oceanographic features. A report is planned for 2004.

Since 1998, researchers from Texas A & M University and the University of Maryland with assistance of researchers from Canada, Europe, and Japan have initiated studies on the feasibility of using otolith microconstituents to distinguish bluefin stocks. To date juveniles from both nursery area (W. Atlantic or Mediterranean) were separated with moderate success with classification rates ranging between 60 to 80% (see Appendix) using microconstituents. More recently research has focused on the use of $d^{13}C$ and of $d^{18}O$ isotopes in otoliths to distinguish nursery habitats. For juveniles collected in 1999 and 2000, $d^{18}O$ of Atlantic bluefin tuna collected in the Western Atlantic and Mediterranean were markedly different with no overlap between nurseries, and this difference was stable across the two years. Further, stable isotope values of otolith cores from medium and giant Atlantic tuna caught in the U.S. tended to delineate into either high or low $d^{18}O$ levels, indicative of origin in either the W. Atlantic or the Mediterranean. (see Appendix and SCRS/2003/105).

Scientists at Virginia Institute of Marine Science and Texas A&M University continue to search for heterogeneous micro-satellite loci. In addition they have begun screening adult bluefin from the east and western management areas for micro-satellite frequencies. Regional and temporal heterogeneity of allele frequencies have been found for several loci, but consistent differences between adults captured in the eastern and western Atlantic have not been found.

Bluefin larvae have been identified for possible use in genetic analyses. During the ichthyoplankton surveys in the Gulf of Mexico during the bluefin spawning season two neuston nets have been fished for at least a decade. Samples from one net have been preserved in ethanol so that the resulting specimens might be used for a variety of biological studies including genetic analyses and ageing. Most of those samples have now been sorted and are available for research on stock structure.

Research on bluefin tuna movement patterns using electronic tags, and on the associated methodology, was continued in 2002 and 2003. Scientists from (1) New England Aquarium, University of New Hamshire, N.M.F.S - Northeast Fisheries Science Center and D.F.O. from Canada and (2) Stanford University and the Monterey Bay Aquarium conducted these studies.

Scientists from the New England Aquarium and the University of New Hampshire conducted studies on a variety of topics related to bluefin tuna in addition to the tagging activities and the exploratory research in the central Atlantic in 2002. Data from pop-up satellite tags is being studied to determine the reliability of the geographic information for understanding bluefin movement and behavior. Studies of the relationship between bluefin schools and surface water temperatures have been conducted. Additionally research on the bluefin movement patterns and their relationship to the environment has been investigated with respect to the utility of spotter aircraft observations as indicators of abundance. Research is also continuing on bluefin energetics, reproduction and predator-prey relations (see Appendix).

Scientists from Stanford University and Monterey Bay Aquarium tagged 8 bluefin tuna in the Gulf of Mexico 2002 and continued tagging activities off North Carolina (releasing 123 with electronic tags in 2003). Double tagging experiments were conducted to estimate error rates in light based position estimates (see Appendix).

Several documents presented to the SCRS in 2002 considered the implications of mixing between Eastern and Western stocks. SCRS/02/93 examined recapture rates of tagged fish in three areas: 1) West Atlantic, 2) Northeast Central Atlantic, and 3) East Atlantic and Mediterranean. The use of the ICCAT tagging data for identifiying stock mixing in the Northeast Central area was discussed, as was the possibility of differing reporting rates between areas. SCRS/02/87 assumed a six strata spatial structure (as identified at the September 2001 ICCAT workshop on bluefin mixing) and applied a simple age-aggregated (production) model approach with inter-stratum mixing. The results suggested that, with or without mixing, the 1997 catch levels of bluefin in the western Atlantic are sustainable; however, those in the east for 1997 are well above sustainable levels and need substantial reduction. Across a wide range of model input parameter values, even at relatively modest levels of mixing, the fishery in the west was predicted to be adversely impacted unless reduction in the east takes place. In SCRS/02/88, a multi-area, fleet-disaggregated, age-structured population dynamics model was used to evaluate the effectiveness of existing and alternative management measures under different mixing scenarios. The model simulated the dynamics of the two bluefin tuna stocks in the North Atlantic and of the fisheries that target them. Results indicated that assessment estimates can be affected considerably by the level of mixing, age-specific movement patterns, and gear selectivities.

SCRS/02/86 identified some improvements for the ADAPT VPA assessment and projection computations carried out at the 2000 assessment, related to plus-group mass and how this was taken into account in MSY computations. Abundance indices were developed using Canadian fishery data (SCRS/02/81), U.S. longline data (SCRS/02/90) and U.S. rod and reel data (SCRS/02/89) for a range of size classes of bluefin tuna.

In response to the ICCAT Commission's request for options for alternative approaches for managing mixed populations of Atlantic bluefin several papers have been submitted to the SCRS. In 2002 SCRS/2002/087 and SCRS/2002/088 presented population models which examined the implications of detailed movement and assessment models on the perception of the status of the Atlantic management units. SCRS/2002/087 used lumped biomass production model approaches while SCRS/2002/088 used age structured approaches. S/2003/105 proposed the extension of the work described in SCRS/2002/088 to further simulate bluefin population patterns and to evaluate possible assessment and management scenarios; the proposed new models would incorporate Bayesian approaches to more fully model data inputs than is currently done by the SCRS with its conventional VPA analyses and to characterize the possible range of population estimates. SCRS/2003/106 further examined the age structured model used in SCRS/2002/088 particularly with respect to its ability to replicate conventional one stock VPA estimates of resource status estimated by the 2002 SCRS and concluded that the western patterns could be replicated but the increasing recruitment pattern for the eastern management unit could not be replicated (also see appendix). SCRS/2003/108 also examined approaches to developing more complex models of bluefin population dynamics including detailed spatial information and methods for assessing the resources and examining management procedures.

Most sampling of tissues from bluefin tuna during 2002 and 2003 has been conducted by scientists associated with the University of Maryland, Texas A&M University, the University of New Hampshire, and the New England Aquarium. Scientists from the University of Maryland and Texas A&M University collected samples from 51 bluefin of about 100-150 cm from the western Atlantic in 2002 as well as samples of juveniles from the Mediterranean Sea in cooperation with European colleagues. Scientists from the University of New Hampshire/New England Aquarium obtained samples from 30 bluefin during 2003. The National Oceanographic and Atmospheric Administration laboratory in Charleston, S.C. is acting as a sample archive center and in 2003 received extensive sub-samples of muscle, blood and gonads from the Icelandic sampling of the Japanese longline catches in Icelandic waters in 1996-2002. The National Marine Fisheries Service observers obtained muscle, blood and gonad samples from seven mature bluefin from the Gulf of Mexico in 2002 and one mature bluefin in 2003. Tables of the mumbers of fish samples available at the western bluefin archive through mid 2002 are available in 2002 National Report.

2.2.2 Swordfish Research

Data from observer samples were compared against self-reported information in from the U.S. large pelagic mandatory logbook reporting system and estimates of discard mortality of swordfish, billfish, sharks and other species from the U.S. fleet were developed from that analysis for the 2003 SCRS. Estimates of small swordfish bycatch for 2002 were compared to the average levels estimated for the late 1990's and were found to be substantially lower (see Appendix).

Fisher reported and observed swordfish catch, size and catch rate patterns through 2002 were examined in support of monitoring the recovery of north Atlantic swordfish. Standardized indices of abundance were updated for the Western North Atlantic using data from the U.S. pelagic longline fleet (SCRS/03/109).

Collaborative research with Venezuelan scientists continues on estimating the age-structure of the catch of swordfish. Results of this research will be available for the next assessment of north Atlantic swordfish.

Samples of more than 40 male swordfish gonads have been collected for European scientists.

Research on measures to mitigate the interactions between pelagic longline and bycatch of marine turtles continued in 2002-2003 under a cooperative research program involving the US Atlantic pelagic longline fishery. Thus far, testing of five potential bycatch reduction techniques during 687 research sets on the Grand Banks has indicated that longline fishermen can avoid unintentional catches of loggerhead sea turtles by reducing the time their hooks are in the water during daylight hours. The results also indicate important sea turtle bycatch reduction can be achieved by using circle hooks instead of the J hook historically used in the fishery, and by using mackerel for bait rather than squid, the primary bait used in the fishery. The vessels participating in the experimental fishing effort reduced loggerhead sea turtle interaction by 92 percent using circle hooks with mackerel bait while actually increasing swordfish catch rates over J hooks with squid bait used as control effort. The gear and techniques developed by this program are being tested in research programs in several countries, and results of this research are being used in other fisheries and countries that operate longline gear. A report on the research progress for this program can be found at http://www.mslabs.noaa.gov/mslabs/docs/watson2.pdf .

2.2.3 Yellowfin Tuna Research

Several collaborative studies were conducted by U.S. scientists in cooperation with scientists from other countries. Cooperative research by the U.S. NMFS and the INP in Mexico continued and resulted in a joint analysis of US and Mexican longline CPUE of yellowfin in the Gulf of Mexico (SCRS/03/061). Cooperative research plans include further development of abundance indices for sharks and other tunas, as well as the refinement of the yellowfin tuna indices as additional data becomes available. Cooperative research on yellowfin tuna abundance indices, catch at age, and life-history studies is also continuing with Venezuelan scientists. One document on Venezuelan longline catch rate patterns resulted from this collaboration in 2003 (SCRS/03/054) and additional working papers based on this collaboration are expected in future years.

Several other working papers were provided in support of the 2003 stock assessment of YFT (July, Merida, Mexico). Two relative abundance patterns (one for the Gulf of Mexico and another for the Atlantic regions fished by US longline vessels) based on US pelagic longline data from 1981 to 2002 were presented in SCRS/03/060. Additionally, a relative abundance index based on data collected through the Large Pelagic Survey from the Virginia-Massachussetts rod&reel fishery (1986-2002) was presented in SCRS/03/062.

New information from a genetic study was presented in SCRS/03/063. The phylogenetic analysis conducted on samples from the Gulf of Mexico and Gulf of Guinea by researchers at Texas A&M, Galveston, revealed the presence of siblings in several sampling tows for juvenile tuna. Given the high level of genetic diversity at both the mitochondrial and microsatellite loci, the probability of such sampling is extremely low and can best be explained by the unequal reproductive output of certain females. Increases in vulnerability of juvenile YFT could be of concern in terms of genetic integrity of the population if levels of reproductive variance are confirmed to be large.

2.2.4 Albacore Research

In 2003, an analysis of U.S. longline CPUE (SCRS/03/086) was prepared in support of the ICCAT assessment of northern- and southern- Atlantic albacore.

2.2.5 Mackerels and Small Tunas Research

U.S. small tuna research is directed mainly on king and Spanish mackerel stocks as the amount landed of other small tunas such as cero makerels by U.S. fishermen is very low. The focus of research is collection of primary fishery catch statistics, and biostatistical sample data, fishery age samples, and abundance indices. Critical research areas regarding mackerels relate to the adequacy of sampling of the age structure of the stocks, the amount of mixing between management units, and increasing the precision associated with the mackerel assessment abundance indices. Because assessment and management are by necessity by geographical units, continued research on migration of king mackerel in particular is important.

2.2.6 Shark Research

Research on Atlantic pelagic sharks continued to be conducted in support of the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks, and ICCAT. Two NMFS scientists were invited to attend a North Atlantic blue shark Discussion Meeting organized by the Irish Marine Institute in Dublin, Ireland, in January 24-25, 2002. The objectives of the meeting were to further cooperation between ICES (International Council for the Exploration of the Seas) and ICCAT, on the assessment of pelagic sharks in the north Atlantic, as well as enhancing the links between researchers and institutes involved in pelagic shark assessment in the region. The meeting was a result of the EC-funded initiative DELASS (Developing Elasmobranch Assessments), an international research project aimed at improving the scientific basis for the management of fisheries taking elasmobranchs in Europe. Items reviewed and discussed at the meeting included information on the biology of Atlantic pelagic sharks, with emphasis on the blue shark, existing analyses and further work on blue shark stock status, cooperation between ICES and ICCAT on future assessment work of pelagic sharks, data availability, a possible assessment of blue shark by ICES in 2002, and future research directions and collaborative work.

After the meeting, a spreadsheet for calculating population parameters of blue sharks under uncertainty using a life-table approach was made available by NMFS scientists for use in the ensuing ICES Study Group on Elasmobranch Fishes stock assessment meeting held in Copenhagen, Denmark, in May 24-25, 2002. ICCAT is planning an assessment of pelagic sharks in 2004.

2.2.7 Billfish Research

Sampling of recreational billfish tournaments continued in 2002 along the U.S. east coast, Gulf of Mexico, Bahamas, and U.S. territories in the Caribbean. A total of 175 billfish tournaments were sampled in 2002, compared to 177 tournaments in 2001. This represented 134,525 hours of fishing effort, an increase of about 7,058 hours from the 2001 level. In 2002, tournament sampling accounted for 137 billfish boated (83 blue marlin, 33 white marlin, 14 sailfish, 0 spearfish and 7 swordfish) and 6,171 released. In comparison, in 2001, there were 108 billfish boated (75 blue marlin, 22 white marlin, 111 sailfish, and 0 spearfish) and 5,563 released.

A number of working papers on various aspects of marlin research were submitted to ICCAT. Document SCRS/2003/030 addresses modeling biases and contradictions among catch rate indices of abundance for Atlantic white marlin (*Tetrapterus albidus*). The paper presents a Bayesian surplus production model (with sensitivity analyses) in which q is adjusted through the latter part of the time series for some commercial fisheries, including the Japanese longline fishery. Document SCRS/2003/031 presents a computer simulation model designed to simulate many forms of fisheries data routinely collected from real fisheries. Up to 10 simultaneous fisheries on the population may be modeled, and each may have minimum and maximum vulnerable sizes and discard mortality rates. The program suite includes modules to compute equilibrium production, maximum sustainable yield, and yield per recruit for the overall selectivity pattern in any simulated year. Document SCRS/2003/032 describes a computer simulation model, SEEPA (Simulator for Evaluating the use of Environmental constraints for standardizing Population Abundance indices), designed to simulate longline catch-effort data. It allows an examination of the consequences of making wrong assumptions about the actual distributions of the fish and the gear in the habitat-standardization process. Document SCRS/2003/033 describes habitat preferences and diving behavior (as determined using electronic tags) of white marlin (*Tetrapturus albidus*) released from the commercial longline and recreational troll fisheries in the western North Atlantic Ocean. Implications for habitat-based stock assessment models are also discussed. Document SCRS/2003/104 describes modifications made to the computer simulation model, SEEPA. Differences between the distributions resulting from the current simulations and previous analyses with SEEPA are briefly discussed. Document SCRS/2003/025 summarizes research activities of the ICCAT Enhanced Research Program for Billfish in the Western Atlantic Ocean during 2003 by location and research objective.

The NMFS SEFSC again played a substantial role in the ICCAT Enhanced Research Program for Billfish in 2002, with SEFSC scientists acting as general coordinator and coordinator for the western Atlantic Ocean. Major accomplishments in 2002 were documented in SCRS/02/127. Highlights include 19 at-sea sampling trips with observers on Venezuelan industrial longline vessels in through September, 2002. Of the trips accomplished to date, 4 observer trips were on Korean type vessels fishing under the Venezuelan flag. Most of these vessels are based out of Cumana targeting tuna, swordfish, or both at the same time. Biological sampling of swordfish, Istiophorids, and yellowfin tuna for reproductive and age determination studies, as well as genetics research were continued during the 2002 sampling season. Shore-based sampling of billfish landings for size frequency data, as well as tournament sampling were obtained from Venezuela, Grenada, U.S. Virgin Islands, Bermuda, Barbados, and Turks and Caicos Islands. Program participants in Venezuela, Grenada, and Barbados continued to assist in obtaining information on tag-recaptured billfish, as well as numerous sharks, in the Western Atlantic Ocean during 2002--a total of 35 tag recovered billfish and sharks were submitted to the Program Coordinator in 2002 and 16 were submitted during the last quarter of 2001. Age, growth, and reproductive samples from several very large billfish were obtained during 2002

In 2002, further investigations of biological habitat requirements and post release survival of blue and white marlins were conducted using popup satellite archival tags (PSAT) facilitated through cooperative research with the US pelagic longline vessels and with the US for-hire fleets operating in areas of high concentrations of billfish. To date, 25 blue marlin have be released with PSATs programed for 30 & 40 day deployments from recreational vessels in the Caribbean and 6 from commercial platforms in the South Atlantic off Florida. In addition, 22 white marlin were tagged with short term deployments (5-10 days) PSATs from recreational vessels near the southeastern tip of the Dominican Republic, and along the US Mid-Atlantic coast and off Venezuela to evaluate post-release survival. In addition, 6 white marlin were tagged with short term PSAT deployments from commercial longline platforms off South Florida. This research is critical for evaluation of post release survival and essential fish habitat since for pelagic species in general, and for marlins in particular the information base is almost non-existent. Data from these fish are currently being compiled and analyzed.

2.2.8 Tagging

Participants in the Southeast Fisheries Science Center's Cooperative Tagging Center (CTC) and the Billfish Foundation Tagging Program (TBF) tagged and released 8,489 billfishes (including swordfish) and 664 tunas in 2002. This represents an increase of about 9% for billfish and an increase of 33.9% for tunas from 2001 levels. A number of electronic tagging studies involving bluefin tuna and billfish were also carried out in 2002. These are discussed in the bluefin and billfish research sections above.

There were 118 billfish recaptures from the CTC and TBF reported in 2002, representing a decrease of 11.9% from 2001. Among the 2002 CTC billfish recaptures there were 39 blue marlin, 25 white marlin, 50 sailfish, and 4 swordfish. For the CTC and TBF, a total of 37 tunas were recorded recaptured in 2001; these were 28 bluefin and 9 yellowfin tuna. These recaptures represent a 37% decrease with respect to year 2001 values. The ICCAT Enhanced Research Program for Billfish in the western Atlantic Ocean has continued to assist in reporting tag recaptures to improve the quantity and quality of tag recapture reports, particularly from Venezuela, Barbados and Grenada.

2.2.9 Fishery Observer Deployments

Domestic Longline Observer Coverage. In accordance with ICCAT recommendations, randomized observer sampling of the U.S. large pelagic long line fleet was continued into 2002 (see Appendix Figure 2.2-Observers). Representative scientific observer sampling of this fleet has been underway since 1992. The data collected through this program have been used to quantify the composition, disposition, and quantity of the total catch (both retained and discarded at sea) by this fleet which fishes in waters of the northwest Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea. Selection of the vessels is based on a random, 5% sampling of the number of sets reported by the longline fleet. A total of 5,232 sets (3,698,265 hooks) were recorded observed by personnel from the SEFSC and NEFSC programs from May of 1992 to December of 2002. Observers recorded over 301,343 fish (primarily swordfish, tunas, and sharks), marine mammals, turtles, and seabirds during this time period. Observer coverage successfully recorded effort from 329 observed sets during 1992, 817 during 1993, 648 during 1994, 699 during 1995, 361 during 1996, 455 during 1997, 287 during 1998, 430 during 1999, 465 during 2000, 395 during 2001, and 346 during 2002 corresponding to nominal sampling fractions of about 2.5%, 6%, 5.2%, 5.2%, 2.5%, 3.1%, 2.9% , 4% , 4%, 4%, and 4%. Starting in year 2002, the sampling fraction was increased to about 8% of the longline fleet. Document SCRS/02/126 provides a more detailed summary of the data resulting from observer sampling between 1992 and 2000.

Southeast U.S. Shark Drift Gillnet Fishery Observer Coverage. The directed shark drift gillnet Observer Program operated by the SEFSC at the Panama City (FL) Laboratory began in 1993 to meet the mandates of the Atlantic Large Whale Take Reduction Plan. Observer coverage varied from 3.2 to 26.8% yr^{-1} from 1993-1995. No coverage was provided in 1996 and 1997, but in 1998 an observer program was partially funded to meet requirements of a NMFS Biological Opinion relating to right whales and sea turtles. Continued coverage ranging from 100%, required during the Right Whale Calving season (15 Nov-1 Apr), to 30-53% has been established since 1999. A total of 322 sets of the shark drift gillnet fishery were observed during 1999-2002. Effort took place in waters off of south Georgia, as well as central and south Florida.

Foreign Fishery Observers. There was no foreign fishing directed at large pelagic species in the U.S. Exclusive Economic Zone (EEZ) off the east coast during 2002.

3. U.S. Implementation of ICCAT Conservation and Management Measures

3.1 Catch Limits and Minimum Sizes

Rebuilding Program for West Atlantic Bluefin Tuna (Rec 98-7; 02-07)
The 1998 rebuilding program for west Atlantic bluefin tuna established an annual landings quota for the United States of 1387 mt. This quota is applied to the 2002 fishing year of June 1, 2002 - May 31, 2003. During the 2001 fishing year, the United States landed 1589 mt dw bluefin tuna, including 82.99 mt dw of bluefin tuna less than 115 cm and 41.43 mt of dead discards. The underharvest of 249 mt from 2001 was carried over to adjust the 2002 fishing year quota. In 2002, the United States landed an estimated 1874 mt dw (all 2002 fishing year estimates were calculated using 2001 fishing year data for the second half of the 2002 fishing year), including 169.66 mt of bluefin tuna less than 115 cm and 38 mt of dead discards (see Appendix, page 1).

Recommendation 02-07 revised the annual landings quota for the United States to 1489.6 mt and allocated 25 mt to pelagic longline catches within the vicinity of the management boundary area. This quota is applied to the 2003 fishing year of June 1, 2003 - May 31, 2004.

Recommendation to Establish a Plan to Rebuild Blue Marlin and White Marlin Populations (Rec 00-13; 02-13)
Phase I requires that countries capturing marlins commercially reduce white marlin landings from pelagic longline and purse seine fisheries by 67 percent and blue marlin landings by 50 percent from 1999 levels; the United States has prohibited all commercial retention of billfish since 1988. For its part of the rebuilding program, the United States agreed to maintain regulations that prohibit all landings of marlins by U.S. pelagic longline fishermen, and to continue monitoring billfish tournaments through scientific observer coverage of at least 5 percent initially, with an objective of 10 percent coverage by 2002. The United States now exceeds these observer requirements. The United States also agreed to limit annual landings by U.S. recreational fishermen to 250 Atlantic blue and white marlin, combined, per year, through 2005. Recommendation 02-13 extended the blue and white marlin rebuilding plan through 2005 and the time frames of the next stock assessments. Catch and release rates are estimated to be very high (90-95%) based on tournament data, and minimum sizes have been established at 168 cm (66 inches) for white marlin and 251 cm (99 inches) for blue marlin. While data indicate that the United States' landings have been under the 250 marlin limit, the United States is in rulemaking to codify the limit as well as implement compliance mechanisms to ensure that the limit is not exceeded.

Recommendation to Establish a Rebuilding Program for North Atlantic Swordfish (Rec 99-7; 02-02)
The 1999 recommendation established an annual landings quota of 2951 mt ww for the United States. Recommendation 02-02 established new quotas for the United States for 2003-2005, a dead discard allowance of 80 mt for 2003, a provision allowing up to 200 mt of North Atlantic swordfish to be caught between 5 degrees North latitude and 5 degrees South latitude, and a provision to transfer 25 mt to Canada. The landings quota and discard allowance are applied to a fishing year of June 1 - May 31. During the 2001 fishing year, there was an underharvest of 1437 mt ww. This underharvest was added to the landings quota for the 2002 fishing year. Landings and discard estimates for the 2002 fishing year are provided in the U.S. compliance tables (see Appendix, page 4). The United States has a minimum size of 33 lb (15 kg) dressed weight, which is designed to correspond to 119 cm, with zero tolerance. Information on compliance with the minimum size is provided in the U.S. compliance tables. The United States is in rulemaking to establish the provisions from Recommendation 02-02.

Recommendation Concerning Swordfish Catches by the Tuna Longline Fishery (00-03)
The United States established a 400 mt ww reserve from the 2001 fishing year quota for North Atlantic swordfish to account for higher than anticipated discards by Japan. At the 2002 meeting, Japan indicated that a total of 215 mt ww were discarded and the United States transferred that amount of quota to Japan in the 2002 fishing season year management period.

Recommendation on South Atlantic Swordfish (02-03)
This recommendation establishes catch limits for the United States for 2003-2006 at 100 mt for 2003 through 2005 and 120 mt for 2006 and allowed that underharvests in 2000 may be carried over to 2003. The United States is in the final stages of rulemaking to establish these provisions. The United States landed 69.86 mt dw in fishing year 2001 and an estimated 53.17 mt dw in fishing year 2002.

Recommendation on Revision and Sharing of the Southern Albacore Catch Limit (02-06)
The United States is subject to a catch limit of 100 mt in 2003, but does not have a directed fishery for southern albacore. The United States landed 2 mt dw in calendar year 2001.

Recommendation on North Atlantic Albacore Catch Limits (02-05)

The United States was allocated a landings quota of 607 mt ww for 2003, which is a level consistent with average landings for the United States over the past ten years. This recommendation applies for one year only. Given the minor share of U.S. mortality in this fishery (< 2%), and given that the ICCAT recommendation provides for the adjustment of next year's catch level in the case of overharvest or underharvest, no new regulations have been proposed for this fishery in the United States. The recommendation provides that overages/underages of this annual catch limit should be deducted from or added to the catch limit established for the year 2004 and/or 2005. The United States landed 453 mt dw in fishing year 2001 and an estimated 498 mt dw in fishing year 2002.

In addition, pursuant to ICCAT's recommendation concerning the limitation of fishing capacity on North Atlantic albacore (1998), the United States submits annually the required reports providing a list of U.S. vessels operating in the fishery.

Recommendation on Bigeye Tuna Conservation Measures (02-01)
No catch limits apply to the United States, since 1999 catch was less than 2100 mt. The United States has implemented a higher minimum size than that required by ICCAT, which provides additional protection for juvenile bigeye. This minimum size of 27 inches (approximately 6.8 kg) applies to all U.S. fisheries landing bigeye tuna, both commercial and recreational. The United States landed 1363 mt dw in fishing year 2001 and an estimated 507 mt dw in fishing year 2002, with no landings of bigeye tuna less than 3.2 kg for both years.

Resolution on Atlantic Sharks (2001)
This resolution calls for the submission of catch and effort data for porbeagle, shortfin mako, and blue sharks; encourages the release of live sharks to the extent possible; encourages the minimization of waste and discards in accordance with the Code of Conduct for Responsible Fisheries; and calls for voluntary agreements not to increase fishing targeting Atlantic porbeagle, shortfin mako, and blue sharks until an assessment can be conducted. The United States already submits catch and effort data for sharks and has catch limits in place for Atlantic porbeagle, shortfin mako, and blue sharks. In 2002, pursuant to the 2000 Shark Finning Prohibition Act, the United States banned the practice of finning nationwide (67 FR 6194, February 11, 2002), which will reduce waste associated with finning. Additionally, the United States adopted a National Plan of Action for the Conservation and Management of Sharks in February 2001, consistent with the International Plan of Action for Sharks, which calls for management measures to reduce waste to the extent practicable and to protect vulnerable life history stages, such as juveniles. The United States is in rulemaking to revise Atlantic shark management measures consistent with new stock assessments.

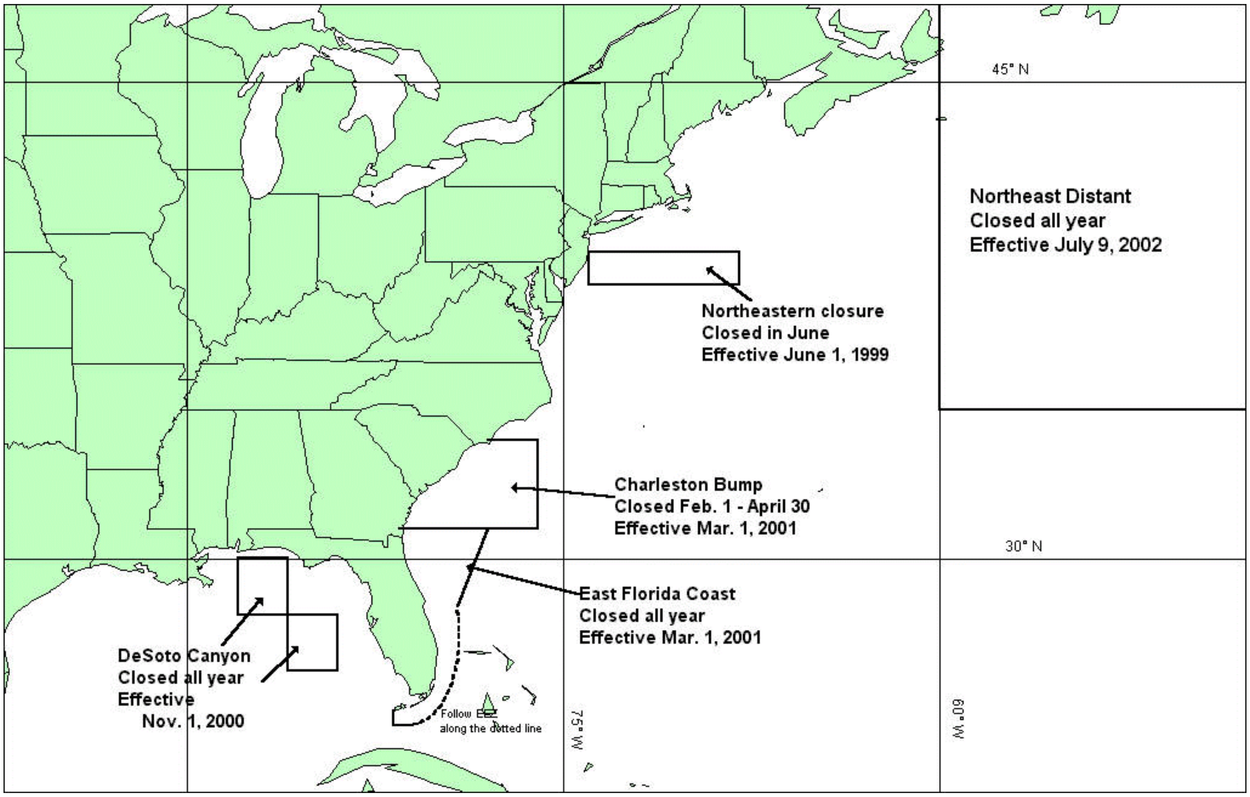
3.2 Closed Seasons

Recommendation on the Establishment of a Closed Area/Season for the Use of Fish-Aggregation Devices (Rec 99-3)
No U.S. action is necessary for this measure. The United States does not have any surface fleets fishing in the area covered by this recommendation.

Domestic Time/Area Closures for ICCAT Species
At present, the Atlantic pelagic longline fishery of the United States is subject to several discrete time/area closures that are designed to reduce bycatch in the pelagic longline fishery by prohibiting pelagic longline fishing for ICCAT species in those areas during specified times. These closures affect offshore fishing areas up to 200 nautical miles (nm) from shore (see Figure 1). Those closures are as follows: (1) Florida East Coast: 50,720 nm^2 year-round; (2) Charleston Bump: 49,090 nm^2 from February through April each year; (3) DeSoto Canyon: 32,860 nm^2 year-round; (4) the Northeastern United States:

21,600 nm^2 during the month of June each year; and (5) Northeast Distant Statistical Sampling Area (NED): 2,631,000 nm^2 year-round. 50 CFR 635.21(c)(2).

NMFS is conducting a 3-year experimental fishery in the NED closed area to develop sea turtle bycatch reduction measures with the intention of reopening the NED closed area and exporting the measures to international fishing fleets. The third year of the experiment is underway.



3.3 Ban on Imports

Trade Restrictive Recommendations adopted in 2002

In 2002, ICCAT recommended bigeye tuna trade restrictions against Bolivia and bigeye tuna, swordfish, and bluefin tuna trade restrictions against Sierra Leone pursuant to its 1998 unregulated and unreported catches resolution. ICCAT also recommended import prohibitions on bigeye tuna against St. Vincent and the Grenadines to take effect on Jan. 1, 2004, unless ICCAT decides at its 2003 meeting that this measure would be unnecessary based on documentary evidence. Furthermore, ICCAT recommended lifting import prohibitions on bluefin tuna, swordfish, and bigeye from Belize, to be effective 1 January 2004, unless ICCAT decides at its 2003 meeting that Belize has not completed necessary actions to bring its fishing practices for those species into conformity with ICCAT conservation and management measures on the basis of documentary evidence. ICCAT also recommended lifting the bigeye tuna import trade restriction against Honduras. The United States is developing regulations to implement these measures.

Statistical Documentation Programs

The United States' Bluefin Tuna Statistical Document program has been in place since the 1990s. As required under the program, the United States submits reports to ICCAT twice yearly providing information on the implementation of the program. In 2001, ICCAT recommended that all bigeye tuna and swordfish be accompanied by an ICCAT Bigeye Tuna or Swordfish Statistical Document, respectively, when those species are imported into the territory of a Contracting Party. The United States already has a domestic documentation program for swordfish called the Certificate of Eligibility. Either the domestic COE form or the ICCAT Swordfish Statistical Document meet the domestic reporting requirements. The United States is developing regulations to implement these measures.

3.4 Observer Programs

The U.S. observer program currently meets two main objectives: monitoring of interactions between fishing gear and protected species (marine mammals, sea turtles, and to a lesser degree, sea birds), and monitoring of fishing effort and catch (estimation of total landings of target species and/or bycatch of non-target or prohibited species). An overview of observer programs in the United States can be found at our website at: http://www.st.nmfs.gov/st1/nop/. Click on the bullets under "About US" for info about both the National Observer Program, which is a coordinating office for NMFS observer programs in our headquarters outside of Washington, DC, and the Regional Programs. Observers for U.S. vessels in ICCAT fisheries are deployed from Miami, Florida and Panama City, Florida.

3.5 Vessel Monitoring

Recommendation Concerning a Vessel Monitoring System Pilot Program (Rec 97-12)
The United States adopted fleet-wide VMS requirements in the Atlantic pelagic longline fishery in May 1999, but was subsequently sued by an industry group. By order dated September 25, 2000, the U.S. District Court for the District of Columbia prevented any immediate implementation of VMS in the Atlantic pelagic longline fishery, and instructed the National Marine Fisheries Service (NMFS) to "undertake further consideration of the scope of the [VMS] requirements in light of any attendant relevant conservation benefits." Pursuant to that order, NMFS conducted an analysis of HMS pelagic longline vessels to determine whether the VMS requirement could be restricted to a subset of HMS pelagic longline vessels. On October 15, 2002, the District Court for the District of Columbia issued a final order upholding the VMS regulation. The United States implemented the fleet-wide VMS requirement in the Atlantic pelagic longline fishery effective September 1, 2003.

3.6 Measures to Ensure Effectiveness of ICCAT Conservation and Management Measures and to Prohibit Illegal, Unreported and Unregulated Fishing

The United States is committed to full participation in ICCAT's efforts to prohibit Illegal, Unregulated and Unreported (IUU) fishing in the Convention Area. The United States government is actively developing a national plan of action (NPOA) to combat IUU, consistent with the International Plan of Action that was recently adopted by the FAO. Possible regulatory or legislative actions will be considered in the context of NPOA development.

Management Standard for the Large-Scale Tuna Longline Fishery
In 2001, ICCAT resolved that minimum management standards should be established for issuance of fishing licenses to tuna longline vessels greater than 24 meters in overall length and that an annual report should be submitted to ICCAT using a specific format. The United States issued permits to 17 tuna longline vessels over 24 meters in overall length. The U.S. submission is provided in the Appendix on page 7.

3.7 Other Recommendations

Resolution on Seabirds (2002)
This resolution encourages ICCAT parties to inform the SCRS and the Commission of the status of their National Plans of Action for Reducing Incidental Catches of Seabirds in Longline Fisheries (NPOA-Seabirds) and to voluntarily submit all available information on interactions with seabirds, including incidental catches in all fisheries under the purview of ICCAT, to the SCRS. The United States submitted an update on the implementation of its NPOA-Seabirds and observer data on seabird interactions in the Appendix on page 33.

Resolution on Atlantic Sharks (2001)

This resolution calls for the submission of catch and effort data for porbeagle, shortfin mako, and blue sharks; encourages the release of live sharks to the extent possible; encourages the minimization of waste and discards in accordance with the Code of Conduct for Responsible Fisheries; and calls for voluntary agreements not to increase fishing targeting Atlantic porbeagle, shortfin mako, and blue sharks until an assessment can be conducted. The United States already submits catch and effort data for all sharks caught incidentally in ICCAT-managed fisheries and has catch limits in place for Atlantic porbeagle, shortfin mako, and blue sharks. In 2002, pursuant to the 2000 Shark Finning Prohibition Act, the United States banned the practice of finning nationwide (67 FR 6194, February 11, 2002), which will reduce waste associated with finning. Additionally, the United States adopted a National Plan of Action for the Conservation and Management of Sharks in February 2001, consistent with the International Plan of Action for Sharks, which calls for management measures to reduce waste to the extent practicable and to protect vulnerable life history stages, such as juveniles.

Resolution on Improving Recreational Fishery Statistics (Rec 99-13)
Recreational landings are estimated through a combination of tournament surveys (the Recreational Billfish Survey), the Large Pelagic Survey (LPS), the Marine Recreational Fishing Statistics Survey (MRFSS), and state landings data. Final regulations adopted in 1999 require selected HMS charter/headboat vessels that do not already do so to complete a logbook; implementation of this requirement is underway. In 1999, NMFS mandated the registration of all recreational tournaments for Atlantic highly migratory species. All tournaments are now required to submit landing reports, if selected. Currently, 100% of billfish tournaments are selected for reporting. The United States finalized regulations effective in March 2003 that implemented a mandatory recreational landings self-reporting system for Atlantic blue and white marlin, west Atlantic sailfish, and North Atlantic swordfish (68 FR 711). The United States is also in rulemaking to make recreational reporting requirements consistent across all tunas, billfish, and swordfish (68 FR 54410); implementation of this requirement is underway.

Recommendation Concerning Registration and Exchange of Information on Vessels Fishing for Tunas and Tuna-Like Species in the Convention Area (2000).
The United States has submitted the list of vessels required pursuant to this recommendation to the Secretariat.

U.S. Swordfish Certificate of Eligibility Program
A summary of data collected through this program in 2002 is provided in the Appendix, page 6.

U.S. Enforcement Actions
A summary of actions taken in ICCAT fisheries is provided in the Appendix, page 8.

Recent U.S. management actions for Atlantic highly migratory species can be found online at: http://www.nmfs.noaa.gov/sfa/hms/

Federal Register notices containing the full text of proposed and final regulations can be found at: http://www.access.gpo.gov/su_docs/aces/aces140.html.

4. OTHER ACTIVITIES

U.S. Research on Gear Modification to Reduce Sea Turtle Bycatch
Preliminary results from U.S. research in the Atlantic Ocean have shown that larger circle hooks significantly reduce turtle catches in the pelagic longline fishery (e.g. with mackerel bait, the number of loggerhead turtles caught was reduced by 65%). Unlike "J" hooks, which are often swallowed, circle hooks often become anchored in the mouth, and therefore hook extraction is easier and safer for sea turtles. There are a number of devices available to remove hooks and line from turtles caught on pelagic

longlines. Long handled LaForce line cutters and long handled Aquatic Release Corporation dehookers are used to remove gear from turtles too large to be boated. The Epperly Biopsy Pole is used with a stainless steel corer to take tissue samples for genetics. Short handled de-hookers used to remove hooks from animals that are boated. Miscellaneous tools have been developed to remove line, hooks, or the barb or eye of hooks on boated turtles. A dip net is used to bring small (<50 kg) turtles aboard. Mouth openers and gags used on boated turtles to allow access to internal hooks. U.S. gear experts presented this bycatch reduction technology to the international fishing community and resource managers at the International Fisheries Forum in Honolulu (2002), and at the NOAA-sponsored International Technical Expert Workshop on Marine Turtle Bycatch, in Seattle, WA (2003). As new technological solutions are discovered, we will continue to help export these technologies to other fishing nations.

ICCAT

Reporting form for catch limit / quota and minimum size regulations

Party	USA
Date	

Species	Bluefin	**Stock**	East

CATCH (MT)

year	limit/quota	Rec. No.	adjusted quota	catch	balance	mgmt period
1993						
1994						
1995	0	94-11				
1996	0	94-11				
1997	0	94-11				
1998	0	94-11				
1999	0	98-5				
2000	0	98-5				
2001	0	00-9				
2002						
2003	0	02-8				

SIZE2002

Minimum size limit	Tolerance level	Rec. No.	% of undersize fish in catch	Size data submitted
6.4 kg	15%	74-1		

observations*

Species	Bluefin	**Stock**	West			

CATCH (MT)

year	quota	discard limit	Rec. No.	adjusted quota	landings	discards	balance	management period
1995			94-12					
1996			94-12					
1997	1344.4		96-4		1334.3	161	10.1	
1998	1344.4		96-4	1354.5	1308	104	47	Fishing year
1999	1387	67.7	98-7	1434	1226	51	217	Fishing year
2000	1387	67.7	98-7	1604	1185	30	438	Fishing year
2001	1387	67.7	98-7	1825	1589.86	41.43	248.28	FY revised
2002	1387	67.7	98-7	1636.14	1874.9[a]	38	-223.91	FY estimate
2003	1489.6	67.7	02-7	1265.69				

SIZE2002

Minimum size limit	Tolerance level	Rec. No.	% of undersize fish in catch		Size data submitted	
6.4kg	15%	74-1				
30 kg/115 cm	8%	91-1	5.21%	FY 01 revised		
30 kg/115 cm	8%	91-1	9.05%	FY 02 estimate		

observations*

Fishing year is June - May.

[a]FY02 estimates were calculated using FY01 data for the 2nd half of the year. Estimates may also revised pending review of survey data.

* Please state whether calendar or fishing year, and specify fishing year where appropriate

Please specify cases where autonomous quota has been set following objection to the relevant recommendation

Please state whether overage/underage are being applied on an annual, biennial or other basis
(Note, overages / underages may only be applied in accordance with the recommendations in force)

ICCAT

Reporting form for catch limit / quota and minimum size regulations

Party	USA		
Date			
Species	Albacore	**Stock**	North

CATCH (MT)

year	limit/quota	Rec. No.	catch	balance	management period	% BET catch
1993			508			
1994			741			
1995			545			
93-95 av.			598			
1999		98-8	314			
2000		98-8	415		fishing year	
2001	607	00-6	453.13		FY revised	
2002	607	01-5	497.66[a]		FY estimate	
2003	607	02-5				

observations*

Underage may be taken per Recommendation 00-14

[a]FY02 estimates were calculated using FY01 data for the 2nd half of the year.

Species	Albacore	**Stock**	South

CATCH (MT)

year	limit/quota	Rec. No.	catch	balance	management period	% BET or SWO
1992						
1993						
1994						
1995						
1996			1			
92-96 av.			0.2			
1998	0.2	97-5	1			
1999	0.2	98-9	1.4			
2000	6	99-6	0.9			4% swo
2001	100	00-7	2			
2002	100	01-6				
2003	100	02-6				

observations*

FY02 not available.

* Please state whether calendar or fishing year, and specify fishing year where appropriate

Please specify cases where autonomous quota has been set following objection to the relevant recommendation

ICCAT

Reporting form for catch limit / quota and minimum size regulations

Party	USA		
Date			
Species	White marlin		

CATCH (MT)

year	catch limit	Rec. No.	PS/LL	Total landings	underage / overage
1996			64.7	7	
1997				2	
1998				2	
1999	2.5	97-9		1.6	0.9
2000	2.5	98-10		0.2	2.3
2001	0	00-13	0	22 fish	
2002	250 B & W	01-10		33 fish	

observations

Catches and catch limits as reported and approved by Compliance Committee
White marlin report in numbers of fish consistent with limit (250 white and blue marlins combined).

Species	Blue marlin		

CATCH (MT)

year	catch limit	Rec. No.	PS/LL	Total landings	underage/overage
1996			197	43	
1997				46	
1998				50	
1999	26	97-9		37	-11
2000	26	98-10		21.4	4.6
2001		00-13		77 fish	
2002	250 B & W	01-10		96 fish	

observations

Catches and catch limits as reported and approved by Compliance Committee
Blue marlin report in numbers of fish consistent with limit (250 white and blue marlins combined).

ICCAT

Reporting form for catch limit / quota and minimum size regulations

Party	USA
Date	

Species	Swordfish	**Stock**	North

CATCH (MT)

year	limit/quota	Discard limit	Rec. No.	adjusted quota	landings	discards	balance	mngmt period
1993					3782			
1994								
1995	3970		94-14		4026			
1996	3500		94-14		3559[#]			
1997	3277		95-11/96-7/98-13		2831		446	
1998	3190		96-7/ 97-6/98-13	3636	3112		524	
1999	3103		96-7/97-6/98-13	3627	2896		731	ad. 2001
2000	2951	320	99-2/ 01-13	2951	2683.7	428.3	267.3	Fishing Year
2001	2951	240	99-2/ 01-13	3626	2137.17	291.38	1437.4	FY revised
2002	2951	160	99-2/ 01-13	4173.4[a]	2399.56[b]	260.03	1673.8	FY estimated
2003	3852	80	02-2	5500[c]				

SIZE2002

Minimum size limit		Tolerance level	Rec. No.	% of undersize fish in catch	Size data submitted	
25 kg/125 cm		15%	90-2			
119 cm		0%	95-10	0.33%	FY01 revised	
119 cm		0%	95-10	0.56%[b]	FY02 estimated	

observations*

[#]4148 in 1997 SCRS includes discards. Landings = 3559

[a]The adjusted quota for 2002 reflects the 215 transfer to Japan per ICCAT Recommendation 00-03.

[b]FY02 estimates were calculated using FY01 data for the 2nd half of the year.

[c]The adjusted quota for 2002 reflects the 25 mt transfer to Canada per ICCAT Recommendation 02-02

Species	Swordfish	**Stock**	South

CATCH (MT)

year	limit/quota	Rec. No.	adjusted quota	catch	balance	management period
1993						
1994						
1995	250	94-14				
1996	250	94-14		384		Fishing year
1997	250	96-8		396		Fishing year
1998	384	97-7,97-8		295	89	Fishing year
1999	384	97-7, 97-8		51	333	Fishing year
2000	384	97-7, 97.8		93.8	290.2	
2001	*384*	00-4		69.86	341	FY revised
2002	*384*	01-2		53.17[a]		FY estimated
2003	100	02-3	390.2			

SIZE2002

Minimum size limit		Tolerance level	Rec. No.	% of undersize fish in catch		Size data submitted
25 kg/125 cm		15%	90-2			
119 cm		0%	95-10	0.42%	FY01 revised	
119 cm		0%	95-10	0.55%[a]	FY02 estimated	

observations*

384 MT limit agreed at intersession meeting of Panel 4 in 1997

[a]FY02 estimates were calculated using FY01 data for the 2nd half of the year.

Limits for 2001 and 2002 are autonomous in accordance with Recs 00-4 and 01-2

* Please state whether calendar or fishing year, and specify fishing year where appropriate
Please specify cases where autonomous quota has been set following objection to the relevant recommendation
Please state whether overage/underage are being applied on an annual, biennial or other basis
(Note, overages / underages may only be applied in accordance with the recommendations in force)

ICCAT

Reporting form for catch limit / quota and minimum size regulations

Party	USA		
Date			
Species	Bigeye	**Stock**	All Atlantic

CATCH (MT)

year	limit/quota	Rec. No.	adjusted quota	catch	balance	management period
1991				974		
1992				813		
91-92 av.				893.5		
1999				1262		
2000				589.2		Fishing Year
2001	NL	00-1		1363		FY revised
2002	NL	01-1		507.32[a]		FY estimated
2003	NL	02-1				

SIZE2002

Minimum size limit	Tolerance level	Rec. No.	% of undersize fish in catch		Size data submitted
3.2 kg	15%	79-1	0		

observations*

NL = no limit as catch in 1999 was less than 2,100 Mt

[a]FY02 estimates were calculated using FY01 data for the 2nd half of the year.

Species	Yellowfin	**Stock**	All Atlantic

CATCH (MT)

year	limit/quota	Rec. No.	adjusted quota	catch	balance	management period
1991						
1992						
91-92 av.						
1999						
2000				7207.1		Fishing Year
2001	NL	00-1		6703		Calendar Year
2002	NL	01-1		5845		Calendar Year

SIZE2002

Minimum size limit	Tolerance level	Rec. No.	% of undersize fish in catch		Size data submitted
3.2 kg	15%	72-1	0		

observations*

* Please state whether calendar or fishing year, and specify fishing year where appropriate

Please specify cases where autonomous quota has been set following objection to the relevant recommendation

Please state whether overage/underage are being applied on an annual, biennial or other basis

(Note, overages / underages may only be applied in accordance with the recommendations in force)

Swordfish Certificate of Eligibility Program 2002*

Imports of Swordfish into the United States (in metric tons, dressed weight).

Country	Atlantic Ocean	Pacific Ocean	Indian Ocean	Not Provided	Total
Not Provided	2.7	0.0	0.0	2.8	5.5
Australia	0.0	217.4	41.1	7.2	265.7
Barbados	0.5	0.0	0.0	0.0	0.5
Brazil	1,075.2	0.0	0.0	0.0	1,075.2
Canada	324.9	0.0	0.0	0.0	324.9
Chile	0.0	963.3	0.0	0.0	963.3
Columbia	0.0	0.0	0.0	0.0	0.0
Costa Rica	0.3	406.6	0.0	0.0	406.9
Ecuador	0.5	458.7	0.0	0.0	459.2
El Salvador	0.0	30.3	0.0	0.0	30.3
Fiji Islands	0.0	36.0	0.0	0.0	36.0
Grenada	19.8	0.0	0.0	0.0	19.8
Indonesia	0.0	0.0	17.2	0.0	17.2
Japan	0.0	16.6	0.0	0.0	16.6
Malaysia	0.5	29.8	0.0	0.0	30.2
Mexico	0.0	78.1	0.0	2.8	80.8
Nambia	87.0	0.0	0.0	1.4	88.4
New Zealand	0.0	257.9	0.0	0.0	257.9
Panama	0.0	755.5	0.0	0.0	755.5
Philippines	0.0	34.0	0.0	1.0	35.0
R.S.A.	0.0	0.0	86.9	0.0	86.9
Samoa	0.0	14.3	0.0	0.0	14.3
Seychelles	0.0	0.0	0.1	0.0	0.1
Singapore	0.0	139.7	3,062.1	0.0	3,201.8
South Africa	146.0	0.7	309.2	0.0	455.9
Taiwan	37.3	0.0	99.8	0.0	137.2
Tonga	0.0	3.8	0.0	0.7	4.5
Trinidad & Tobago	15.4	0.0	0.0	0.2	15.6
Uruguary	245.2	2.3	0.0	0.0	247.5
Venezuela	50.9	4.7	0.0	1.3	56.9
VietNam	0.0	14.7	0.0	0.0	14.7
Total	**2,006.1**	**3,464.2**	**3,616.5**	**17.4**	**9,104.2**

* COE Data as of 2/23/03

ANNUAL REPORTING OF IMPLEMENTATION OF THE ICCAT MANAGEMENT STANDARD FOR LARGE-SCALE TUNA LONGLINE VESSELS

a. Management in the fishing grounds

	Scientific Observer boarding	Satellite-based vessel monitoring system	Daily or required periodic catch report	Entry/Exit report
	Yes	Yes	Yes	Yes
Note	See section 2.2.9	Required on all vessels with pelagic longline gear on board and permitted to fish for swordfish/tuna using longline gear (effective 9/1/2003)	Vessel logbook program[1]	Vessel logbook program[1]

b. Management of transshipment (from the fishing grounds to the landing ports)

	Transshipment report	Port inspection	Statistical document program
	No		
Note	Transhipment prohibited per 50 CFR 635.29	See below	See below

c. Management at landing ports

	Landing inspection	Landing reporting	Cooperation with other Parties
	Yes	Yes	Yes
Note	Port sampling program[2]	Vessel logbook program, Dealer reporting program[3], Bluefin Statistical Document, Swordfish Certificate of Eligibility	

[1]Vessel logbook program. Annual vessel permits are required for commercial and recreational vessels targeting Atlantic tunas (bluefin, yellowfin, bigeye, albacore, and skipjack), U.S. commercial vessels fishing for swordfish, and commercial vessels fishing for Atlantic sharks in the U.S. Exclusive Economic Zone (EEZ). All commercially permitted vessels are selected to submit vessel logbooks. Logbooks contain information on fishing vessel activity, including dates of trips, number of sets, area fished (lat./long.), number of fish and other marine species caught, released and retained. In some cases, social and economic data such as volume and cost of fishing inputs are provided. Logbooks must be filled out within 48 hours of completing a day's fishing activities for multiple-day fishing trips or, before offloading for 1-day trips. Logbooks must be mailed within 7 days of offloading.

[2]Port sampling program. Port sampling agents are stationed at major ports along the Atlantic and Gulf of Mexico coasts to collect biological samples and size frequency, age-at-length, catch per unit effort, and catch composition data. Port samplers routinely visit major fish dealers and randomly sample catches.

[3]Dealer reporting program. Dealer permits are required for the commercial receipt of Atlantic tuna, swordfish, and sharks. Bluefin tuna dealers report imports through the Bluefin Statistical Document, as described below, while swordfish dealers report through the dealer import form. Dealer reports must be submitted to NMFS twice a month for all swordfish, sharks and tunas. Dealers are required to record each purchase of Atlantic bluefin tuna on a landing card and provide the information to NMFS within 24 hours of the purchase or receipt of the fish. The landing cards, which are used to monitor the bluefin tuna quota, include the following information: dealer number, dealer name, date the fish was landed, harvest gear, fork length, weight (whole or dressed), identification tag number, area where fish was caught, port where landed, Atlantic tuna permit number, vessel name, and the name and dated signature of the vessel's master.

NOAA ENFORCEMENT ACTIONS TAKEN ON ICCAT SPECIES

September 1, 2002 - August 31, 2003

During the reporting period, enforcement efforts consisted of dockside monitoring of offloads at major landing facilities in conjunction with dealer record checks, as well as at-sea boardings and visits to a limited number of concerned recreational marinas. Enforcement officials detected the following violations:

Prohibition	Number of Cases	Disposition/Status
Illegal sale or purchase of billfish (635.31(b))	2	Written warnings
Illegally possess HMS w/o vessel permit (635.71(a)(2))	2	Open investigations
	3	Written warnings
	2	Sent to GCEL
	1	NOVA[1] Issued
Selling Atlantic HMS w/o dealer permit (635.71(a)(3))	4	Open investigation
	1	Sent to GCEL
Selling Atl. HMS to non-permittted dealer (635.71(a)(4))	1	Sent to GCEL
	1	Open investigation
Failure to have permit at vessel or dealer or permit was altered (635.71(a)(5))	1	Sent to GCEL
Falsify or fail to record required information (635.71(a)(6))	1	Sent to GCEL
	1	Settlement agreement by GCEL
Failure to identify gear (635.71(a)(10))	1	Open investigation
Did not take an observer when required (635.71(a)(11))	1	Written warning
	1	Settlement agreement by GCEL
Resist, oppose, impede a Law Enforcement Officer (635.71(a)(12))	1	Settlement agreement by GCEL
HMS not in specified form (635.71(a)(21))	1	Written warning
Possess undersized HMS (635.71(a)(22))	2	Written warnings
	1	Summary Settlement Paid (SS)
Unrestricted use of Pelagic Longline (PLL) gear (635.71(a)(23))	1	Written warning
	1	Sent to GCEL
Improper importation of Atl. HMS (635.71(a)(24))	1	Written warning
Prohibition	Number of Cases	Disposition/Status

[1] Notice of Violation and Assessment

Violate any provision of M-SA or ATCA (635.71(a)(28))	1	Open investigation
Land, purchase, sell illegal HMS species (635.71(a)(29)(i))	1	Sent to GCEL
Gear deployed in closed area (635.71(a)(30))	1	Sent to GCEL
Improper gear used in closed area (635.71(a)(31))	1	Sent to GCEL
Resist, oppose, impede a NMFS employee (635.71(a)(35))	1	Settlement agreement satisfied
Fish for Atl. Tuna w/o a vessel permit (635.71(b))	1	Open investigation
Exceed BFT catch limit (635.71(b)(12))	2	Written warnings
Billfish caught using PLL gear (635.71(c)(1))	1	SS Paid
Fail to maintain Billfish in specified form (635.71(c)(3))	1	Written warning
Illegal sale or purchase of Billfish (635.71(c)(4))	6 1	Written warnings SS Paid
Undersized Billfish (635.71(c)(5))	1	NOVA Issued
Purchase, sell or import Swordfish w/o permit (635.71(e)(1))	2	Written warnings
Unrestricted sale or purchase of Swordfish (635.71(e)(7))	1 1	Open investigation Sent to GCEL

Appendix Table 2.1-YFT. Annual Landings (MT) of Yellowfin Tuna from 1998 to 2002.

Area	Gear	1998	1999	2000	2001	2002
NW Atlantic	Longline	464.9	581.3	734.5	631.8	399.7
	Rod and reel*	2845.7	3818.2	3809.5	3690.5	2878.2
	Troll	177.5	0.0	0.0	0.0	0.0
	Gillnet	1.7	0.2	0.2	7.6	5.0
	Trawl	0.7	4.1	1.8	2.7	0.3
	Handline	0.0	192.0	235.7	242.5	127.5
	Trap	0.1	0.8	0.5	0.1	0.2
	Uncl	0.0	2.1	1.3	6.8	3.2
Gulf of Mexico	Longline	1864.5	2736.6	2133.0	1505.5	2104.3
	Rod and reel*	80.9	149.4	52.3	494.2	136.8
	Handline	60.8	12.7	28.6	43.4	92.3
	Gillnet	0.0	**	0.0	0.0	0.0
Caribbean	Longline	58.6	24.4	11.8	23.1	11.8
	Rod and reel*	-	-	-	0.1	52.3
	Handline	3.9	14.5	19.4	14.3	7.2
	Gillnet	0.0	0.0	0.1	0.3	**
	Trap	0.0	0.1	0.3	0.3	0.3
NC Area 94a	Longline	4.6	0.2	2.1	3.5	0.1
SW Atlantic	Longline	55.3	32.4	19.8	36.2	26.1
All Gears & Areas		5619.2	7569.0	7050.7	6703.1	5845.3

** ≤= 0.05 MT
* Rod and Reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.

Appendix Table 2.1-SKJ. Landings (MT) of Skipjack Tuna from 1998 to 2002

Area	Gear	1998	1999	2000	2001	2002
NW Atlantic	Longline	0.7	0.3	0.0	0.1	**
	Rod and reel*	49.5	63.6	13.1	32.9	26.7
	Troll	0.4	0.0	0.0	0.0	0.0
	Gillnet	16.9	26.5	1.9	3.6	**
	Trawl	0.2	1.0	0.0	0.2	**
	Handline	0.0	0.2	0.2	0.2	0.2
	Trap	0.0	17.5	0.0	**	**
Gulf of Mexico	Longline	0.6	0.4	0.2	0.2	**
	Rod and reel*	37.0	34.8	16.7	16.1	13.3
	Handline	0.0	0.4	0.7	0.0	0.0
	Uncl	0.0	0.0	0.0	0.0	0.0
Caribbean	Longline	0.0	1.3	1.6	3.6	2.3
	Gillnet	0.0	0.4	0.6	1.6	0.6
	Handline	0.0	5.8	8.8	10.0	12.2
	Trap	0.0	0.1	0.3	0.4	0.6
	Rod and reel*	-	-	-	-	33.5
SW Atlantic	Longline	0.0	0.0	0.0	0.0	0.0
All Gears & Areas		105.3	152.3	44.1	68.9	89.6

** $\leq$ 0.05 MT
* Rod and Reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.

Appendix Table 2.1-BET. Landings (MT) of Bigeye tuna by year for 1998-2002.

Area	Gear	1998	1999	2000	2001	2002
NW Atlantic	Longline	544.3	737.8	333.2	502.2	325.0
	Rod and reel*	228.0	316.1	34.4	366.2	50.9
	Troll	4.0	0.0	0.0	0.0	0.0
	Gillnet	0.4	0.2	0.0	0.2	0.0
	Handline	0.0	11.9	4.1	33.7	13.1
	Trawl	0.5	1.2	1.7	0.4	0.3
	Pound	0.0	0.0	0.0	0.0	0.0
	Uncl	0.0	0.9	0.0	1.0	0.0
Gulf of Mexico	Longline	25.6	54.6	44.5	15.3	41.0
	Rod and reel*	0.0	1.8	0.0	0.0	0.0
	Handline	0.1	0.2	0.1	0.5	0.6
Caribbean	Longline	48.5	23.2	13.7	31.9	29.6
	Handline	0.0	0.2	1.5	0.0	0.0
NC Area 94a	Longline	48.4	35.3	63.1	61.0	47.0
SW Atlantic	Longline	28.5	78.2	77.4	92.0	68.1
All Gears & Areas		928.3	1261.6	573.6	1104.4	575.6

* Rod and Reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector.

Appendix Table 2.2b-BFT. Landings (MT) of Bluefin tuna for 1998 to 2002.

Area	Gear	1998	1999	2000	2001	2002
NW Atlantic	Longline	30.5	25.1	22.8	17.7	8.4
	Handline	29.2	15.5	3.2	9.0	4.5
	Purse Seine	248.6	247.9	275.2	195.9	207.7
	Harp	133.1	115.8	184.2	101.9	55.5
	* Rod and reel (>145 cm LJFL)	610.4	657.5	632.8	993.4	1008.2
	* Rod and reel (<145 cm LJFL)	166.3	103.0	49.5	242.9	547.6
	Uncl	0.6	0.1	0.2	0.5	0.0
Gulf of Mexico	Longline	18.3	48.4	43.3	19.8	32.8
	* Rod and reel	0.0	0.4	0.9	1.7	1.5
NC Area 94a	Longline	-	-	-	-	8.7
	All Gears	1237.0	1213.7	1212.1	1582.4	1874.9

* Rod and Reel catches and landings represent estimates of landings and dead discards when available based on statistical surveys of the U.S. recreational harvesting sector.

Appendix Table 2.2-ALB. Landings (MT) of Albacore tuna for 1998 to 2002.						
Area	Gear	1998	1999	2000	2001	2002
NW Atlantic	Longline	155.4	179.5	130.5	171.7	123.2
	Gillnet	40.1	27.0	0.8	3.3	2.5
	Handline	0.0	0.6	2.9	1.7	3.4
	Trawl	2.4	0.4	0.0	0.0	0.3
	Troll	5.8	0.0	0.0	0.0	0.0
	Rod and reel*	601.1	90.1	250.8	122.3	342.0
	Pound	0.9	0.4	0.0	0.0	0.0
	Uncl	0.0	0.0	0.1	0.1	**
Gulf of Mexico	Longline	3.9	3.8	4.1	4.9	9.5
	Rod and reel*	0.0	0.0	0.0	0.0	0.0
	Handline	0.0	**	0.0	0.0	0.0
Caribbean	Longline	17.8	8.3	9.2	8.7	8.4
	Trol	0.0	0.0	0.0	0.0	0.0
	Gillnet	0.0	0.2	0.1	0.5	**
	Trap	0.0	**	0.2	0.3	0.6
	Handline	0.0	3.8	5.0	2.2	2.7
NC Area 94a	Longline	1.6	1.5	2.6	6.1	5.0
SW Atlantic	Longline	1.4	1.4	0.9	2.4	1.0
	All Gears & Areas	830.4	317	407.35	324.2	498.67

** $\leq$ 0.05 MT
* Rod and Reel landings are estimates of landings and dead discards, when available.

Appendix Table 2.3-SWO. Catches and Landings (MT) of Swordfish for 1998 to 2002.						
Area	Gear	1998	1999	2000	2001	2002
NW Atlantic	* Longline	1624.1	1872.3	1547.6	1225.1	1122.3
	Gillnet	36.3	0.0	0.0	0.0	0.1
	Handline	0.0	5.0	7.7	7.5	8.2
	Trawl	5.9	7.5	10.9	2.7	3.9
	Troll	0.7	0.0	0.0	0.0	0.0
	* unclassified	9.1	3.8	1.4	0.3	1.6
	Harpoon	1.5	0.0	0.6	7.4	2.8
	** Rod and Reel	4.7	21.3	15.6	1.5	48.3
	Trap	0.1	**	0.0	0.0	0.0
Gulf of Mexico	* Longline	633.1	579.6	631.7	494.6	547.5
	Handline	0.0	**	1.2	0.3	2.5
Caribbean	* Longline	516.0	260.5	331.9	347.0	324.7
	Trap	0.0	0.0	0.3	0.0	0.1
	Gillnet	0.0	0.0	0.0	0.0	0.0
	Handline	0.0	0.0	0.0	0.0	0.0
NC Atlantic	* Longline	658.6	650.0	804.6	420.6	592.9
S Atlantic	* Longline	170.1	185.2	143.8	149.3	53.8
	All Gears& Areas	3660.2	3585.2	3497.1	2653.3	2708.7

* includes landings and estimated discards from scientific observer and logbook sampling programs.
** ≤ = 0.5 MT

Appendix Table 2.4-BIL. Landings (MT) and dead discards of Blue Marlin, White Marlin and Sailfish for 1999-2002.

		Blue Marlin				White Marlin				Sailfish			
Area	Gear	1999	2000	2001	2002	1999	2000	2001	2002	1999	2000	2001	2002
NW Atlantic	* Longline	22.0	28.8	10.9	17.3	18.6	10.3	5.1	11.5	13.7	11.2	2.2	0.4
	** Unclassified	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0
	Rod and reel	24.8 +?	13.8 +?	9.0 +?	9.8 +?	-	-	-	-	-	-	-	-
Gulf of Mexico	* Longline	55.2	29.6	9.4	17.8	31.5	29.9	10.1	15.6	57.4	33.9	8.2	6.3
	Rod and reel	7.5 +?	4.7 +?	5.1 +?	4.4 +?	-	-	-	-	-	-	-	-
Caribbean	* Longline	1.6	0.5	1.2	0.8	5.0	0.5	0.7	1.5	0.5	0.1	0.0	0.2
	Rod and reel	4.6 +?	5.7 +?	2.3 +?	2.9 +?	-	-	-	-	-	-	-	-
	Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown & NC Area 94a	* Longline	1.6	0.7	0.9	1.5	1.1	0.1	0.6	0.7	0.0	0.1	0.3	**
SW Atlantic	* Longline	1.7	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0
***NW Atlantic& Caribbean & Gulf of Mex.	Rod and reel					5.2	1.3	3.4	5.6	163.0	75.7	57.8	103.0
	All Gears	119.0	83.9	38.8	54.7	62.0	42.1	19.9	35.3	234.6	121.1	68.5	109.9

* includes landings and estimated discards from scientific observer and logbook sampling programs.
** ≤ = 0.5 MT
*** Estimation method no longer provides area-specific information.

Appendix Table 2.6a-SHK. Estimates of U.S. commercial and recreational landings and dead discards for pelagic sharks in the U.S. Atlantic, Gulf of Mexico, and Caribbean.

	Commercial					Recreational			Discards			Total	
Year	mt (ww) [1]	mt (dw) [2]	lb (dw) [3]	av. weight[4]	number [5]	number [6]	av. weight[7]	lb (dw)	number	mt (ww)	lb (dw) [8]	number	lb (dw)
1981						12,603	50.035	630,591				12,603	630,591
1982	45.41	23.17	51,077		1,354	20,015	50.996	1,020,685				21,369	1,071,762
1983	51.89	26.47	58,367		1,627	21,968	117.64	2,584,316				23,595	2,642,683
1984	49.12	25.06	55,250		1,538	23,295	67.489	1,572,156				24,833	1,627,406
1985	57.99	29.59	65,227		1,969	92,998	38.224	3,554,756				94,967	3,619,982
1986	68.50	34.95	77,049	66.850	2,385	42,572	65.631	2,794,043				44,957	2,871,091
1987	87.46	44.62	98,375	69.171	2,786	37,153	39.002	1,449,041	13,092	560.64	630,606	53,031	2,178,022
1988	129.48	66.06	145,639	68.958	3,915	32,993	41.271	1,361,654	13,655	468.74	527,237	50,563	2,034,530
1989	141.36	72.12	159,001	57.574	4,937	18,255	73.228	1,336,777	13,480	538.21	605,376	36,672	2,101,155
1990	102.74	52.42	115,566	67.221	3,274	11,630	41.246	479,691	13,955	795.97	895,300	28,859	1,490,557
1991	114.32	58.33	128,587	76.681	3,290	10,070	62.061	624,954	17,232	813.21	914,695	30,592	1,668,236
1992	139.81	71.33	157,258	73.737	4,111	16,304	39.219	639,427	8,939	298.31	335,538	29,354	1,132,222
1993	387.30	197.60	435,638	81.631	5,278	29,861	50.988	1,522,553	30,545	1,191.52	1,340,217	65,684	3,298,407
1994	513.46	261.97	577,535	82.713	6,688	5,638	68.280	384,963	13,410	637.71	717,294	25,736	1,679,791
1995	393.93	200.98	720,219	75.676	9,517	32,673	47.629	1,556,182	10,864	710.27	798,909	53,054	3,075,310
1996	402.03	205.12	760,364	81.934	9,280	18,534	33.697	624,540	22,153	949.22	1,067,682	49,967	2,452,586
1997	381.08	194.43	537,594	85.937	6,256	8,743	54.834	479,414	7,754	250.42	281,671	22,753	1,298,679
1998	267.07	136.26	505,275	83.184	6,074	11,762	35.977	423,161	6,002	280.09	315,044	23,838	1,243,480
1999	113.10	57.70	376,471	88.388	4,259	11,122	48.304	537,237	3,464	117.63	132,310	18,845	1,046,018
2000	191.15	97.53	350,705	69.280	5,062	13,346	16.749	223,532	7,495	216.13	243,102	25,903	817,339
2001	192.43	98.18	361,667	62.978	5,743	3,820	83.938	320,643	6,158	155.75	175,187	15,721	857,497
2002	174.06	88.81	305,637	60.717	5,034	4,732	87.152	412,403	5,335	92.73	104,302	15,101	822,343

[1] From weighout data sheets; [2] Wet weight to dry weight conversion ratio is 1.96; [3] 1982-1994 data are from weighout data sheets, 1995-2002 data are the maximum of the combined southeast quota monitoring program/southeast and northeast general canvass estimate and the weighout estimate; [4] In pounds dressed weight from weighout data sheets; [5] 1982-1994 data are taken directly from weighout data sheets,1995-2002 data obtained as the maximum of dividing values in fourth column (lb dw) by those in fifth column (av. weight) and the estimated number of sharks landed from the weighout data sheets; [6] Almost all recreational landings are from the MRFSS survey, for 2000-2002 data from Headboat and TXPWD were not yet available; [7] In pounds dressed weight; [8] Wet weight to dry weight conversion ratio is 1.96.

Appendix Table 2.6b-SHK Estimates of commercial and recreational landings and dead discards for blue sharks in the U.S. Atlantic, Gulf of Mexico, and Caribbean.

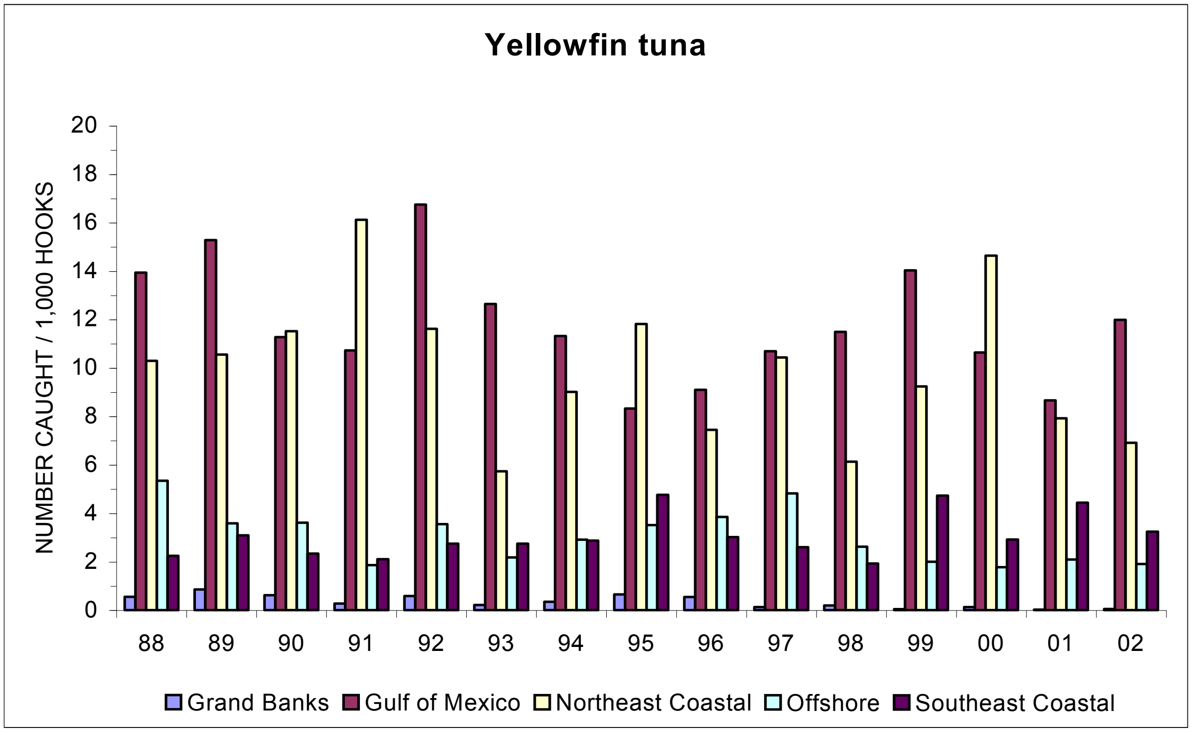
	Commercial					Recreational			Discards			Total	
Year	mt (ww) [1]	mt (dw) [2]	lb (dw) [3]	av. weight[4]	number [5]	number [6]	av. weight[7]	lb (dw)	number	mt (ww)	lb (dw) [8]	number	lb (dw)
1981						4,925	46.653	229,766				4,925	229,766
1982	0	0	0		0	0	46.653	0				0	0
1983	0	0	0		0	14,593	46.653	680,807				14,593	680,807
1984	0	0	0		0	2,579	46.653	120,318				2,579	120,318
1985	0	0	0		0	11,621	33.003	383,528				11,621	383,528
1986	0.40	0.20	450	148.500	6	18,898	66.182	1,250,707				18,904	1,251,157
1987	0	0	0	56.412	0	20,683	47.545	983,373	12,506	526.2	591,868	33,189	1,575,241
1988	0.10	0.05	112	56.412	4	12,235	32.62	399,106	12,934	421.16	473,719	25,173	872,937
1989	0	0	0	56.412	0	7,419	41.011	304,261	12,525	480	539,902	19,944	844,163
1990	0.25	0.13	286	56.412	6	1,745	56.134	97,954	13,141	741.33	833,845	14,892	932,084
1991	0	0	0	56.412	0	6,643	52.12	346,233	16,562	772.32	868,702	23,205	1,214,936
1992	0.47	0.24	529	67.769	14	5,853	41.191	241,091	7,043	184.39	207,401	12,910	449,021
1993	7.88	4.02	8860	75.188	85	14,114	53.567	756,045	29,329	1,136.33	1,278,139	43,528	2,043,044
1994	7.82	3.99	8796	79.960	105	507	46.653	23,653	11,986	572.24	643,653	12,598	676,103
1995	3.61	1.84	4059	66.557	61	464	46.653	21,647	9,725	618.15	695,293	10,250	720,998
1996	5.40	2.76	17920	70.819	253	9,150	34.07	311,741	18,996	710.69	799,381	28,399	1,129,042
1997	1.42	0.72	1598	52.933	31	4,236	55.74	236,115	6,614	184.605	207,643	10,881	445,356
1998	2.87	1.46	3228	40.873	79	6,085	46.653	283,884	5,295	195.25	219,616	11,459	506,728
1999	0.16	0.08	1111	6.725	165	5,218	46.653	243,435	2,772	98.96	111,310	8,155	355,856
2000	0.61	0.31	3508	62.634	56	7,010	46.653	327,038	6,298	137.19	154,311	13,364	484,856
2001	3.09	1.58	3476	40.579	86	950	46.653	44,320	5,219	105.87	119,082	6,255	166,879
2002	0.20	0.10	225	56.500	4	0	46.653	0	4,335	67.87	76,340	4,339	76,565

[1] From weighout data sheets; [2] Wet weight to dry weight conversion ratio is 1.96; [3] 1982-1994 data are from weighout data sheets, 1995-2002 data are the maximum of the combined southeast quota monitoring program/southeast and northeast general canvass estimate and the weighout estimate; [4] In pounds dressed weight from weighout data sheets, values for 1987-1991 are taken as the mean of 1992-2002 values; [5] 1982-1994 data are taken directly from weighout data sheets,1995-2002 data obtained as the maximum of dividing values in fourth column (lb dw) by those in fifth column (av. weight) and the estimated number of sharks landed from the weighout data sheets; [6] Almost all recreational landings are from the MRFSS survey, for 2000-2002 data from Headboat and TXPWD were not yet available; [7] In pounds dressed weight, values for 1981-84, 1994-95, and 1998-2002 are taken as the mean of 1985-93 and 1996-97 values for which n>=5; [8] Wet weight to dry weight conversion ratio is 1.96.

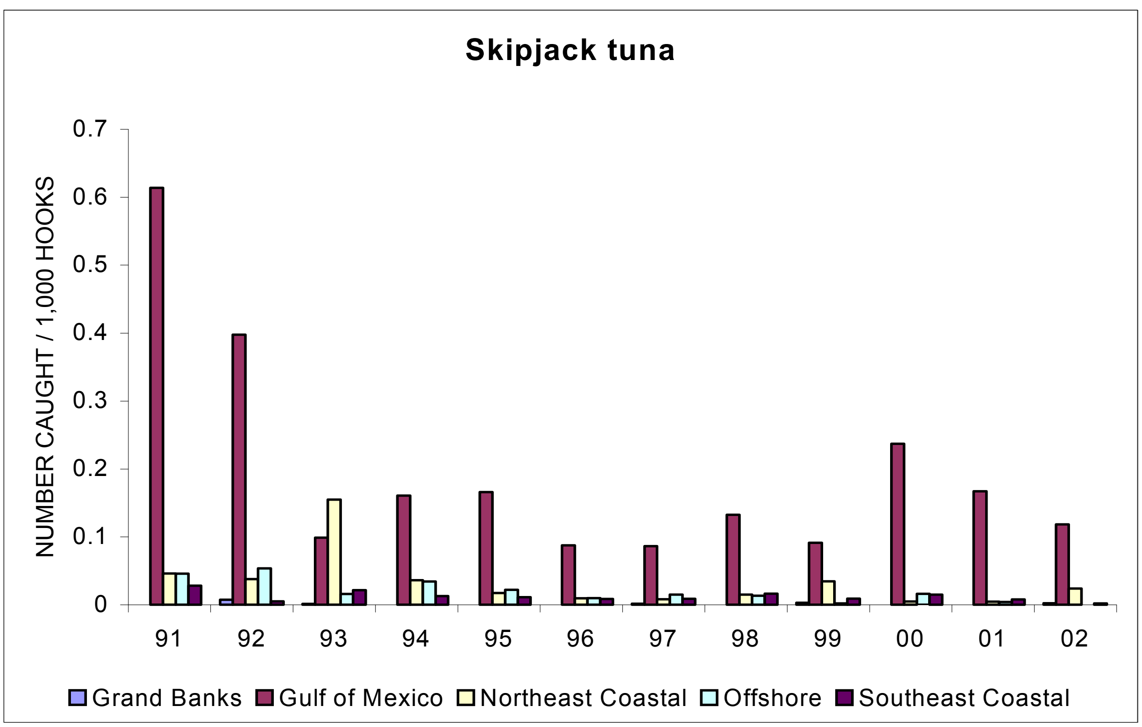
Appendix Table 2.6c-SHK. Estimates of commercial and recreational landings and dead discards for shortfin makos in the U.S. Atlantic, Gulf of Mexico, and Caribbean.

	Commercial					Recreational			Discards			Total	
Year	mt (ww) [1]	mt (dw) [2]	lb (dw) [3]	av. weight[4]	number [5]	number [6]	av. weight[7]	lb (dw)	number	mt (ww)	lb (dw) [8]	number	lb (dw)
1981						7,678	56.395	433,001				7,678	433,001
1982	42.12	21.49	47,376		1298	13,522	50.996	689,568				14,820	736,944
1983	6.78	3.46	7,626		225	7,375	56.141	414,039				7,600	421,665
1984	42.46	21.66	47,759		1436	15,474	67.531	1,044,975				16,910	1,092,734
1985	53.24	27.16	59,884		1877	79,912	41.487	3,315,309				81,789	3,375,193
1986	64.76	33.04	72,842	64.9361	2,318	20,792	70.107	1,457,665				23,110	1,530,507
1987	77.84	39.71	87,554	65.7712	2,592	14,809	35.069	519,337	217	8.72	9,808	17,618	616,699
1988	101.37	51.72	114,021	63.0954	3,398	19,998	44.693	893,771	127	5.08	5,714	23,523	1,013,505
1989	124.56	63.55	140,105	55.771	4,608	8,367	90.117	754,009	249	9.01	10,134	13,224	904,248
1990	91.77	46.82	103,223	63.8425	3,081	8,509	35.483	301,925	259	10.307	11,593	11,849	416,741
1991	104.87	53.51	117,957	75.5015	3,085	3,422	69.020	236,186	245	11.16	12,553	6,752	366,697
1992	125.97	64.27	141,691	71.8326	3,782	8,382	33.589	281,543	771	38.41	43,203	12,935	466,437
1993	281.09	143.41	316,164	77.355	4,044	15,034	49.883	749,941	562	24.03	27,029	19,640	1,093,134
1994	324.66	165.64	365,177	76.7173	4,623	4,496	79.296	356,515	558	21.45	24,127	9,677	745,818
1995	288.83	147.36	324,870	71.2094	4,562	31,212	51.227	1,598,897	446	28.44	31,989	36,220	1,955,756
1996	238.05	121.46	267,762	83.2385	3,217	8,618	30.265	260,824	0	0	0	11,835	528,586
1997	245.46	125.23	276,089	84.574	3,264	3,025	60.839	184,038	0	0	0	6,289	460,127
1998	199.76	101.92	224,689	82.327	2,729	5,633	29.590	166,680	0	0	0	8,362	391,370
1999	90.05	45.94	150,073	87.763	2,262	1,383	56.141	77,643	0	0	0	3,645	227,716
2000	166.74	85.07	187,546	66.185	2,836	5,808	56.141	326,066	0	0	0	8,644	513,613
2001	182.02	92.87	204,735	63.154	3,242	2,870	83.938	240,902	0	0	0	6,112	445,637
2002	165.59	84.48	186,255	61.024	3,060	3,199	87.152	278,799	0	0	0	6,259	465,054

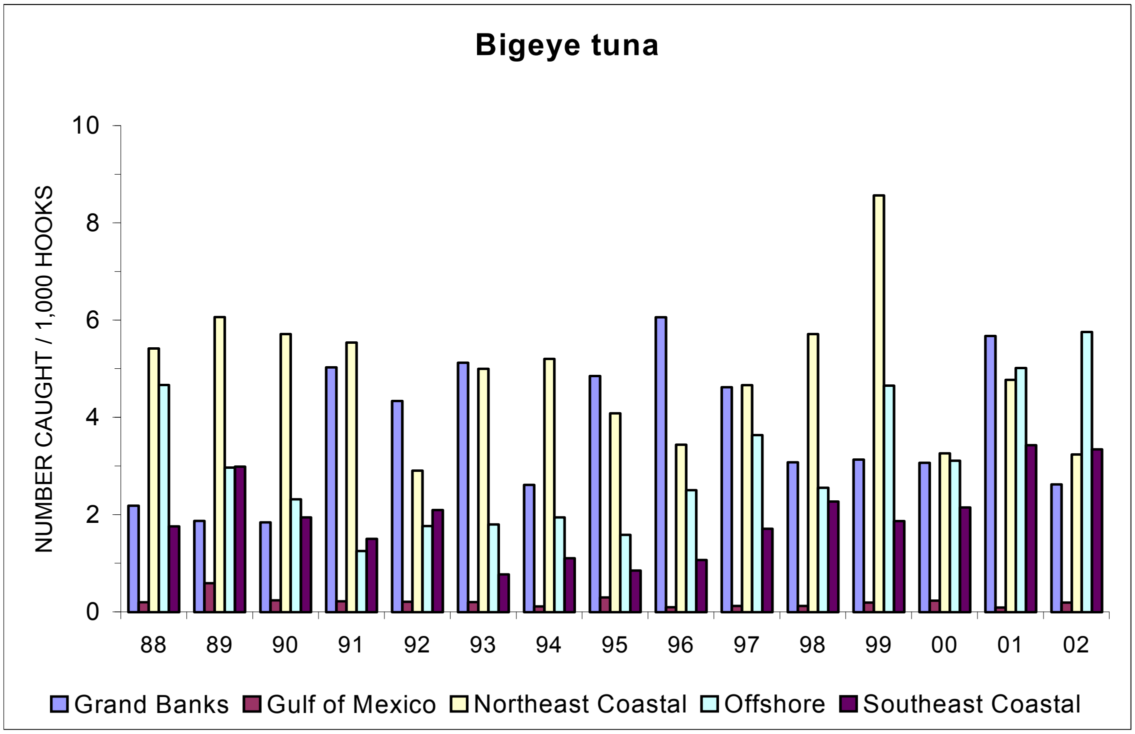
[1] From weighout data sheets; [2] Wet weight to dry weight conversion ratio is 1.96; [3] 1982-1994 data are from weighout data sheets, 1995-2002 data are the maximum of the combined southeast quota monitoring program/southeast and northeast general canvass estimate and the weighout estimate; [4] In pounds dressed weight from weighout data sheets; [5] 1982-1994 data are taken directly from weighout data sheets,1995-2002 data obtained as the maximum of dividing values in fourth column (lb dw) by those in fifth column (av. weight) and the estimated number of sharks landed from the weighout data sheets; [6] Almost all recreational landings are from the MRFSS survey, for 2000-2002 data from Headboat and TXPWD were not yet available; [7] In pounds dressed weight, values for 1983 and 1999-2000 are taken as the mean of 1981-82, 1984-98, and 2001-02 values for which n>=5; [8] Wet weight to dry weight conversion ratio is 1.96.



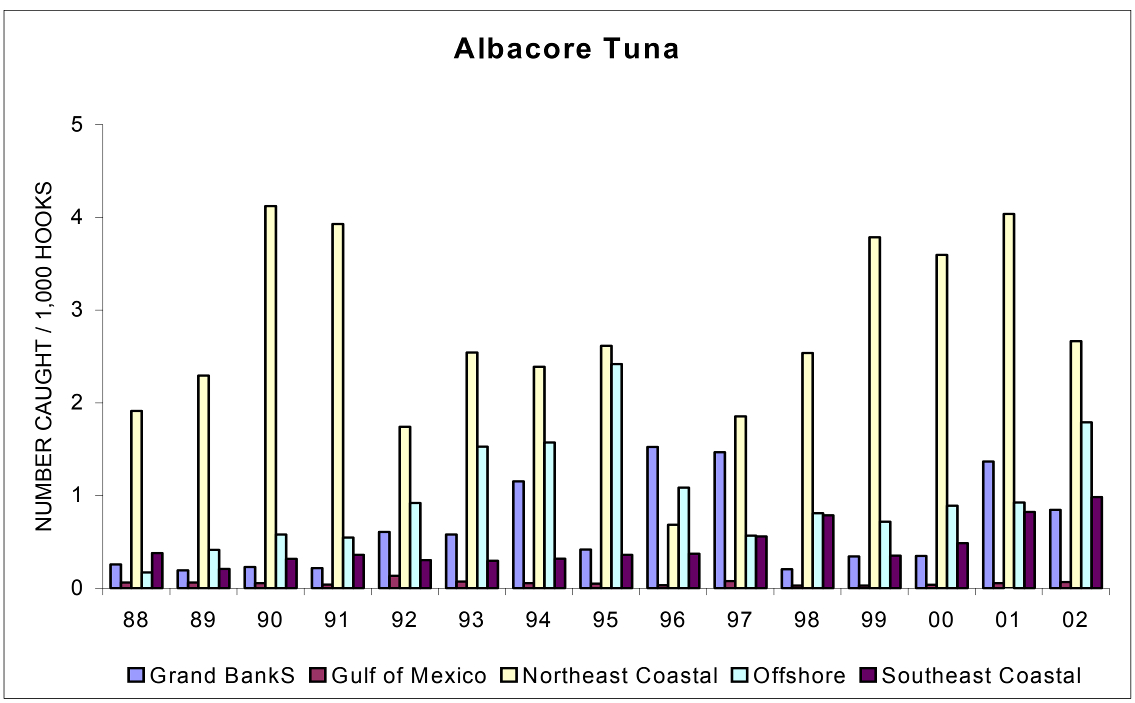
Appendix Figure 2.1-YFT. *Nominal catch rates for YFT in US Longline logbook reports.*



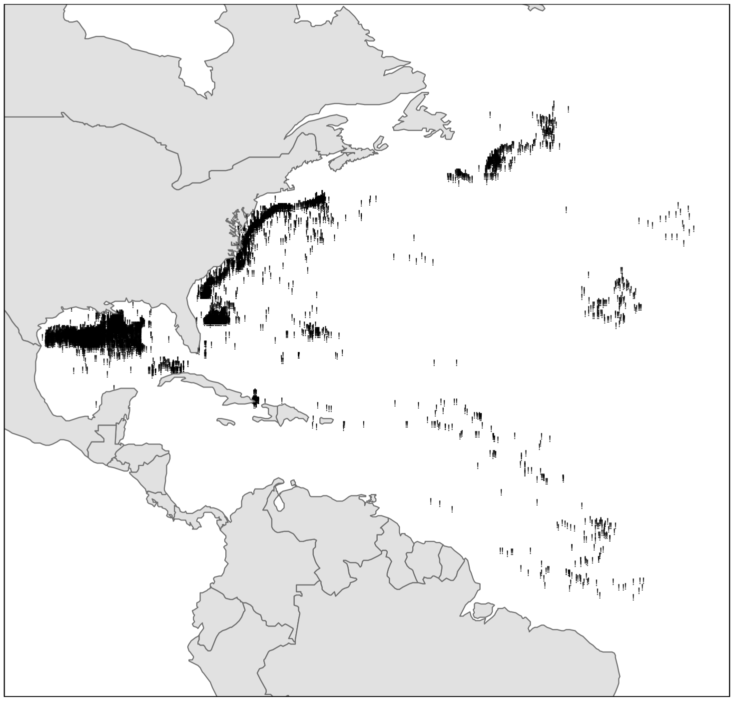
Appendix Figure 2.1-SKJ. *Nominal catch rates for SKJ in US Longline logbook reports.*



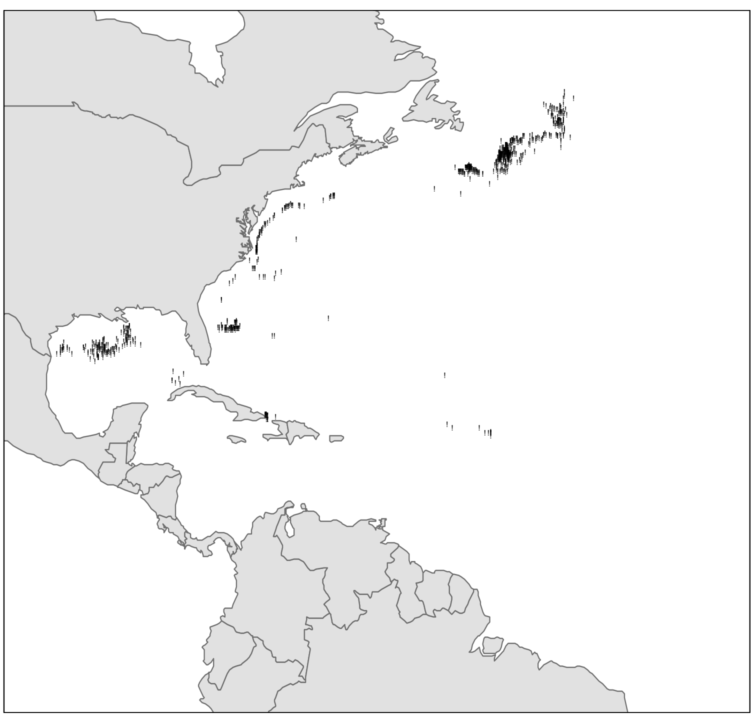
Appendix Figure 2.1-BET. *Nominal catch rates for BET in US Longline logbook reports.*



Appendix Figure 2.2 - ALB. *Nominal catch rates for ALB in US Longline logbook reports.*



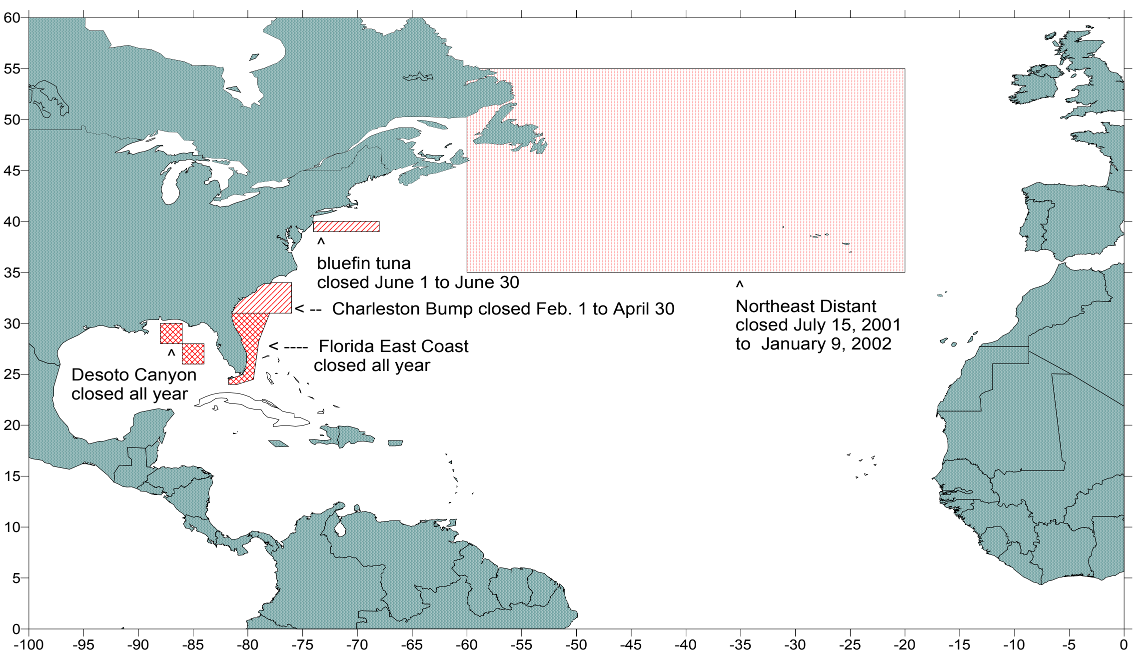
Appendix Figure 2.2 -Observers*. Reported (upper) and observed (lower) longline positions in 2001.*



AFFECT OF TIME/AREA CLOSURES ON U.S. SWORDFISH CATCH

Beginning in the year, 2001, U.S pelagic longline fishing was prohibited or restricted in the five areas and times shown in figure 1. The three southern areas, (Charleston Bump, Florida East Coast, and Desoto Canyon), were selected, at least in part, to reduce the catch of swordfish < 125 cm and other bycatch. The bluefin tuna area was closed primarily to reduce the catch of bluefin smaller than legal size for sale by U.S. fishers. Longline vessels were allowed to fish in the Northeast Distant area if they participated in a turtle study and carried an observer. In 2002 the Northeast Distant area was closed all year to vessels not participating in the turtle study.

The number of longline vessels in the U.S. fishery targeting swordfish has declined steadily since the mid 1990's. Reported effort (hooks) declined initially but has remained fairly stable since 1998 (Table 1). The percentage effort in hooks and estimated catch of swordfish < 125 cm in numbers and in metric tons in 2001 and 2002 are compared to the average effort and catch from 1997 through 1999 (Table 2). There was some overall reduction in effort, reported in hooks fished. Some of the effort previously reported from the Florida East Coast fishing area appears to have redistributed into the Gulf of Mexico and up to the south Atlantic and Mid Atlantic Bights. The years 2001, 2002, and average (1997-1999) estimated catch of swordfish < 125 cm in numbers and in metric tons and effort in hooks are reported by area and time/area status in Table 3. Although the metric tons of swordfish < 125 cm estimated caught increased in some areas compared to the 1997-99 average, notably the Caribbean and the Gulf of Mexico, the overall change in estimates was a reduction of nearly 50% in both years.



Appendix Figure 1. Time area closures for the U.S. Atlantic pelagic longline fleet.

Table 1. *Numbers of Active Vessels.* "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.

YEAR	FISHED	CAUGHT SWORDFISH	CAUGHT SWORDFISH IN 5 MONTHS	HOOKS REPORTED
1987	297	273	180	6,558,426
1988	388	338	210	7,009,358
1989	456	415	251	7,927,401
1990	419	363	209	7,500,095
1991	342	308	176	7,754,127
1992	340	304	184	9,076,717
1993	435	306	177	9,735,806
1994	501	306	176	10,351,805
1995	489	314	198	11,270,539
1996	367	275	191	10,944,660
1997	352	265	167	10,213,780
1998	288	233	139	8,120,273
1999	226	200	143	7,996,685
2000	206	185	135	8,158,390
2001	185	168	114	7,897,037
2002	174	154	108	7,276,665

Table 2. Catch in numbers (# small) and in metric tons (mt small) of swordfish < 125 cm and effort (hooks) in years 2001 and 2002 expressed as a percentage of the average from years 1997 through 1999.

gear	area	2001 # small	2002 # small	2001 mt small	2002 mt small	2001 hooks	2002 hooks
LL	CAR	70%	70%	144%	150%	84%	49%
LL	GOM	124%	127%	105%	139%	103%	101%
LL	FEC	18%	11%	28%	16%	67%	73%
LL	SAB	47%	37%	52%	34%	103%	58%
LL	MAB	115%	136%	60%	108%	94%	84%
LL	NEC	102%	67%	13%	34%	108%	67%
LL	NED	86%	39%	95%	17%	61%	91%
LL	total LL	69%	62%	56%	54%	90%	85%

Table 3. Catch in numbers (# small) and in metric tons (mt small) of swordfish < 125 cm and effort (hooks) by longline (LL) gear for years 2001, 2002, and the average for years 1997, 1998 and 1999 (average) by area, (Caribbean (CAR). Gulf of Mexico (GOM), Florida East Coasxt (FEC), South Atlantic Bight (SAB), Mid Atlantic Bight (MAB), Northeast Coastal (NEC), and Northeast Distant (NED) and status of time/area closure.

area	time/area	# small			hooks			mt small			change in mt	
		average	2001	2002	average	2001	2002	average	##	##	2001	2002
CAR	open	434	304	304	237,280	200,243	115,912	11	16	16	5	5
GOM	closed	424	25	5	236,805	20,900	13,635	19	1	0	-18	-19
GOM	open	1,394	2,226	2,306	2,618,065	2,918,899	2,877,187	49	70	94	21	45
FEC	closed	2,364	338	93	475,383	158,407	151,235	112	27	7	-85	-105
FEC	open	135	103	191	143,166	258,329	301,211	6	6	12	0	6
SAB	closed	939	105	23	216,264	58,587	5,176	58	7	2	-51	-56
SAB	open	1,474	1,036	870	385,236	561,014	343,710	81	65	46	-16	-35
MAB	closed	2	0	0	6,250	400	0	0	0	0	0	0
MAB	open	1,211	1,396	1,644	1,001,960	950,998	845,408	51	31	56	-20	4
NEC	closed	11	0	0	41,150	0	0	0	0	0	0	0
NEC	open	763	785	517	733,002	833,489	520,295	30	4	10	-26	-20
NED	closed	980	843	379	495,972	303,750	450,091	36	34	6	-2	-30
NED	open	0	0	0	800	1,672	700	0	0	0	0	0
total LL	closed	4,719	1,311	500	1,471,824	542,044	620,137	225	69	15	-156	-211
total LL	open	5,933	6,084	6,076	5,693,554	5,923,903	5,455,223	244	194	240	-50	-4

INFORMATION ON RESEARCH ON BLUEFIN TUNA STOCK STRUCTURE USING MICROCONSTITUENTS AND ISOTOPES IN OTOLITHS.

Since 1998, U.S., Canadian, European, and Japanese scientists have initiated cooperative research on the feasibility of using otolith microconstituents to distinguish bluefin stocks. Progress includes: 1. Coordinated sampling to obtain juveniles from principal nursery areas; 2. Field and laboratory protocols for chemical analysis of bluefin tuna otoliths (Secor and Zdanowicz 1998; Rooker et al. 2001). 3. An inter-laboratory test for elemental signature differences between juvenile Atlantic bluefin tuna collected in western and eastern Atlantic nursery regions (Secor et al. 2002). 4. Evaluation of intra-nursery stability in elemental fingerprints across different spatial and time scales (Rooker et al. 2001; 2002; 2003). 5. Development of a micromilling procedure for core isolation. 6. Development and tests on methods to measure trace transition metals in otoliths (Arslan and Paulson 2003). Using earth and transition metals in otoliths, juveniles from either nursery area (W. Atlantic or Mediterranean) were separated with moderate success with classification rates ranging between 60 to 80% (Rooker et al. 2003; Secor et al. 2002). Inter-annual differences in elemental fingerprints were significant but inter-laboratory precision was high. Protocols are now in place to permit classification of adults by nursery habitats based upon micromilling of core regions and decontamination procedures.

Recent research has focused on the use of otolith 13C and $d^{18}O$ isotopes to distinguish nursery habitats. In particular, $d^{18}O$ should vary between the Mediterranean and the west Atlantic. The cooler Mediterranean should lead to an enriched level of $d^{18}O$ based upon kinetic considerations as well as empirical evidence (Thorrold et al. 1997; Gao et al. 2001). Preliminary findings suggest that $d^{18}O$ isotopes may be a powerful and reliable marker of nursery origin. For juveniles collected in 1999 and 2000, $d^{18}O$ of Atlantic bluefin tuna collected in the Western Atlantic and Mediterranean were markedly different with no overlap between nurseries, and this difference was stable across the two years. Further, stable isotope values of otolith cores from medium and giant Atlantic tuna caught in the U.S. tended to delineate into either high or low $d^{18}O$ levels, indicative of origin in either the W. Atlantic or the Mediterranean. Ongoing research is directed at evaluating potential bias due to the micromilling procedure, further verification of nursery-specific $d^{18}O$ levels, and preliminary examinations of nursery origins for sub-adults and adults collected in from U.S. and Mediterranean coastal waters

SUMMARY OF BLUEFIN TUNA RESEARCH 2002-2003

New England Aquarium and University of New Hampshire
Molly Lutcavage, Richard Brill, Steve Wilson, Julie Porter, Michael Genovese, Edward Murray, Anne Everly, Anthony Mendillo, Jennifer Goldstein, Scott Heppell, Chris Bridges, Nathaniel Newlands, Rob Schick, John Sibert, and Anders Nielsen

Between 17 July – 10 October, 2002, we released 67 light-sensing pop-up archival satellite tags (PTT-1000, Microwave Telemetry, Inc., Columbia, MD) on Atlantic bluefin tuna (91- 272 kg) in the western North Atlantic. The majority of these tags were deployed in summer and autumn via the purse seine vessel White Dove Too in New England waters, and two tags were deployed in North Carolina in January, 2003. No tags were deployed in Canada this season. Although a number of tags were shed before the programmed one year jettison date (June, 2003), we have long-term continuous data records for about one third of these fish. Efforts are underway with biomaterials experts to redesign tag anchors and tethers to maximize attachment durations. We are also testing new pop-up tag software that will help identify causes of premature shedding.

The majority of the fish tagged in 2002 were considerably smaller than those tagged in previous years. After leaving New England, the majority of smaller fish (90-136 kg) frequented the Mid-Atlantic Bight (off the Carolinas) from November to February, consistent with the winter North Carolina bluefin fishery, although some dispersed to the east, similar to results from previous years. Results from spatial and environmental analyses of tagging data from 2001-2003 are being prepared for publication.

Additional modifications completed by John Sibert and Anders Nielson on the space state Kalman filter for determining "most probably track" from light-based archival data is being prepared for publication. A statistical method for determining "most likely" premature shed date for earlier versions of popup tags (that lacked depth sensors or fail-safes) has been developed so that movement information obtained from these tags is reliable.

In 2003, so far we've deployed 59 PTT-1000 tags on fish in the Gulf of Maine, and 12 tags on bluefin tuna captured and released from purse seiners off Turkey and Croatia. This work is being conducted in collaboration with Drs. Gregorio DeMetrio and colleagues, who will submit results under separate cover. Additional deployments are expected before the season ends.

In 2003, histological and hormonal analyses were completed for reproduction studies on 160 bluefin sampled in the Gulf of Maine by New England Aquarium researchers. In addition, over 30 samples have been obtained from US longliners from July- Aug, 2003, and submitted to Dr. Scott Heppell and Dr. Chris Bridges for histological and hormonal analyses, respectively.

A manuscript examining the relationship of bluefin tuna schools to sea surface temperature fronts was accepted for publication in Fisheries Oceanography, and papers dealing with isotope ratios and food habits, biomass estimation, and movement models for bluefin tuna in the NW Atlantic have been submitted elsewhere.

Environmental and spatial analyses of the Central North Atlantic cruise catch results will be undertaken at the University of New Hampshire, and stomach content analyses are expected to be completed this year. Larval samples of suspected scombrid larvae from the 2002 Eagle Eye Two cruise were sorted, digitally photographed, and submitted by the New England Aquarium researchers to Dr. Bill Richards and Dr. John Lamkin of SEFSC for larval identification. Subsamples were removed for species identification via genetic screening by Dr. John Graves.

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REPORT ON THE ELECTRONIC TAGGING OF ATLANTIC BLUEFIN TUNA

The Tag-A-Giant Program in 2003

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The goals of the Tag-A-Giant (TAG) program are to use a range of electronic tagging technologies to document the movements and behaviors of Atlantic bluefin tuna throughout their range, especially at their spawning and feeding grounds. The specific questions that are being addressed include elucidation of habitat preferences on spawning and feeding grounds, spawning site fidelity, and the level of mixing between eastern and western stocks in different regions where the bluefin appear to aggregate. An additional objective is to determine the influence of environmental parameters on behaviors, abundance and distribution of adolescent and mature bluefin tuna. The program continued placing tags internally and externally on Atlantic bluefin tuna in the North Atlantic. As of September 2003, over 750 electronic tags had been deployed in Atlantic bluefin tuna with 55% of these being surgically implanted archival tags. In 2003, experiments were designed for calculating the error around geolocation estimations. By conducting double tagging experiments using ARGOS based tags versus electronic tags that use light and sea surface temperature data to estimate positions, the TAG team has acquired a robust statistical system for position estimation. This is the first step required prior to temporal and spatial modeling of the tag results and will ensure quality control occurs upon publication.

North Carolina

To elucidate long term records of behavior TAG scientists have primarily focused on using archival tags. Archival tags have been improving over the past few years with the manufacturers meeting new design criteria. The major goal of continued deployments on bluefin tuna is to discern fidelity to feeding and breeding grounds. By obtaining multi-year records it is assumed that answers to the questions of when and where bluefin breed can be ascertained. To date the most reliable place to surgically implant an archival tag has been off the coast of North Carolina. In 2003 tag scientists worked 11 fishing days in winter conditions off the coast of North Carolina and deployed 107 implantable archival tags and 16 external pop up satellite tags. Many of the fish were double tagged to ascertain if any mortality had occurred. There was no mortality indicated from the pop-up satellite tagged fish. Most of the tags deployed in 2003 thus far were implantable archival tags of a new generation (Lotek, 2310 LTD tag) capable of recording positions and time series data on pressure, light, internal and external temperature for 5-10 years. A single tag from this recent deployment has been recovered by Spanish fishers to the east of the stock boundary line after deployment in North Carolina in January (see attachment). In addition, the 107 archival tags were implanted in bluefin of a mean size greater than 8 years of age.

Of the 16 pop-up tags deployed, to date, 65% of the pop-up satellite tags have released at durations of 5-9 months post deployment. A single pop-up satellite tag is in the eastern Atlantic post-reporting while all others are in New England or Canadian waters or along the Gulf Stream. This results is consistent with five years of results from the same region. The main result is that pop up satellite tagged fish tagged in the Carolina winter assemblage, report within 9 months most often in the western Atlantic and off the New England or Canadian coastline. As in years past, a small percentage (<10% of reporting tags) of bluefin tuna tagged in Carolina move directly into feeding grounds east of the Flemish Cap and south of Greenland.

Recovery of North Carolina released implantable archival tags deployed in previous years.

Recovery of implantable archival tags has been relatively slow in the summer of 2003. Currently a total of 69 of the 1996-1999 deployed tags, n of 279 tags (24.7%) have reported. A single archival tag (516) deployed in January 1999 was recovered in Italy in June 2003. Spanish scientists recovered an archival tag (1013) from the newer deployments of 2002 (n= 28) and 2003 (n=107).

New England

The results from the pop-up tagging of 35 bluefin tuna have been collated and submitted to a peer review journal. The major results of this paper indicate movements of Atlantic bluefin tuna due south of the release point off Nantucket, Massachusetts. Tags provided data from 1 to 9 months post release and showed primary linkage of this assemblage to offshore waters of the Carolinas and to points south off the North American continental shelf. Two fish showed movements into the Gulf of Mexico breeding ground. Continued efforts to tag fish in this location are on going. A problem with premature release was apparent in the New England data set and due to inclusion of pressure sensors on the generation of pop-up tags deployed, it could readily be detected. Tags that detached prematurely drifted to mid-Atlantic positions.

Gulf of Mexico

The data from the Gulf of Mexico effort to tag breeding assemblages of bluefin tuna from 1999-2002 has been partially analyzed and several publications for peer review are currently being prepared for submission to journals in 2003. Scientific operations in the Gulf of Mexico included 112 sets with the mean hooks per set of 186 + 91. The mean soak times for sets was 2.6 h. Scientists captured 1.78 bluefin per 1000 hooks set in the Gulf and had 0.6 mortalities per 1000 hooks. Mortality of bluefin was difficult to prevent even with short soak times. This research combined with physiological research on going in our laboratory on live bluefin tuna suggests an important finding. We have demonstrated that warm temperatures such as those found in the Gulf of Mexico breeding ground, place the Atlantic bluefin tuna in a high stress physiological situation. The bluefin is endothermic and in warm waters where oxygen is limiting, the physiology of the bluefin demands for oxygen increase. The capture of the large giants, in warm waters increases their physiological stress and most likely results in the mortality we have encountered. To accommodate the problem, scientific longlining was reduced to very short sets with short soak times (1.2 h). We have recorded with electronic tags body temperatures and ambient water temperatures above 33ºC and 31ºC respectively, in bluefin tuna in the Gulf of Mexico.

Mediterranean and Eastern Atlantic

To address questions about mixing and spawning site fidelity, it is important to tag giant bluefin tuna at various sites around the Atlantic Ocean TAG scientists are collaborating with Irish, French and Tunisian scientists to further the knowledge of electronic tagging and to combine resources and expertise for east Atlantic and Mediterranean deployments.

Peer Reviewed Papers Submitted or In Preparation

1) Validation of Geolocation Estimates Based on Light Level and Sea Surface Temperature from Electronic tags. S. Teo, A. Boustany, S. Blackwell, A. Walli, K. Weng and B.A. Block

2) Movements and Behavior of Atlantic bluefin tuna (Thunnus Thynnus) Revealed with Implantable Archival Tags. A.Walli, S.Teo, H. Dewar, A. Boustany, C. Farwell, T. Williams, E. Prince and B.A. Block

3) Movements of Atlantic bluefin tuna (Thunnus thynnus) Satellite Tagged off New England. M.J.W. Stokesbury, A. Seitz, S. Teo, R. K. O'Dor and B.A. Block

4) Pop-Up Satellite Tagging Reveals Movements and Behavior of Bluefin tagged off the North Carolina coast. A. Boustany, S.Teo, K.Weng, C. Farwell and B.A. Block

5) Electronic Tagging of Atlantic Bluefin Tuna in the Gulf of Mexico Breeding Ground

B.A. Block, A. Boustany, S.L. Teo, A. Seitz and E. Prince

Recent Abstracts of Papers Presented:

Stokesbury, M.J., Seitz, A., Teo, S., O'Dor, R.K., and Block, B.A. 2003.
Western residency of satellite tagged Atlantic bluefin tuna (Thunnus thynnus)
tagged off New England. pp. 271. Abstracts, American Fisheries Society 133rd Annual Meeting, Quebec City, August 10-14.

SUMMARY OF RESEARCH IN PROGRESS TO DEVELOP STOCK ASSESSMENT MODELS TO SUPPORT MANAGEMENT OF ATLANTIC BLUEFIN TUNA IN A SIX-AREA, TWO-STOCK, MULTI-FLEET CONTEXT

McAllister, Murdoch[2], Babcock, Elizabeth[3], Apostolaki, Panayiota[1]

The following research activities are currently in progress to develop stock assessment models to support management of Atlantic bluefin tuna in a six-area, two-stock, multi-fleet context.

1. A discussion paper outlining bluefin research produced by McAllister, Babcock, Apostolaki, and Pikitch for the SCRS meeting to discuss development of a research proposal for a large-scale ICCAT Bluefin Tuna Research Program in May has been elaborated. This updated version further elaborates the modeling and data analysis work that this group has initiated to support the proposed new six-area management regime. It describes the components of the fishery management evaluation framework that the group is building in collaboration with the Sustainable Fisheries Division Southeast Fisheries Science Center and others in the US delegation. These model components include an operating model component that models plausible scenarios for the underlying dynamics of the overall fishery management system. The elements of the operating model include firstly, a six-area, two-stock, quarterly time step multi-fleet population dynamics model (described in the second paper, below). Secondly, an observation error model is proposed, that simulates plausible error structures in the observations that are gathered to be used in stock assessment and fishery management harvest control rules. Thirdly, a fishery management implementation model is proposed to model the implementation of the annual management controls imposed. As well as the operating model, the fishery management system evaluation framework will include a harvest control rule module that models the annual stock assessment and harvest control rule options. This simulates the annual evaluation of data collected from the system and the specification of e.g. a TAC or fishing effort level in each area. The annual management decision is fed into the implementation model of the operating model which then models how the decision is actually carried out. The impacts on population dynamics are then implemented in the population dynamics model component of the operating model. This simulation-evaluation framework will thus permit the evaluation of the potential consequences of a large variety of stock assessment and harvest control rules over a variety of plausible scenarios for population dynamics including migration. The paper also outlines new approaches to statistically analyzing the different types of tagging data (conventional, pop-up and archival) to estimate values for parameters in the operating model such as movement rates between areas and age-, fleet-, area-, and season-dependent fishery catchabilities of bluefin tuna.

2. The model presented in SCRS/02/88, which was a fleet disaggregated, age- and sex-structured two-stock model and simulated the mixing of the two Atlantic bluefin tuna stocks and their movement between areas, was updated with new information from the 2002 assessment. The virgin biomass and productivity parameters for both stocks were adjusted so that the 6-area model could reproduce the trends in spawning stock biomass (SSB) estimated in the 2002 base case VPA models for the eastern and western stocks. The model was then run again under various migration scenarios, to determine what virgin spawning stock biomass would need to be assumed to allow the model to predict the same biomass in 2000 as was predicted by the VPA models. The 6-area model could not reproduce the increasing trend in recruitment that the VPA models estimated for the eastern stock in 2002, but it could reproduce the western stock biomass trend, and could reproduce the eastern stock trend estimated in the 1998 assessment. Under the migration models considered, the trend in (SSB) for the eastern stock was not greatly influenced by the migration model assumed. However, for the western stock, if eastern fish were assumed to migrate into the western area, the virgin biomass of western stock was predicted to be lower, as was the current depletion of the population, while if western fish were assumed to migrate into the eastern area the virgin biomass of the western stock was predicted to be higher. For the migration scenario with eastern fish moving into the western area, the western population was estimated to be less productive than it appeared to be without migration, implying a longer time for the western stock to recover. This model is presented as a proposed operating model for six-area bluefin fisheries management strategy evaluation. It is also proposed that this model will be developed as a stock assessment model to be fitted to catch-age data, tagging data, micro-constituent data and relative abundance indices.

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FINAL U.S. NATIONAL PLAN OF ACTION FOR REDUCING THE INCIDENTAL CATCH OF SEABIRDS IN ATLANTIC TUNA, SWORDFISH, AND SHARK LONGLINE FISHERIES

NPOA-Seabird Executive Summary

Increased concerns have arisen about the incidental capture of non-target species in various fisheries throughout the world. Incidental capture can be economically wasteful, it impacts living marine resources, and the accidental killing of non-harvested animals may be aesthetically aversive. Incidental catch of non-target marine species such as marine mammals, sea turtles, and seabirds has generated growing concern over the long-term ecological effects of such bycatch in longline and other fisheries conducted in many areas of the world's oceans.

The United States has voluntarily developed the U.S. *National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries* (NPOA-S) to fulfill a national responsibility to address seabird bycatch in longline fisheries, as requested in the *International Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries* (IPOA-S). The IPOA-S applies to "States" (hereafter Countries) in whose waters longline fishing is being conducted by their own or foreign vessels, and to Countries that conduct longline fishing on the high seas and in the exclusive economic zones (EEZs) of other Countries. The IPOA-S is a voluntary measure that calls on Countries to: (1) assess the degree of seabird bycatch in their longline fisheries; (2) develop individual national plans of action to reduce seabird bycatch in longline fisheries that have a seabird bycatch problem; and (3) develop a course of future research and action to reduce seabird bycatch. The NPOA-S is to be implemented consistent with the FAO *Code of Conduct for Responsible Fisheries* and all applicable rules of international law, and in conjunction with relevant international organizations.

Development of the NPOA-S was a collaborative effort between the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (FWS) and the Department of State (DOS), carried out in large part by the Interagency Seabird Working Group (ISWG) consisting of representatives from those three agencies. This partnership approach recognizes the individual agency management authorities covering seabird interactions with longline fisheries. NMFS manages U.S. fisheries under the authority of the Magnuson-Stevens Fishery Conservation and Management Act and the High Seas Fishing Compliance Act. FWS manages birds predominately under the authority of the Endangered Species Act and the Migratory Bird Treaty Act. In addition, DOS has the lead role in international negotiations on fisheries conservation and management issues that should help promote IPOA implementation by encouraging other nations to develop NPOAs. Given each agency's responsibilities, the NPOA-S was developed collaboratively by NMFS and FWS. This collaborative effort has increased communication between seabird specialists and fishery managers in FWS and NMFS. Maintaining this cooperation is a high priority for both agencies.

The NPOA-S contains the following themes:

1. Action Items: NMFS, with the assistance of the Regional Fishery Management Councils (Councils), the NMFS Regional Science Centers, and FWS, as appropriate, should conduct the following activities:

- Detailed assessments of its longline fisheries for seabird bycatch within 2 years of the adoption of the NPOA-S;
- If a problem is found to exist within a longline fishery, measures to reduce this seabird bycatch should be implemented within 2 years. These measures should include data collection, prescription of mitigation measures, research and development of mitigation measures and methods, and outreach, education, and training about seabird bycatch; and
- NMFS, in collaboration with the appropriate Councils and in consultation with FWS, will prepare an annual report on the status of seabird mortality for each longline fi shery, including assessment information, mitigation measures, and research efforts. FWS will also provide regionally-based seabird population status information that will be included in the annual reports.

2.) Interagency Cooperation: The continuation, wherever possible, of the ongoing cooperative efforts between NMFS and FWS on seabird bycatch issues and research.

3.) International Cooperation: The United States' commitment, through the DOS, NMFS and FWS, to advocate the development of National Plans of Action within relevant international fora. The development of the NPOA-S has emphasized that all U.S. longline fisheries have unique characteristics, and that the solution to seabird bycatch issues will likely require a multi-faceted approach requiring different fishing techniques, the use of mitigating equipment, and education within the affected fisheries. Therefore, the NPOA-S does not prescribe specific mitigation measures for each longline fishery. Rather, this NPOA-S provides a framework of actions that NMFS, FWS, and the Councils, as appropriate, should undertake for each longline fishery. By working cooperatively, fishermen, managers, scientists, and the public may use this national framework to achieve a balanced solution to the seabird bycatch problem and thereby promote sustainable use of our nation's marine resources.

Detailed assessments should address the following:
• Criteria used to evaluate the need for seabird bycatch mitigation and management measures
• Longline fishing fleet data (numbers and characteristics of vessels)
• Fishing techniques data (demersal, pelagic, and other pertinent technical information)
• Fishing areas (by season and geographic location)
• Fishing effort data (seasons, species, catch, number of sets, and number of hooks/year/fishery)
• Status of seabird populations in the fishing areas, if known
• Estimated total annual seabird species-specific catch and catch-per-unit-effort (number/1,000 hooks set/species/fishery)
• Existing area and species-specific seabird bycatch mitigation measures and their effectiveness in reducing seabird bycatch
• Efforts to monitor seabird bycatch (e.g., observer program and logbooks), and
• Statement of conclusions and decision to develop and implement mitigation measures as needed.

Bycatch of Seabirds in Atlantic Tuna, Swordfish, and Shark Longline Fisheries

Introduction

The Secretary of Commerce manages Atlantic tunas, swordfish, and sharks - collectively known as highly migratory species or HMS - under the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks. The HMS FMP includes five species of Atlantic tunas (bluefin, yellowfin, albacore, bigeye, skipjack), swordfish, and 39 species of sharks in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. Longline fisheries for these species include the pelagic longline fishery for Atlantic tunas and swordfish and the bottom longline fishery for sharks. The HMS Management Division assesses seabird bycatch annually in the Stock Assessment and Fishery Evaluation Report.

Seabird Bycatch Assessment.

Atlantic pelagic longline fishery

Observer data from 1992 through 2002 indicate that bycatch is relatively low (Table 1). Since 1992, a total of 113 seabird interactions have been observed, with 77 seabirds observed killed in the Atlantic pelagic longline fishery. No expanded estimates of seabird bycatch or catch rates are available for the pelagic longline fishery.

Observed bycatch has ranged from 1 to 18 seabirds observed dead per year and 0 to 15 seabirds observed released alive per year from 1992 through 2002. Approximately half of the seabirds observed have not been identified to species (n = 55). Of those seabirds identified, gulls represent the largest group (n = 29), followed by greater shearwaters (n = 19), and northern gannets (n = 8). Greater shearwaters experienced the highest mortality (100 percent), followed by unidentified seabirds (67 percent), and gulls (66 percent). Northern gannets had the lowest mortality rate (12 percent).

The Mid Atlantic Bight experienced the highest number of seabirds observed caught and killed (n = 49, 80 percent). The Northeast Coastal area had the second highest number observed (n = 35) but third highest bycatch mortality (48 percent) compared to the South Atlantic Bight, which had a lower number of seabirds observed caught (n = 15) but higher mortality

(80 percent).

Table 1. **Seabird Bycatch in the Atlantic Pelagic Longline Fishery from 1992 to 2002.**
Source: NMFS Pelagic longline fishery observer program.

Year	Month	Area	Type of Bird	Number observed	Status
1992	10	MAB	GULL	4	dead
1992	10	MAB	SHEARWATER GREATER	2	dead
1993	2	SAB	GANNET NORTHERN	2	alive
1993	2	MAB	GANNET NORTHERN	2	alive
1993	2	MAB	GULL BLACK BACKED	1	alive
1993	2	MAB	GULL BLACK BACKED	3	dead
1993	11	MAB	GULL	1	alive
1994	6	MAB	SHEARWATER GREATER	3	dead
1994	8	MAB	SHEARWATER GREATER	1	dead
1994	11	MAB	GULL	4	dead
1994	12	MAB	GULL HERRING	7	dead
1995	7	MAB	SEABIRD	5	dead
1995	8	GOM	SEABIRD	1	dead
1995	10	MAB	STORM PETREL	1	dead
1995	11	NEC	GANNET NORTHERN	2	alive
1995	11	NEC	GULL	1	alive
1997	6	SAB	SEABIRD	11	dead
1997	7	MAB	SEABIRD	1	dead
1997	7	NEC	SEABIRD	15	alive
1997	7	NEC	SEABIRD	6	dead
1998	2	MAB	SEABIRD	7	dead
1998	7	NEC	SEABIRD	1	dead
1999	6	SAB	SEABIRD	1	dead
2000	6	SAB	GULL LAUGHING	1	alive
2000	11	NEC	GANNET NORTHERN	1	dead
2001	6	NEC	SHEARWATER GREATER	7	dead
2001	7	NEC	SHEARWATER GREATER	1	dead
2002	7	NEC	SEABIRD	1	dead
2002	8	NED	SHEARWATER GREATER	1	dead
2002	8	NED	SEABIRD	1	dead
2002	9	NED	SHEARWATER GREATER	3	dead
2002	9	NED	SEABIRD	3	alive
2002	9	NED	SHEARWATER SPP	1	dead
2002	10	NED	GANNET NORTHERN	1	alive
2002	10	NED	SHEARWATER SPP	1	dead
2002	10	NED	SEABIRD	2	dead
2002	10	MAB	GULL	3	alive
2002	10	MAB	GULL	1	dead
2002	11	MAB	GULL	3	alive

GOM - Gulf of Mexico, MAB - Mid Atlantic Bight, NEC - Northeast Coastal, NED - Northeast Distant, SAB - South Atlantic Bight

Atlantic bottom longline shark fishery

One pelican has been observed killed from 1994 through 2002. The pelican was caught in January 1995 off the Florida Gulf Coast (between 25 18.68 N, 81 35.47 W and 25 19.11 N, 81 23.83 W) (G. Burgess, University of Florida, Commercial Shark Fishery Observer Program, pers. comm., 2001). No expanded estimates of seabird bycatch or catch rates are available for the bottom longline fishery.

Description of Fisheries

Atlantic pelagic longline fishery

There are approximately 80 to 100 active pelagic longline vessels currently operating in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. Fishermen target either swordfish (at night) or yellowfin and bigeye tuna (during the day). The nighttime fishery utilizes frozen bait (mackerel or squid, predominantly) and lightsticks. The daytime fishery uses frozen bait predominantly along the east coast and live bait in the Gulf of Mexico. In 2000, NMFS prohibited the use of live bait on pelagic longline vessels in the Gulf of Mexico to minimize bycatch mortality of billfish. Additionally, NMFS prohibited pelagic longline fishing in the Florida East Coast, Charleston Bump, DeSoto Canyon, and Northeast Distant areas beginning in 2000 and 2001 to reduce bycatch of swordfish, billfish, and sea turtles. An experimental fishery has been conducted in the Northeast Distant area since 2001.

NMFS attempts to achieve five percent observer coverage (by number of sets) and has achieved approximately three to five percent annually between 1992 and 2001. Increased sampling in 2001, particularly in the Northeast Distant area, increased the sampling fraction to over six percent. Observers collect information about seabird bycatch by species and also take photographs of the birds. In addition, fishermen are required to submit logbooks for every trip made. Logbooks do not collect specific information about seabird bycatch at this time. Commercial pelagic longline fishing occurs throughout the North and South Atlantic, and the Gulf of Mexico. NMFS expects to estimate seabird bycatch from the pelagic longline observer program in the coming year (extrapolating reported effort with observed catch rates).

Atlantic bottom longline shark fishery

There are approximately 250 bottom longline shark vessels currently operating in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. The Atlantic bottom longline fishery targets large coastal sharks, with landings dominated by sandbar and blacktip sharks. Gear characteristics vary by region, but in general, a ten-mile long monofilament bottom longline, containing about 750 hooks is fished overnight. Skates, sharks, or various finfishes are used as bait. This fishery operates subject to a limited large coastal shark quota, with a typical two to three-month long season starting in January and July. Commercial shark bottom longline fishing is concentrated in the southeastern United States and Gulf of Mexico. Vessel owners must submit logbooks for each shark fishing trip and are subject to observer coverage.

NMFS attempts to achieve five percent observer coverage and has achieved approximately three percent annually between 1995 and 2001 by weight of sharks landed. Increased sampling in 2001 increased the sampling fraction to a little more than four percent. Observers collect information about seabird bycatch. Starting in 2001, 20 percent of shark fishermen have been selected to submit a supplemental discard form, which includes information on seabird bycatch, as part of their standard logbook submissions.

Current Seabird Mitigation Efforts

No management measures are currently in place for seabird protection in either of these fisheries. Time/area closures for the pelagic longline fishery are in place in the Gulf of Mexico, along the east coast of Florida, in the Charleston Bump, in the Northeast Distant area, and in the Mid-Atlantic Bight (Figure 2). Such closures may positively affect seabirds. Evidence has been presented at international workshops that has indicated that, if necessary, streamer lines and line shooters are effective in reducing the bycatch of seabirds in longline fisheries.

Conclusion

Bycatch of seabirds in Atlantic HMS pelagic and bottom longline fisheries is minimal and there does not appear to be a problem with seabird bycatch in these fisheries. Accordingly, no mitigation measures are necessary at this time. NMFS intends to continue to collect data on seabird bycatch through observer programs and supplemental logbooks programs and to increase the species-specific identification of seabirds observed. NMFS will reassess seabird bycatch in these fisheries as expanded bycatch estimates are generated and/or new information becomes available.

Figure 1. **Geographic areas used in the Atlantic pelagic longline fishery observer program.**

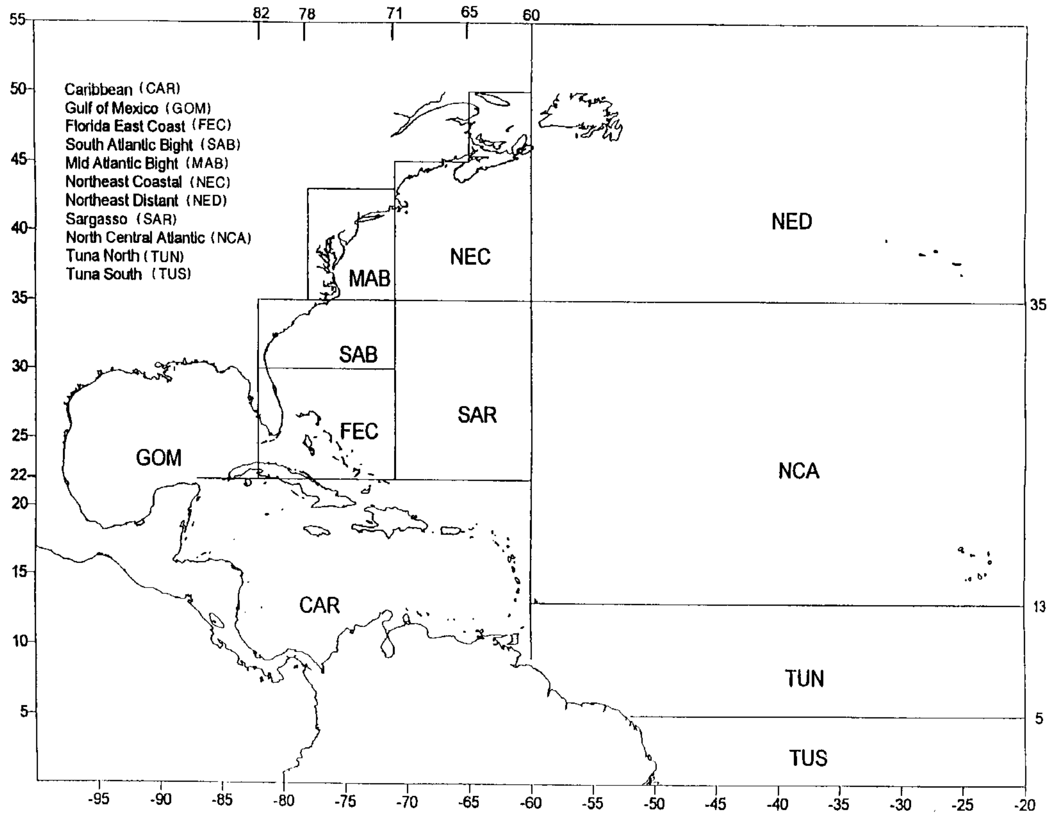

Figure 2. **Map of closed areas for Atlantic pelagic longline fishermen.**