

4.0 FISHERY DATA UPDATE

In this section, HMS fishery data, with the exception of some data on Atlantic sharks, are analyzed by gear type. Section 4.10 provides a summary of landings by species. While HMS fishermen generally target particular species, the non-selective nature of many fishing gears warrants analysis and management on a gear-by-gear basis. In addition, issues such as bycatch and safety are generally better addressed by gear type. A summary of bycatch, incidental catch, and protected resource interaction statistics can be found in Chapter 7.0 of this document.

The revised list of authorized fisheries and fishing gear used in those fisheries became effective December 1, 1999 (64 FR 67511). The rule applies to all U.S. marine fisheries, including Atlantic HMS. As stated in the rule, “no person or vessel may employ fishing gear or participate in a fishery in the exclusive economic zone (EEZ) not included in this List of Fisheries (LOF) without giving 90 days’ advance notice to the appropriate Fishery Management Council (Council) or, with respect to Atlantic HMS, the Secretary of Commerce (Secretary).” Authorized gear types include:

- Swordfish handgear fishery – rod and reel, harpoon, handline, bandit gear, buoy gear
- Swordfish recreational fishery - rod and reel, handline
- Pelagic longline fishery – longline, green-stick
- Shark gillnet fishery – gillnet
- Shark bottom longline fishery – longline
- Shark handgear fishery - rod and reel, handline, bandit gear
- Shark recreational fishery – rod and reel, handline
- Tuna purse seine fishery – purse seine
- Tuna recreational fishery– rod and reel, handline, speargun (speargun allowed for tunas other than bluefin), green-stick (only for vessels possessing the Atlantic HMS Charter-Headboat permit),
- Tuna handgear fishery – rod and reel, harpoon, handline, bandit gear
- Tuna harpoon fishery - harpoon
- Atlantic billfish recreational fishery – rod and reel only
- Tuna green-stick fishery – green stick

Due to the nature of the Standing Committee for Research and Statistics (SCRS) data collection, Table 4.1 depicts a summary of U.S. and international HMS catches by species rather than gear type. International catch levels and U.S. reported catches for HMS, other than sharks, are taken from the 2010 Standing Report of the SCRS (SCRS, 2010). The U.S. percentage of regional and total catch of HMS species is presented (Table 4.1) to provide a basis for comparison of the U.S. catch relative to other nations/entities. Catch of billfish includes both recreational landings and dead discards from commercial fisheries; catch for bluefin tuna includes commercial landings and dead discards and recreational landings; and swordfish include commercial landings and dead discards. International catch and landings tables are included for the pelagic longline and purse seine fisheries in Sections 4.1 and 4.2 of this document. At this point, data necessary to assess the U.S. regional and total percentage of international catch levels for most Atlantic shark species are unavailable.

Table 4.1 Calendar Year 2009 U.S. vs. International Catch (mt ww) of HMS Other Than Sharks. Source: SCRS, 2010.

Species	Total International Reported Catch	Region	Total Regional Catch	U.S. Catch	U.S. Percentage of Regional Catch	U.S. Percentage of Total Atlantic Catch
Atlantic Swordfish	25,103	North Atlantic	12,655	2,697	21.3%	10.7%
		South Atlantic	12,448	0	0%	
Atlantic Bluefin Tuna	21,636	West Atlantic	1,936	1,068	55.2%	4.9%
		East Atlantic/Med.	19,701	0	0%	
Atlantic Bigeye Tuna	86,011	Total Atlantic	86,011	516	0.60%	0.60%
Atlantic Yellowfin Tuna	118,871	West Atlantic	20,978	2,802	13.4%	2.4%
		East Atlantic/Med.	97,893	0	0%	
Atlantic Albacore Tuna	42,241	North Atlantic	15,364	188	1.2%	0.44%
		South Atlantic/Med.	26,877	0	0%	
Atlantic Skipjack Tuna	148,222	West Atlantic	25,747	119	0.46%	0.08%
		East Atlantic/Med.	122,475	0	0%	
Atlantic Blue Marlin	2,863	North Atlantic	1,412	6	0.42%	0.2%
		South Atlantic	1,451	0	0%	0%
Atlantic White Marlin	406	North Atlantic	186	3	1.6%	0.74%
		South Atlantic	220	0	0%	0%
Atlantic Sailfish	3,055	West Atlantic	1,415	3	0.21%	0.09%
		East Atlantic	1,640	0	0%	

4.1 Pelagic Longline (PLL) Fishery

4.1.1 Current Management

The PLL fishery for Atlantic HMS primarily targets swordfish, yellowfin tuna, and bigeye tuna in various areas and seasons. Secondary target species include dolphin, albacore tuna, and, to a lesser degree, sharks. Although this gear can be modified (*e.g.*, depth of set, hook type, hook size, bait, *etc.*) to target swordfish, tunas, or sharks, it is generally a multi-species fishery. These vessel operators are opportunistic, switching gear style and making subtle changes to target the best available economic opportunity of each individual trip. PLL gear sometimes attracts and hooks non-target finfish with little or no commercial value as well as species that cannot be retained by commercial fishermen due to regulations, such as billfish. PLL gear may also interact with protected species such as marine mammals, sea turtles, and seabirds. Thus, this gear has been classified as a Category I fishery with respect to the Marine Mammal Protection Act (MMPA). Any species (or undersized catch of permitted species) that cannot be landed due to fishery regulations is required to be released, regardless of whether the catch is dead or alive.

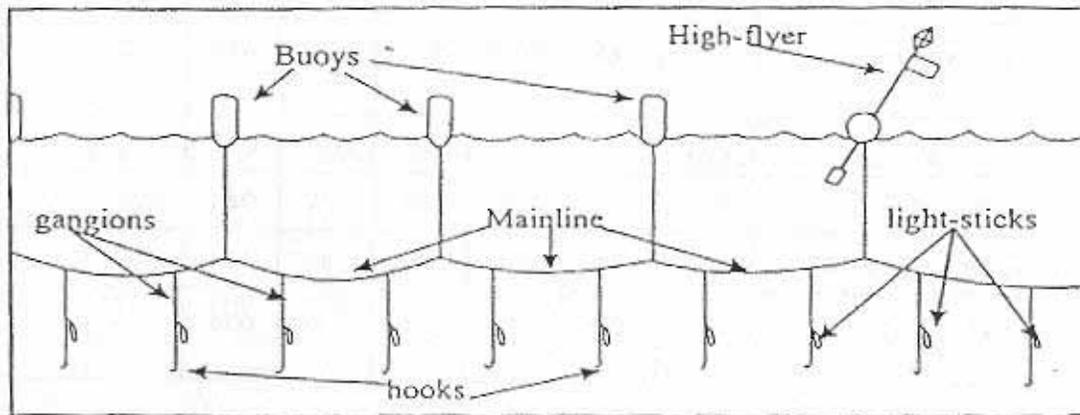


Figure 4.1 Typical U.S. Pelagic Longline Gear. Source: Arocha, 1996.

PLL gear is composed of several parts (Figure 4.1). The primary fishing line, or mainline of the longline system, can vary from five to 40 miles in length, with approximately 20 to 30 hooks per mile. Based upon observer reports from 2005 - 2006, the shortest length of a mainline set on an observed trip was 9.5 nautical miles (nm) while the longest set during a trip was 44.2 nm (Keene, *et. al.*, 2010). The depth of the mainline is determined by ocean currents and the length of the floatline, which connects the mainline to several buoys, and periodic markers which can have radar reflectors or radio beacons attached. Each individual hook is connected by a leader, or gangion, to the mainline. Lightsticks, which contain light emitting chemicals, are often used, particularly when targeting swordfish. When attached to the hook and suspended at a certain depth, lightsticks attract baitfish, which may, in turn, attract pelagic predators (NMFS, 1999).

When targeting swordfish, PLL gear is generally deployed at sunset and hauled at sunrise to take advantage of swordfish nocturnal near-surface feeding habits (NMFS, 1999). In general, longlines targeting tunas are set in the morning, fished deeper in the water column, and hauled back in the evening. Except for vessels of the distant water fleet, which undertake extended trips,

fishing vessels preferentially target swordfish during periods when the moon is full to take advantage of increased densities of pelagic species near the surface. The number of hooks per set varies with line configuration and target species (Table 4.2).

Table 4.2 Average Number of Hooks per PLL Set, 2000 - 2009. Source: PLL logbook data.

Target Species	2002	2003	2004	2005	2006	2007	2008	2009
Swordfish	695	711	701	747	742	672	708	687
Bigeye tuna	755	967	400	634	754	773	751	755
Yellowfin tuna	715	720	696	691	704	672	678	689
Mix of tuna species	767	765	779	692	676	640	747	744
Shark	640	696	717	542	509	494	377	354
Dolphin	542	692	1,033	734	988	789	989	1,033
Other species	300	865	270	889	236	NA	NA	NA
Mix of species	756	747	777	786	777	757	749	781

Figure 4.2 illustrates basic differences between swordfish (shallow) and tuna (deep) longline sets. Swordfish sets are buoyed to the surface, have fewer hooks between floats, and are relatively shallow. This same type of gear arrangement is used for mixed target species sets. Tuna sets use a different type of float placed much further apart. Compared with swordfish sets, tuna sets have more hooks between the floats and the hooks are set much deeper in the water column. It is believed that tuna sets hook fewer turtles than the swordfish sets because of the difference in fishing depth. In addition, tuna sets use bait only, while swordfish sets use a combination of bait and lightsticks. Compared with vessels targeting swordfish or mixed species, vessels specifically targeting tuna are typically smaller and fish different grounds.

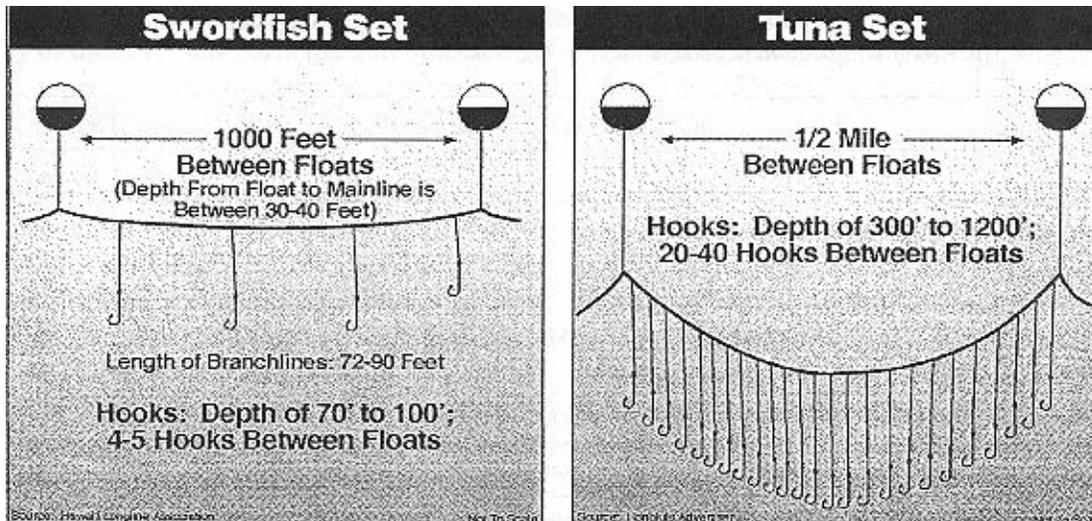


Figure 4.2 Different Pelagic Longline Gear Deployment Techniques. Source: Hawaii Longline Association and Honolulu Advertiser.

NOTE: This figure is only included to show basic differences in pelagic longline gear configuration and to illustrate that this gear may be altered to target different species.

Regional U.S. Pelagic Longline Fisheries Description

The U.S. PLL fishery has historically been comprised of five relatively distinct segments with different fishing practices and strategies. These segments are: 1) the Gulf of Mexico yellowfin tuna fishery; 2) the South Atlantic-Florida east coast to Cape Hatteras swordfish fishery, which has been greatly affected by the Florida East Coast, Charleston Bump time/area closures; 3) the Mid-Atlantic and New England swordfish and bigeye tuna fishery; 4) the U.S. distant water swordfish fishery; and, 5) the Caribbean Islands tuna and swordfish fishery. Each vessel type has different range capabilities due to fuel capacity, hold capacity, size, and construction. In addition to geographical area, these segments have historically differed by percentage of various target and non-target species, gear characteristics, and deployment techniques. Some vessels fish in more than one fishery segment during the course of a year (NMFS, 1999). Due to the various changes in the fishery, *i.e.*, regulations, operating costs, market conditions, species availability, etc., the fishing practices and strategies of these different segments may change over time.

The Gulf of Mexico Yellowfin Tuna Fishery

Gulf of Mexico vessels primarily target yellowfin tuna year-round; however, a handful of these vessels directly target swordfish, either seasonally or year-round. Longline fishing vessels that target yellowfin tuna in the Gulf of Mexico also catch and sell dolphin, swordfish, other tunas, and sharks. During yellowfin tuna fishing, few swordfish are captured incidentally. Many of these vessels participate in other Gulf of Mexico fisheries (targeting shrimp, shark, and snapper/grouper) during allowed seasons. Home ports for this fishery include, but are not limited to, Madera Beach, Florida; Panama City, Florida; Dulac, Louisiana; and Venice, Louisiana (NMFS, 1999).

For catching tuna, the longline gear is configured similarly to swordfish longline gear but is deployed differently. The gear is typically set in the morning (between two a.m. and noon) and retrieved in the evening or night (4 p.m. to midnight). Fishing occurs in varying water temperatures; however, yellowfin tuna are generally targeted in the western Gulf of Mexico during the summer when water temperatures are high. In the past, fishermen have used live bait, however, NMFS prohibited the use of live bait in the Gulf of Mexico in an effort to decrease bycatch and bycatch mortality of billfish (65 FR 47214, August 1, 2000). This rule also closed the Desoto Canyon area (year-round closure) to PLL gear. In the Gulf of Mexico, and all other areas, except the Northeast Distant Waters (NED), specific circle hooks (16/0 or larger non-offset and 18/0 or larger with an offset not to exceed 10 degrees) are currently required, as are whole finfish and squid baits.

The South Atlantic – Florida East Coast to Cape Hatteras Swordfish Fishery

Historically, South Atlantic pelagic longline vessels targeted swordfish year-round, although yellowfin tuna and dolphin fish were other important marketable components of the catch. In 2001 (65 FR 47214, August 1, 2000), the Florida East Coast closed area (year-round closure) and the Charleston Bump closed area (February through April closure) became effective. These PLL closures, implemented to reduce bycatch and bycatch mortality of protected species, non-target species, and undersized fish, effectively shut down a large portion of the PLL fishery in the South Atlantic.

Prior to the PLL closures, smaller vessels made short fishing trips from the Florida Straits north to the bend in the Gulf Stream off Charleston, South Carolina (Charleston Bump). Mid-sized and larger vessels in this segment of the fishery migrate seasonally on longer trips to areas ranging from the Yucatan Peninsula throughout the West Indies and Caribbean Sea. Some trips also range as far north as the Mid-Atlantic coast of the United States to target bigeye tuna and swordfish during the late summer and fall. Home ports (including seasonal ports) for this fishery include, but are not limited to, Georgetown, South Carolina; Charleston, South Carolina; Fort Pierce, Florida; Pompano Beach, Florida; and Key West, Florida. This segment of the fishery consists of small to mid-size vessels, which typically sell fresh swordfish to local high-quality markets (NMFS, 1999).

The Mid-Atlantic and New England Swordfish and Bigeye Tuna Fishery

Fishing in this area has evolved during recent years to focus almost year-round on directed tuna trips, with substantial numbers of swordfish trips as well. Some vessels participate in directed bigeye/yellowfin tuna fishing during the summer and fall months and then switch to bottom longline and/or shark fishing during the winter when the large coastal shark season is open. During the season, vessels primarily offload in the ports of New Bedford, Massachusetts; Barnegat Light, New Jersey; Ocean City, Maryland; and Wanchese, North Carolina (NMFS, 1999). In 1999, NMFS closed the Northeastern U.S. area in June to pelagic longline gear to reduce bluefin tuna discards (64 FR 29090, May 28, 1999). Section 7.7 of this document describes changes in discards of bluefin tuna and other species. Additionally, in 2009, NOAA Fisheries published the final Pelagic Longline Take Reduction Plan (PLTRP) (74 FR 23349, May 19, 2009) to protect pilot whales and Risso's dolphins which included, among other measures, a

requirement that PLL vessel operators fishing in the Cape Hatteras Special Research Area contact NOAA Fisheries at least 48 hours prior to a trip, and carry observers if requested.

The U.S. Atlantic Northeast Distant Water (NED) Swordfish Fishery

This fishing ground covers virtually the entire span of the western north Atlantic, from as far east as the Azores and the Mid-Atlantic Ridge. Large fishing vessels that fish in these distant waters operate out of Mid-Atlantic and New England ports during the summer and fall months targeting swordfish and tunas, and then move to Caribbean ports during the winter and spring months. Many of the current distant water operations were among the early participants in the U.S. directed Atlantic commercial swordfish fishery. These larger vessels, with greater ranges and capacities than coastal fishing vessels, enabled the United States to become a significant participant in the north Atlantic fishery. In the past, some of these vessels have also fished for swordfish in the south Atlantic (*i.e.*, south of 5° N. lat). In recent years however, no U.S. vessels have fished for swordfish in the South Atlantic.

The NED vessels traditionally have been larger than their southeast counterparts because of the greater distances to the fishing grounds. Thus, trips in this fishery tend to be longer than in the other longline fisheries. Ports for this fishery range from San Juan, Puerto Rico through Portland, Maine, and include New Bedford, Massachusetts, and Barnegat Light, New Jersey (NMFS, 1999). This segment of the fleet was directly affected by the L-shaped closure in 2000 and the NED closure implemented in 2001. A number of these vessels have returned to the NED fishery since the area was reopened pursuant to the issuance of the July 6, 2004, rule to reduce sea turtle bycatch and bycatch mortality (69 FR 40734, July 6, 2004). Unlike other areas, vessels fishing in the NED are required to use 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel or squid baits. The NED is also allocated a 25 mt bluefin tuna quota. In 2009, the 25 mt quota in the NED was attained for the first time. As a result, the bluefin tuna target catch requirements specified for the longline category became applicable in the NED from October 20 - December 31, 2009.

The Caribbean Tuna and Swordfish Fishery

In the past, this fleet has been similar to the southeast coastal fishing fleet in that it consisted primarily of smaller vessels making short, relatively near-shore trips, producing high quality fresh product (NMFS, 1999). The U.S. Caribbean fleet historically landed swordfish and tunas that supported the tourist trade in the Caribbean as well as a tuna canning industry that no longer exists. In recent years, yellowfin tuna have been the primary species of tuna landed using PLL gear, with additional landings of skipjack, bigeye, and albacore tunas. Because no Atlantic Tunas Longline permits are currently held by residents of Puerto Rico or the U.S. Virgin Islands, it can be assumed that these tuna landings were reported by vessels fishing in the Caribbean, but based out of other U.S. ports.

Management of the U.S. Pelagic Longline Fishery

The U.S. Atlantic PLL fishery is guided by a swordfish quota that is divided between the North and South Atlantic (separated at 5° N. Lat.). Other regulations include minimum sizes for

swordfish, yellowfin tuna, bigeye tuna, and bluefin tuna; bluefin tuna target catch requirements; shark quotas; protected species incidental take limits; reporting requirements (including logbooks); gear and bait requirements; limited access vessel permits, and mandatory workshop requirements. Current billfish regulations prohibit the retention of billfish by commercial vessels, or the sale of billfish from the Atlantic Ocean. As a result, all billfish hooked on PLL gear must be discarded, and are considered bycatch. PLL is a heavily managed gear type and is strictly monitored. Because it is difficult for PLL fishermen to avoid undersized or prohibited fish in some areas, NMFS has closed areas in the Gulf of Mexico and along the U.S. East Coast. The intent of these closures was to decrease bycatch in the PLL fishery by closing areas with the highest bycatch rates. There are also time/area closures for PLL fishermen designed to reduce the incidental catch of bluefin tuna and sea turtles. In order to enforce time/area closures and to monitor the fishery, NMFS requires all PLL vessels to report positions on an approved vessel monitoring system (VMS).

In addition to the regulations mentioned above, to protect sea turtles, vessels with PLL gear onboard must, at all times, in all areas open to PLL fishing except the NED, possess onboard and/or use only 16/0 or larger non-offset circle hooks and/or 18/0 or larger circle hooks with an offset not to exceed 10 degrees. Only whole finfish and squid baits may be possessed and/or utilized with allowable hooks. Vessels fishing in the NED are required to use 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel or squid baits. All PLL vessels must possess and use sea turtle handling and release gear in compliance with NMFS careful release protocols. Additionally, all PLL vessel owners and operators must be certified in the use of the protected species handling and release gear. Certification must be renewed every three years and can be obtained by attending a training workshop. Approximately 18 - 24 workshops are conducted annually, and they are held in areas with significant numbers of PLL permit holders.

In 2009, to protect pilot whales and Risso's dolphins, the PLTRP (74 FR 23349, May 19, 2009) included a requirement that PLL vessel operators fishing in the Cape Hatteras Special Research Area must contact NOAA Fisheries at least 48 hours prior to a trip, and carry observers if requested. The PLTRP also established a 20 nm upper limit on mainline length for all PLL sets in the mid-Atlantic Bight (MAB), and required that an informational placard be displayed in the wheelhouse and on the working deck of all active PLL vessels in the Atlantic fishery.

Permits

The 1999 FMP established six different limited access permit (LAP) types: (1) directed swordfish, (2) incidental swordfish, (3) swordfish handgear, (4) directed shark, (5) incidental shark, and (6) Atlantic tunas longline. To reduce bycatch in the PLL fishery, these permits were designed so that the swordfish directed and incidental permits are valid only if the permit holder also holds both a tuna longline and a shark permit. Similarly, the tuna longline permit is valid only if the permit holder also holds both a swordfish (directed or incidental, not handgear) and a shark permit. This allows limited retention of species that might otherwise have been discarded.

As of October 2010, approximately 248 tuna longline limited access permits had been issued. In addition, approximately 177 directed swordfish limited access permits, 72 incidental

swordfish limited access permits, 215 directed shark limited access permits, and 265 incidental shark limited access permits had been issued (see Chapter 8 for more information on permits). Vessels with limited access swordfish and shark permits do not necessarily use PLL gear, but these are the only permits that allow for the use of PLL gear in HMS fisheries.

In 2010, the procedures for issuing the Atlantic tunas longline permits were consolidated within the SERO permits office in St. Petersburg, Florida. This streamlined PLL permitting process, has made it easier for fishermen to obtain combinations of permits, when necessary, and made it more efficient to administer.

Monitoring and Reporting

PLL fishermen and the dealers who purchase Atlantic HMS from them are subject to reporting requirements. NMFS has extended dealer reporting requirements to all swordfish importers as well as dealers who buy domestic swordfish from the Atlantic. These data are used to evaluate the impacts of harvesting on the stock and the impacts of regulations on affected entities.

Commercial HMS fisheries are monitored through a combination of vessel logbooks, dealer reports, port sampling, cooperative agreements with states, and scientific observer coverage. Logbooks contain information on fishing vessel activity, including dates of trips, number of sets, area fished, 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 also required.

PLL Observer Program

During 2009, NMFS observers recorded 1,376 PLL sets for overall non-experimental fishery coverage of 15.0 percent (Garrison and Stokes, 2010). Table 4.3 details the amount of observer coverage in past years for this fleet.

In the PLTRP (74 FR 23349, May 19, 2009), it was recommended that NMFS increase observer coverage to 12 to 15 percent throughout all Atlantic pelagic longline fisheries that interact with pilot whales and Risso's dolphins to ensure representative sampling of fishing effort. If resources are not available to provide such observer coverage for all fisheries, regions, and seasons, the PLTRT recommended NMFS allocate observer coverage to fisheries, regions, and seasons with the highest observed or reported bycatch rates of pilot whales. The PLTRT recommended that additional coverage be achieved either by increasing the number of NMFS observers who have been specially trained to collect additional information supporting marine mammal research, or by designating and training special "marine mammal observers" to supplement traditional observer coverage. In 2009, total observer coverage, including experimental sets, was 17.3 percent (Table 4.3).

Table 4.3 Observer Coverage of the Pelagic Longline Fishery. Source: Yeung, 2001; Garrison, 2003b; Garrison and Richards, 2004; Garrison, 2005; Fairfield-Walsh and Garrison, 2006; Fairfield-Walsh & Garrison, 2007; Fairfield & Garrison, 2008; Garrison, Stokes & Fairfield, 2009; Garrison and Stokes, 2010.

Year	Number of Sets Observed			Percentage of Total Number of Sets		
1999	420			3.8		
2000	464			4.2		
	Total	Non-NED	NED	Total	Non-NED	NED
2001*	584	398	186	5.4	3.7	100.0
2002*	856	353	503	8.9	3.9	100.0
2003*	1,088	552	536	11.5	6.2	100.0
	Total	Non-EXP	EXP	Total	Non-EXP	EXP
2004**	702	642	60	7.3 %	6.7 %	100.0 %
2005**	796	549	247	10.1 %	7.2 %	100.0 %
2006	568	-	-	7.5 %	-	-
2007	944	-	-	10.8 %	-	-
2008	1,190	-	101***	13.6 %	-	100.0***
2009	1,588	1,376	212***	17.3	15.0	100.0***

*In 2001, 2002, and 2003, 100 percent observer coverage was required in the NED research experiment.

** In 2004 and 2005, there was 100 percent observer coverage in experimental fishing (EXP).

*** In 2008 and 2009, 100 percent observer coverage was required in experimental fishing in the FEC, Charleston Bump, and GOM, but these sets are not included in extrapolated bycatch estimates because they are not representative of normal fishing.

4.1.2 Recent Catch and Landings

U.S. PLL catch (including bycatch, incidental catch, and target catch) is largely related to vessel characteristics and gear configuration. The reported catch is summarized for the whole fishery in Table 4.4. Table 4.5 provides a summary of U.S. PLL landings, as reported to the International Commission for the Conservation of Atlantic Tunas (ICCAT). Additional information regarding U.S. landings and discards is available in the 2009 U.S. National Report to ICCAT (NMFS, 2010).

Table 4.4 Reported Catch of Species Caught by U.S. Atlantic PLLs, in Number of Fish, for 2002-2009. Source: PLL Logbook Data.

Species	2002	2003	2004	2005	2006	2007	2008	2009
Swordfish Kept	49,320	51,835	46,440	41,139	38,241	45,933	42,800	45,378
Swordfish Discarded	13,035	11,829	10,675	11,134	8,900	11,823	11,194	7,484
Blue Marlin Discarded	1,175	595	712	567	439	611	687	1,013
White Marlin Discarded	1,438	809	1,053	989	557	744	670	1,064
Sailfish Discarded	379	277	424	367	277	321	506	774
Spearfish Discarded	148	108	172	150	142	147	197	335
Bluefin Tuna Kept	178	273	475	375	261	337	343	629
Bluefin Tuna Discarded	585	881	1,031	765	833	1,345	1,417	1,290
Bigeye, Albacore, Yellowfin, Skipjack Tunas Kept	79,917	63,321	76,962	57,132	73,058	70,390	50,108	57,461
Pelagic Sharks Kept	2,987	3,037	3,440	3,149	2,098	3,504	3,500	3,060
Pelagic Sharks Discarded	22,828	21,705	25,355	21,550	24,113	27,478	28,786	33,721
Large Coastal Sharks Kept	4,077	5,326	2,292	3,362	1,768	546	115	403
Large Coastal Sharks Discarded	3,815	4,813	5,230	5,877	5,326	7,133	6,732	6,672
Dolphin Kept	30,384	29,372	38,769	25,707	25,658	68,124	43,511	62,701
Wahoo Kept	4,188	3,919	4,633	3,348	3,608	3,073	2,571	2,648
Turtle Interactions	465	399	369	152	128	300	476	137
<i>Number of Hooks (x 1,000)</i>	<i>7,150</i>	<i>7,008</i>	<i>7,276</i>	<i>5,911</i>	<i>5,662</i>	<i>6,291</i>	<i>6,498</i>	<i>6,979</i>

Table 4.5 Reported Landings in the U.S. Atlantic Pelagic Longline Fishery (in mt ww) for 2002-2009. Source: NMFS ICCAT National Report 2010.

Species	2002	2003	2004	2005	2006	2007	2008	2009
Yellowfin Tuna	2,573.0	2,164.0	2,492.2	1,746.2	2,009.9	2,394.5	1,324.5	1,700.1
Skipjack Tuna	2.5	1.4	0.7	0.6	0.2	0.0	1.5	0.5
Bigeye Tuna	535.8	283.9	310.1	311.9	520.6	380.7	407.7	409.4
Bluefin Tuna*	49.9	133.9	180.1	211.5	204.6	164.3	247.8	291.0
Albacore Tuna	155.0	107.6	120.4	108.5	102.9	126.8	117.9	157.4
Swordfish N.*	2,598.8	2,756.3	2,518.5	2,272.8	1,960.8	2,474.0	2,353.6	2,649.0
Swordfish S.*	199.9	20.5	15.7	0.0	0.0	0.0	0.0	0.0

* Includes landings and estimated discards from scientific observer and logbook sampling programs

In recent years, there has been concern regarding the amount of swordfish that the U.S. has been landing, as it has been well below the ICCAT-recommended quota. To address this concern, NMFS has taken a number of steps to modify swordfish management measures as the North Atlantic swordfish stock has rebuilt. In 2007, NMFS published a final rule (72 FR 31688, June 7, 2007) to change PLL vessel upgrading requirements, increase incidental swordfish landing limits, and increase recreational (Angling and Charter/Headboat) landing limits. Additionally, NMFS implemented regulations in 2008 (73 FR 38144, July 3, 2008) to allow Atlantic tunas longline permits that had been expired for more than one year to be renewed. This action enabled some PLL fishermen to renew permits which previously could not be renewed for technical reasons, because they did not have a vessel to assign the permit to. Finally, from 2008 to 2010, a limited experimental PLL fishery was authorized in the Florida East Coast and Charleston Bump PLL closed areas to examine catch and bycatch rates in these areas.

In the U.S. pelagic longline fishery, fish may be discarded for a variety reasons. Swordfish, yellowfin tuna, and bigeye tuna may be discarded because they are undersized or unmarketable (*e.g.*, bitten by sharks). Blue sharks, as well as other species, are discarded because of limited markets (resulting in low prices) and perishability of the product. Large coastal sharks are discarded when the shark season is closed. Bluefin tuna may be discarded because target catch requirements for other species have not been met. Also, all billfish are required to be released. In the past, swordfish have been discarded when the swordfish season was closed.

From 2005 through 2006, the Pelagic Observer Program (POP) recorded a total of 8,953 elasmobranchs (20 percent of the total catch) caught by U.S. PLL vessels targeting tunas and swordfish (Keene, *et al.*, 2010). Of the 31 elasmobranch species observed, blue sharks were numerically dominant (33 percent of the total elasmobranch catch), with blue, pelagic rays, silky, night, shortfin mako, tiger, and requiem sharks making up the majority (85.8 percent).

At this time, the direct use of observer data with pooling for estimating dead discards in the PLL fishery represents the best scientific information available for use in stock assessments. Direct use of observer data has been employed for a number of years to estimate dead discards in Atlantic and Pacific longline fisheries, including billfish, sharks, and undersized swordfish. Furthermore, the data have been used for scientific analyses by both ICCAT and the Inter-American Tropical Tuna Commission for a number of years.

Bycatch mortality of marlins, sailfish, swordfish, and bluefin tuna from all fishing nations may significantly reduce the ability of these populations to rebuild, and it remains an important management issue. In order to minimize bycatch and bycatch mortality in the domestic PLL fishery, NMFS implemented regulations to close certain areas to this gear type (Figure 4.3) and has banned the use of live bait by PLL vessels in the Gulf of Mexico.

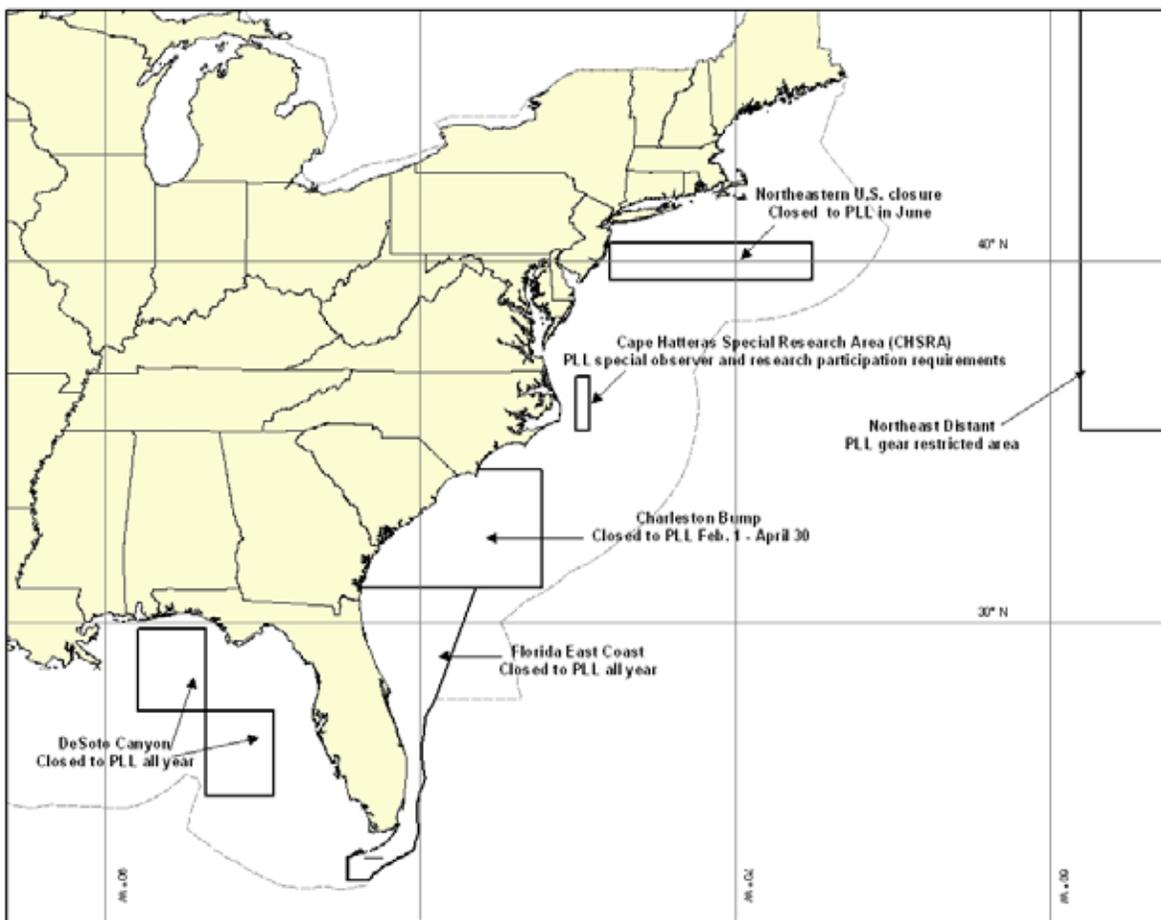


Figure 4.3 Areas Closed to Pelagic Longline Fishing by U.S. Flagged Vessels

Protected Species

Marine Mammals

Many of the marine mammals that are hooked by U.S. pelagic longline fishermen are released alive, although some animals suffer serious injuries and may die after being released. The observed and estimated marine mammal interactions for 2002 – 2009 are summarized in Table 4.6. Marine mammals are caught primarily during the third and fourth quarters in the MAB and Northeast Coastal (NEC) areas (Table 4.6). In 2009, the majority of observed interactions were with pantropical spotted dolphin, Risso’s dolphin, and pilot whales (Garrison and Stokes, 2010). NMFS monitors observed interactions with sea turtles and marine mammals on a quarterly basis and reviews data for appropriate action, if any, as necessary.

Table 4.6 Summary of Marine Mammal Interactions in the Pelagic Longline Fishery, 1999 - 2009. Sources: Yeung, 2001; Garrison, 2003b; Garrison and Richards, 2004; Garrison, 2005; Walsh and Garrison, 2006; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008; Garrison, Stokes & Fairfield, 2009; Garrison and Stokes, 2010.

Year	Species	Total		Mortality		Serious Injury		Alive	
		Obs	Est	Obs	Est	Obs	Est	Obs	Est
2002	Risso’s dolphin	10	87.2	-	-	4	11	6	59.6
	Pilot whale	10	113.5	-	-	4	49.9	6	67.8
	Common dolphin	1	1	-	-	-	-	1	1
	Unidentified dolphin	2	2	-	-	1	1	1	1
	Unidentified marine mammal	1	1	-	-	1	1	-	-
2003	Beaked whale	2	48.8	-	-	1	5.3	1	43.5
	Dolphin	1	16.2	-	-	1	16.2	-	-
	Atlantic spotted dolphin	1	29.8	-	-	1	29.8	-	-
	Bottlenose dolphin	1	2	-	-	-	-	1	2
	Common dolphin	2	45.6	-	-	-	-	2	45.6
	Risso’s dolphin	14	109.5	1	1	3	40.1	10	68.4
	Striped dolphin	1	1	-	-	-	-	1	1
	Pilot whale	4	32.1	-	-	2	21.4	1	11.3
	Baleen whale	1	1	-	-	-	-	1	1
Minke whale	1	22.3	-	-	-	-	1	22.3	
2004	Pilot whale	8	107.5	-	-	6	74.1	2	33.8
	Common dolphin	1	6.8	-	-	-	-	1	6.8
	Risso’s dolphin	3	49.4	-	-	2	27.5	1	21.9
2005	Pilot whale	18	294.4	-	-	9	211.5	9	79.5
	Risso’s dolphin	2	42.1	-	-	-	2.9	2	39.2
	Common dolphin		5.7	-	-	-	-	-	5.7
	Bottlenose dolphin	1	5.2	-	-	-	-	1	5.2
	Beaked whale		1	-	-	-	1	-	-

Year	Species	Total		Mortality		Serious Injury		Alive	
		Obs	Est	Obs	Est	Obs	Est	Obs	Est
	Atlantic spotted dolphin	1	4.3	-	-	-	-	1	4.3
	Unidentified marine mammal	1	13.2	-	-	1	13.2	-	-
	Unidentified whale		3.4	-	-	-	3.4	-	-
	Unidentified dolphin	1	2.6	-	-	-	-	1	2.6
2006	Atlantic spotted dolphin		1.9	-	-	-	-	-	1.9
	Beaked whale		2.2	-	-	-	-	-	2.2
	Bottlenose dolphin		0.6	-	-	-	-	-	0.6
	Pilot whale	20	274.5	1	15.5	12	168.6	7	90.4
	Unidentified dolphin	2	26.5	-	-	2	26.5	-	-
	Unidentified marine mammal	1	12.6	1	12.6	-	-	-	-
2007	Atlantic spotted dolphin		1.4	-	-	-	-	-	1.4
	Bottlenose dolphin	2	12.6	-	-	1	-	1	12.6
	Beaked whale	1	1.5	-	-	-	-	1	1.5
	Pilot whale	8	86.6	-	-	5	56.7	3	30.7
	Risso's dolphin	2	20.3	-	-	1	9.3	1	11.0
	Unidentified dolphin	2	3.8	1	1.5	-	-	1	2.3
	Unidentified marine mammal	2	22.1	-	-	2	22.1	-	-
2008	Atlantic spotted dolphin		3.1						3.1
	Bottlenose dolphin	1	6.6	-	-	-	-	1	6.6
	Beaked whale	1	6.1	-	-	-	-	1	6.1
	Killer whale	1	3.4	-	-	-	-	1	3.4
	Pilot whale	8	141.5	-	-	5	98.2	3	43.3
	Risso's dolphin	9	64.4	1	4.4	4	20.4	4	39.6
	Sperm whale	1	1.6	-	-	-	-	1	1.6
	Unidentified dolphin		3.2	-	-	-	-		3.2
Unidentified marine mammal	2	34.7	-	-	1	20.4	1	14.3	
2009	Bottlenose dolphin	3	23	-	-	2	11.3	1	11.6
	Common dolphin	1	8.5	1	8.5	-	-	-	-
	False Killer whale		2.5	-	-	-	-		2.5
	Pantropical spotted dolphin	5	26.6	-	-	4	14.1	1	12.5
	Pilot whale	4	35.7	-	-	2	16.5	2	19.2
	Risso's dolphin	5	38.5	-	-	2	11.4	3	27.1
	Unidentified dolphin	1	1.6	-	-	-	-	1	1.6
	Unidentified marine mammal	1	8.0	-	-	1	8.0	-	-

Sea Turtles

As a result of increased sea turtle interactions in 2001 and 2002, NMFS reinitiated consultation for the pelagic longline fishery and completed a new BiOp on June 1, 2004. The June 2004 BiOp concluded that long-term continued operation of the Atlantic pelagic longline fishery as proposed was not likely to jeopardize the continued existence of loggerhead, green, hawksbill, Kemp's ridley, or olive ridley sea turtles, but was likely to jeopardize the continued existence of leatherback sea turtles. The BiOp included and Reasonable and Prudent Alternative

(RPA) which was adopted and implemented within the PLL fishery, and an Incidental Take Statement (ITS) for 2004 – 2006 combined, and for each subsequent three-year period (NMFS, 2004b). The estimated sea turtle takes for regular fishing and experimental fishing effort for 2002- 2009 are summarized in Table 4.7, Table 4.8, and Table 4.9. Loggerhead interactions are more widely distributed, however, the NED, and the NEC appear to be areas with high interaction levels each year.

The pelagic longline fishery interacted with an estimated 290 leatherback sea turtles and 243 loggerhead sea turtles outside of experimental fishing operations in 2009. The majority of loggerhead sea turtle interactions occurred in the SAB, NED, and the NEC areas (Table 4.7). The interactions with leatherback sea turtles were highest in the GOM and NEC areas (Table 4.8). NMFS monitors observed interactions with sea turtles and marine mammals on a quarterly basis and reviews data for additional appropriate action, if any, as necessary.

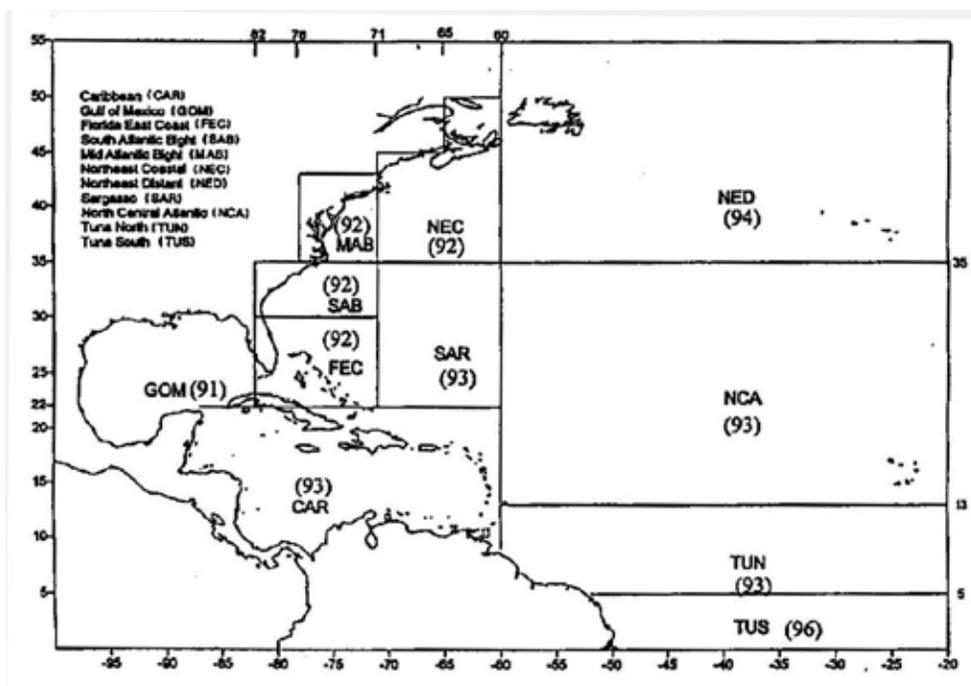


Figure 4.4 Geographic Areas Used in Summaries of Pelagic Logbook Data. Source: Cramer and Adams, 2000

Table 4.7 Estimated Number of Loggerhead Sea Turtle Interactions in the U.S. Atlantic Pelagic Longline Fishery, 2002 - 2009 by statistical area. Sources: Walsh and Garrison, 2006; Garrison, 2005; Garrison and Richards, 2004; Garrison 2003; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008; Garrison et al., 2009; Garrison and Stokes, 2010.

Area	2002	2003	2004	2005	2006	2007	2008	2009
CAR	43	36	61	40	16	7	17	9
GOM	170	135	45	19	17	10	10	38

Area	2002	2003	2004	2005	2006	2007	2008	2009
FEC	99	137	99	0	40	83	47	41
SAB	22	52	194	34	18	34	70	47
MAB	94	18	92	54	70	155	20	37
NEC	147	241	150	67	135	48	237	43
NED	0	0	52	20	235	200	352	22
SAR	0	70	41	38	19	4	16	7
NCA	0	39	0	3	10	2	1	0
TUN	0	0	0	0	0	0	0	9
TUS	0	0	0	0	0	0	0	0
Total	575	728	734	275	559	543	770	243
NED exp'tal fishery (2001-03)	100	92	-	-	-	-	-	-
Exp'tal fishery (2004-05; 2008-09)	-	-	0	8	-	-	1	0
Total	675	820	734	283	559	543	771	243

Table 4.8 Estimated Number of Leatherback Sea Turtle Interactions in the U.S. Atlantic Pelagic Longline Fishery, 2002 - 2009 by statistical area. Sources: Walsh and Garrison, 2006; Garrison, 2005; Garrison and Richards, 2004; Garrison 2003; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008; Garrison et al, 2009; Garrison and Stokes, 2010.

Area	2002	2003	2004	2005	2006	2007	2008	2009
CAR	0	0	17	2	4	1	2	1
GOM	695	838	780	179	109	212	144	93
FEC	100	27	64	62	28	7	30	19
SAB	93	75	164	7	39	0	0	31
MAB	70	94	184	11	30	114	43	31
NEC	5	76	33	6	73	76	140	73
NED	0	0	98	63	116	84	0	37
SAR	0	0	18	20	14	5	14	3
NCA	0	2	0	0	1	0	0	0
TUN	0	0	0	0	0	0	8	1
TUS	0	0	0	0	0	0	0	0
Total	962	1113	1359	351	415	499	381	286
NED exp'tal fishery (2001-03)	158	79	-	-	-	-	-	-

Area	2002	2003	2004	2005	2006	2007	2008	2009
Exp'tal fishery (2004-05; 2008-09)	-	-	3	17	-	-	4	4
Total	1120	1192	1362	368	415	499	385	290

Table 4.9 Estimated Sea Turtle Interactions by Species in the US Atlantic Pelagic Longline fishery, 1999-2009, and Incidental Take Levels (ITS).

PLL Fishery	2002	2003	2004	2005	2006	2007	2008	2009	3 year ITS, 2004-06/2007-09
									Total
Leatherback	962	1,112	1,362	368	415	500	385	286	1,981 / 1,764
Loggerhead	575	727	733	282	558	542	772	243	1,869 / 1,905
Other/Unidentified sea turtles	50	38	0	0	11	1	0	0	35 / 35
Marine mammals	201	300	164	372	313	151	265	144	NA

Sea Birds

Observer data indicate that seabird bycatch is relatively low in the U.S. Atlantic pelagic longline fishery (Table 4.10) (NMFS, 2009). In 2007, there were 121 active U.S. pelagic longline vessels fishing for swordfish in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea that reportedly set approximately 6.1 million hooks. A total of one seabird was observed taken, a brown pelican which was released alive. Extrapolated estimates of seabird bycatch have varied substantially since 1992. Live discards ranged from zero to 486 per year, averaging 60 per year. Estimates of dead discards of seabirds ranged from zero to 623 per year, averaging 150 per year. The annual bycatch rate of birds discarded dead ranged from zero to 0.015 birds per 1,000 hooks, while the rate of total seabird catch ranged from zero to 0.106 birds per 1,000 hooks.

Table 4.10 Observed Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery, 2004-2009. Source: NMFS, 2008; NMFS PLL fishery observer program (POP) data.

Year	Month ¹	Area	Type of Bird	Number observed	Status
2004	1	MAB	Gull	5	dead
2004	3	MAB	Shearwater greater	1	alive
2004	3	MAB	Shearwater greater	4	dead
2004	4	NED	Seabird	1	dead

Year	Month ¹	Area	Type of Bird	Number observed	Status
2005	1	SAB	Gull herring	1	dead
2005	1	SAB	Shearwater spp	1	dead
2005	3 ²	NEC	Shearwater greater	1	alive
2005	3 ²	NEC	Shearwater greater	1	dead
2006	4	MAB	Shearwater greater	1	dead
2006	4	NEC	Shearwater spp	1	alive
2006	4	NED	Shearwater greater	1	dead
2007	1	MAB	Gull blackbacked	6	dead
2008	2	GOM	Pelican brown	1	alive
2009	1	MAB	Northern gannet	2	alive
2009	1	MAB	Northern gannet	1	dead
2009	2	GOM	Brown pelican	1	dead
2009	3	MAB	Shearwater greater	3	dead
2009	3	MAB	Unid	1	dead

¹ Beginning in 2004, reports based on Quarters not month.

² Experimental fishery takes.

Table 4.11 Status of Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery, 1992-2009. Source: NMFS Pelagic longline fishery observer program (POP).

Species	Release Status		Total	Percent Dead
	Dead	Alive		
Greater shearwater	28	3	31	90.3
Cory's shearwater	1	-	1	100.0
Unidentified shearwater	2	1	3	66.7
Herring gull	8	-	8	100.0
Great black-backed gull	9	1	10	90.0
Laughing gull	1	1	2	50.0
Unidentified gull	14	8	22	63.6
Northern gannet	2	9	8	11.1
Storm petrel	1	-	1	100.0
Unidentified seabird	40	19	59	67.8
Brown pelican	2	0	1	100.0
Grand Total	108	42	150	72.0

Table 4.12 Expanded estimates of seabird bycatch (alive and dead) in the U.S. Atlantic pelagic longline fishery, 2000 - 2007. Source: NMFS, 2008.

	2000	2001	2002	2003	2004	2005	2006	2007
Gulls	22	-	248	-	77	8	-	54
Gannets	22	-	-	-	-	-	-	-
Seabirds	-	-	36	39	6	-	-	-
Shearwaters	-	283	-	-	75	31	27	-
Storm-petrels	-	-	-	-	-	-	-	-
All	44	283	284	39	158	39	27	54

4.1.3 International Issues and Catch

PLL fisheries for Atlantic HMS primarily target swordfish and tunas. Directed PLL fisheries in the Atlantic have been operated by Spain, the United States, and Canada since the late 1950s or early 1960s. The Japanese PLL tuna fishery started in 1956 and has operated throughout the Atlantic since then (NMFS, 1999). Many of the 48 other ICCAT parties now also operate PLL vessels.

As described in past SAFE Reports, ICCAT generally establishes management recommendations on a species (*e.g.*, swordfish) or issue basis (*e.g.*, data collection) rather than by gear type. Because most ICCAT management recommendations pertain to individual species or issues, as discussed above, it is often difficult to obtain information specific to the international PLL fishery. Nevertheless, ICCAT reports landings by gear type. Available data indicate that longline effort produces the second highest volume of catch and effort, and is the most broadly distributed (longitudinally and latitudinally) of the gears used to target ICCAT managed species (SCRS, 2004b). Purse seines produce the highest volume of catch of ICCAT managed species from the Atlantic (SCRS, 2004b). Figure 4.5 shows the aggregate distribution of hooks from all fishing fleets from 2000-2006.

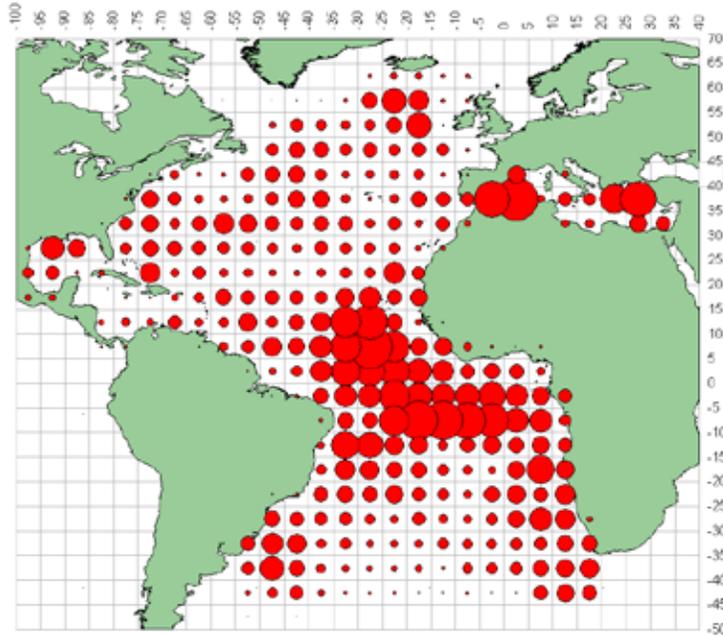


Figure 4.5 Aggregate Distribution of Hooks Deployed by All ICCAT Parties 2000-2006.
Source: SCRS, 2008.

Scientific observer data are being collected on a range of PLL fleets in the Atlantic and will be increasingly useful in better quantifying total catch, catch composition, and disposition of catch as these observer programs mature. Previously, there was no ICCAT required minimum level of observer coverage specific to PLL fishing. However, in 2010 the U.S. proposal for scientific observers was adopted by ICCAT. One of the requirements is a minimum of 5 percent observer coverage of fishing effort in PLL, purse seine, and bait boat fisheries. Japan is required to have eight percent observer coverage of its vessels fishing for swordfish in the North Atlantic, which are primarily PLL vessels; however, the recommendation is not specific to vessel or gear type. ICCAT recommendation 04-01, a conservation and management recommendation for the bigeye tuna fishery, requires at least five percent observer coverage of PLL vessels over 24 meters participating in that particular fishery. The United States has already implemented a mandatory observer program in the U.S. PLL fishery.

Highly Migratory Species

The U.S. PLL fleet represents a small fraction of the international PLL fleet that competes on the high seas for catches of tunas and swordfish. In recent years, the proportion of U.S. PLL landings of HMS, for the fisheries in which the United States participates, has remained relatively stable in proportion to international landings. Historically, the U.S. fleet has accounted for less than 0.5 percent of the landings of swordfish and tuna from the Atlantic Ocean south of 5° N. Lat. and does not operate at all in the Mediterranean Sea. Tuna and swordfish landings by foreign fleets operating in the tropical Atlantic and Mediterranean are greater than the catches from the north Atlantic area where the U.S. fleet operates. Within the area where the U.S. longline fleet operates, U.S. longline landings still represent a limited fraction of total landings. In recent years (2000-2009), U.S. longline landings have averaged 5.0 percent of total Atlantic longline landings,

ranging from a high of 5.5 percent in 2002 to a low of 4.3 percent in 2001. Table 4.13 contains aggregate longline landings of HMS, other than sharks, for all countries in the Atlantic for the period 2000-2009.

Table 4.13 Estimated International Longline Landings of HMS, Other than Sharks, for All Countries in the Atlantic: 2002-2009 (mt ww). Source: SCRS, 2009; U.S. ICCAT National Reports 2003 – 2010; SCRS, 2010.

	2002	2003	2004	2005	2006	2007	2008	2009
Swordfish (N. Atl + S. Atl)	22,240	21,709	23,891	24,442	24,563	26,507	22,096	23,786
Yellowfin Tuna (W. Atl) ²	11,921	10,166	16,019	14,449	14,249	13,287	13,069	14,992
Bigeye Tuna	46,438	54,466	48,396	38,035	34,182	46,232	41,063	47,932
Bluefin Tuna (W. Atl.) ²	730	186	644	425	565	420	606	366
Albacore Tuna (N. Atl + S. Atl)	27,851	28,325	21,652	19,888	22,963	18,324	15,864	15,326
Skipjack Tuna (W. Atl) ²	349	95	206	207	286	52	50	20
Blue Marlin (N. Atl. + S. Atl.) ³	1,357	1,698	1,397	1,588	1,248	1,828	1,763	1,619
White Marlin (N. Atl. + S. Atl.) ³	751	607	549	547	333	381	342	355
Sailfish (W. Atl.) ⁴	1,272	876	754	1,065	651	692	984	952
Total International Longline Landings (from SCRS, 2010)	112,909	118,128	113,508	100,646	99,040	107,723	95,837	105,348
Total U.S. Longline Landings (from 2003- 2010 U.S. Natl. Reports)⁵	6,194	5,509	5,638	4,918	5,032	5,809	4,695	5,413
U.S. Longline Landings as a Percent of Total International Longline Landings	5.5%	4.7 %	5.0 %	4.9 %	5.1 %	5.4 %	4.9 %	5.1%

¹Landings include those classified by the SCRS as longline landings.

²Note that the United States has not reported participation in the E. Atl yellowfin tuna fishery since 1983 and has not participated in the E. Atl bluefin or the E. Atl skipjack tuna fishery since 1982.

³Includes U.S. *dead discards* and *Brazilian live discards*.

⁴Includes U.S. *dead discards*.

⁵Includes swordfish, blue marlin, white marlin, and sailfish longline discards.

Atlantic Sharks

Stock assessments and data collection for international shark fisheries have improved in recent years due to increased reporting requirements adopted by ICCAT. Specifically, since 2004, there have been several shark-related Recommendations and Resolutions (e.g., 04-10, 06-10, 07-06, 08-07, and 08-08). Additionally, SCRS has assessed several species of sharks including blue, shortfin mako, and porbeagle sharks. For more information on ICCAT shark actions, see previous SAFE reports and ICCAT webpage (<http://www.iccat.int/en/>).

The most recent catch totals for blue, shortfin mako, and porbeagle sharks are presented in Table 4.14.

Table 4.14 Estimated International Landings of Pelagic Sharks for All Countries in the Atlantic: 2002-2009 (mt ww)¹.
 Source: SCRS, 2010

	2002	2003	2004	2005	2006	2007	2008	2009
Blue Shark (N. Atl + S. Atl + MED)	31,189	34,591	34,750	41,809	39,116	46,126	53,705	54,994
Shortfin Mako (N. Atl + S. Atl + MED)	5,080	7,189	7,104	6,305	6,022	6,714	5,197	5,399
Porbeagle (N. Atl + S. Atl + MED)	848	648	745	571	507	515	606	427
Total International Catches	37,117	42,428	42,599	48,685	45,645	53,355	59,508	60,820
U.S. Blue Shark Catches ¹	68	0	72	68	47	55	138	104
U.S. Shortfin Mako Catches ¹	415	142	411	187	130	223	198	216
U.S. Porbeagle Catches ¹	1	0	1	0	0	0	1	1
Total U.S. Catches¹	484	142	484	255	177	278	337	321
U.S. Catches¹ as a Percent of Total International Catches	1.3 %	0.3 %	1.1 %	0.5 %	0.4 %	0.5 %	0.6 %	0.5%

¹ Includes catches and discards

Sea Turtles

Sea turtle bycatch in the U.S. PLL fishery has decreased significantly in the last decade. From 1999 to 2003, the U.S. PLL fleet targeting HMS interacted with an average of 772 loggerhead and 1,013 leatherback sea turtles per year, based on observed takes and total reported effort. In 2004, the U.S. PLL fleet was estimated to have interacted with 734 loggerhead and 1,359 leatherback sea turtles (Garrison, 2005). The numbers have been reduced recently and in 2009, the U.S PLL fishery was estimated to have interacted with 243 loggerhead sea turtles and 286 leatherback sea turtles (Garrison and Stokes, 2010) (Table 4.7 and Table 4.8).

Although ICCAT adopted a resolution in 2003 (03-11) encouraging contracting parties, cooperating non-contracting parties, entities, or fishing entities to collect and provide the SCRS with all available information on sea turtle interactions in ICCAT fisheries, an exact assessment of basin-wide incidental catches is not available. However, high numbers of estimated sea turtle catches in foreign fleets have been described in other sources. Lewison, *et al.* (2004) estimated that a total of 210,000 – 280,000 loggerhead and 30,250 – 70,000 leatherback sea turtles were captured by pelagic longline fisheries each year throughout the Atlantic basin, including the Mediterranean Sea. More recently, a report by Lewison and Crowder (2007) indicates that applying bycatch rates to accurately estimate the number of turtles taken internationally by pelagic longline fleets is challenging because high variability in bycatch rates within and among fleets constrains the estimation. The report states that international sea turtle bycatch estimates are important, but given the high level of uncertainty, any precision beyond one or two significant digits is questionable. Given this caveat, Lewison and Crowder (2007) estimated that total annual sea turtle bycatch (all species) for pelagic longlines throughout the Atlantic basin, including the Mediterranean Sea, ranged from 28,180 to 39,080 interactions, which represents a notable decrease from 2004 estimates. The study suggested that pelagic longlines may not be the highest source of fishery-induced mortality but, because the gear interacts with older age classes, efforts to reduce sea turtle bycatch are warranted.

In 2010, ICCAT adopted a recommendation that requires CPCs to collect and annually report to the Commission, information on interactions of its fleet with sea turtles by gear type. Furthermore, CPCs fishing with PLL must carry on-board, safe handling and release equipment and be trained in safe-handling and release techniques.

Mortality in the domestic PLL fisheries is just one of several factors affecting sea turtle populations in the Atlantic (National Research Council, 1990). Many sources of anthropogenic mortality are outside of U.S. jurisdiction and control. Nevertheless, NMFS works to reduce sea turtle bycatch in domestic and international fisheries through collaborative research programs and coordinated education and recovery efforts in partnership with Regional Fishery Management Organizations (RFMOs) and other international bodies, governments, universities, private institutions, and local communities in relevant areas throughout the world. Among these activities, NMFS conducts joint research and holds workshops for fishers and fisheries managers on sea

turtle handling, release, and resuscitation methods; sea turtle biology and species identification; and measures to mitigate sea turtle interactions.

In recent years, NMFS funded and/or held numerous workshops or training sessions and cooperative research initiatives to promote the protection and conservation of sea turtles in the Atlantic Ocean, including:

Training/Workshops

- Workshops on the use of circle hooks, dehookers and line cutters in artisanal and industrial longline fisheries in Morocco, in cooperation with the Universite Abdelmalek Essaadi, Department of Biology. Because Morocco's drift gill net fishery is changing to pelagic longline fishing, these were designed to teach techniques with sea turtle mitigation gear and circle hooks to ensure both the viability of the new fishery as well as protection for endangered and threatened sea turtles
- Provision of laminated cards with sea turtle ID and handling guidelines and a sea turtle safe handling video to numerous countries, including Brazil, Spain, Mexico, Uruguay, Italy, Costa Rica, and Indonesia (the guidelines have been translated into Spanish and Vietnamese)
- Training for Korean and Japanese representatives in sea turtle handling protocols used by NOAA Fisheries observers

Cooperative Research

- A 2006 leatherback turtle research program in the Dominican Republic
- Cooperative research with Spain concerning loggerhead turtles hooked with longline hooks in the Azores
- Participation in a European technical meeting in June 2008 concerning bycatch in fisheries in the Canary Islands
- Work with Spanish field trials assisting with tests of bait type with regard to sea turtle capture rates, including planned future work to test circle hooks in a Spanish swordfish fishery
- Assistance for research to reduce sea turtle bycatch in longline fisheries, coordinating field trials in Brazil, Uruguay, and Italy, including provision of satellite tags to Brazilian and Uruguayan longline observers to investigate the post-hooking survivorship of turtles after their release from fishing gear
- Work with Korean fisheries scientists on statistical analysis of data gained from bycatch reduction experiments
- Collaboration with World Wildlife Fund to test the use of circle hooks in both tuna and swordfish-directed fisheries in Italy.

Working with the Department of State, NMFS has also conducted several programs involving technology transfer and training for the protection and conservation of Atlantic sea turtles, including:

- Transfer of sea turtle mitigation technology to Spain, Canada, Mexico, Italy, Uruguay, and Venezuela

- Provision of hooks designed to reduce sea turtle bycatch throughout Latin America

Many other outreach, education, and research projects have been conducted and/or funded by NMFS regarding sea turtle bycatch reduction in the Pacific Ocean.

4.2 Purse Seine

4.2.1 Current Management

Purse seine gear consists of a floated and weighted encircling net that is closed by means of a drawstring, known as a purseline, threaded through rings attached to the bottom of the net. The efficiency of this gear can be enhanced by the assistance of spotter planes used to locate schools of tuna. Once a school is spotted, the vessel, with the aid of a smaller skiff, intercepts and uses the large net to encircle it. Once encircled, the purseline is pulled, closing the bottom of the net and preventing escape. The net is hauled back onboard using a powerblock, and the tunas are removed and placed onboard the larger vessel. Economic and social aspects of the fisheries are described in Chapter 5.0 of this report.

A number of purse seine vessels targeted and landed bluefin off the coast of Gloucester, Massachusetts as early as the 1930s and purse seine vessels have participated in the U.S. Atlantic tuna fishery continuously since the 1950s. In 1958, continued commercial purse seining effort for Atlantic tunas began with a single vessel in Cape Cod Bay, Massachusetts and expanded rapidly into the mid-Atlantic region between Cape Hatteras and Cape Cod during the early 1960s. The purse seine fishery between Cape Hatteras and Cape Cod was directed mainly at small and medium bluefin, yellowfin, and skipjack tuna primarily for the canning industry. North of Cape Cod, purse seining was directed at giant bluefin. High catches of juvenile bluefin were sustained throughout the 1960s and into the early 1970s. These high catch rates by U.S. purse seine vessels are believed to have played a role in the decline in abundance during subsequent years.

A limited entry system with non-transferable individual vessel quotas (IVQs) for purse seining was established in 1982, effectively excluding any new entrants into this category. Equal baseline quotas of bluefin are assigned to individual vessels by regulation; the IVQ system is possible given the small pool of ownership in this sector of the fishery, *i.e.*, five qualified participants. In 1996, the quotas were made transferable among the five entities provided they notified NMFS in writing. The 1999 Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks (1999 FMP) and its implementing regulations established BFT baseline percentage quota shares for each of the domestic fishing categories. These percentage shares were based on allocation procedures that NMFS developed over several years. The baseline percentage quota shares established in the 1999 FMP were carried forward in the 2006 Consolidated HMS FMP (effective since June 1, 1999) and set the Purse Seine category allocation at 18.6 percent of the U.S. Total Allowable Catch (TAC).

Vessels participating in the Atlantic tunas purse seine fishery are required to target the larger size class bluefin, more specifically the giant size class (81 inches or larger) and are granted a tolerance limit for large medium size class bluefin (73 to less than 81 inches); *i.e.*, large medium catch may not exceed 15 percent by weight of the total amount of giant bluefin landed during a season. These vessels may commence fishing starting on July 15 of each year and may continue through December 31, provided the vessel has not fully attained its IVQ. Over the last few years, the Purse Seine category has not fully harvested its allocated quota. Figure 4.6 compares the BFT allocations listed in the 2006 Consolidated HMS FMP, originally established in the 1999 FMP, to the 2009 landings; these pie charts clearly depict the lack of Purse seine landings last year. This can be attributed to a number of different reasons outside of the industry’s or NMFS’ control, such as lack of availability, schools of mixed size classes, high operating costs, vessel sales, etc. NMFS has issued several exempted fishing permits to this sector of the fishery (to assist in archival tagging of bluefin and other research projects) and will continue to assess current regulations and their impact on providing reasonable opportunities to harvest available quota.

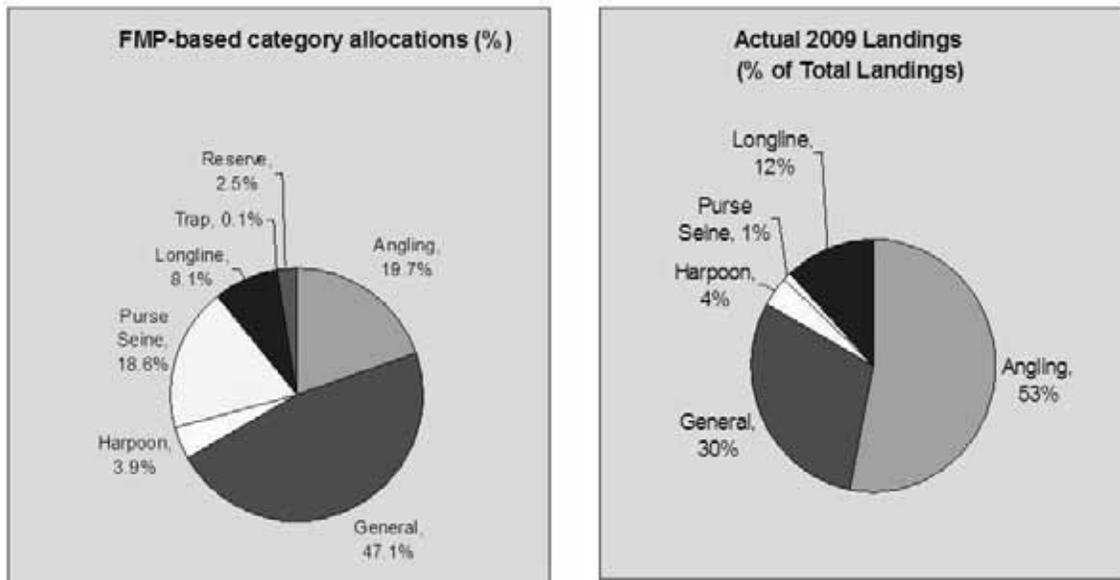


Figure 4.6 2006 Consolidated HMS FMP BFT quota allocation vs. actual BFT landings (2009). Source: NMFS Commercial BFT Landings Database; NMFS, 2006; and NMFS, 1999.

4.2.2 Recent Catch and Landings

Table 4.15 shows purse seine landings of Atlantic tunas from 2002 through 2009. Purse seine landings historically have made up approximately 20 percent of the total annual U.S. landings of bluefin (about 25 percent of total commercial landings), but recently only account for a small percentage (See Figure 4.6). In the 1980s and early 1990s, purse seine landings of yellowfin tuna were often over several hundred metric tons. Over 4,000 mt ww of yellowfin were recorded landed in 1985. Over the past 15

years, via informal agreements with other sectors of the tuna industry, the purse seine fleet has opted not to direct any effort on HMS other than bluefin.

Table 4.15 Domestic Atlantic Tuna Landings for the Purse Seine Fishery: 2002-2009 (mt ww). Northwest Atlantic Fishing Area. Source: U.S. National Report to ICCAT: 2010.

Species	2002	2003	2004	2005	2006	2007	2008	2009
Bluefin Tuna	207.7	265.4	31.8	178.3	3.6	27.9	0	11.4

4.2.3 International Issues and Catch

The U.S. purse seine fleet has historically accounted for a small percentage of the total international Atlantic tuna landings. Table 4.16 shows that over the past 10 years, the U.S. purse seine fishery has contributed to less than 0.15 percent of the total purse seine landings reported to ICCAT. In recent years, ICCAT has not taken any action that affects the U.S. purse seine fleet.

Table 4.16 Estimated International Purse Seine Atlantic Tuna Landings in the Atlantic and Mediterranean: 2002-2009 (mt ww). Source: SCRS, 2010.

Species	2002	2003	2004	2005	2006	2007	2008	2009
Bluefin Tuna	18,748	17,922	19,895	23,524	20,356	22,980	12,641	9,479
Yellowfin Tuna	97,538	82,088	62,228	61,410	62,761	52,733	70,047	77,757
Skipjack Tuna	68,935	92,347	93,284	89,704	71,215	81,335	73,080	84,494
Bigeye Tuna	20,894	22,731	18,417	18,595	16,457	17,553	15,536	22,658
Albacore	158	998	717	949	3432	1289	169	259
Total	206,273	216,086	194,541	194,182	174,221	175,890	171,473	194,659
U.S. Total	208	265	32	178	4	28	0	11
U.S. Percentage	0.10%	0.12%	0.02%	0.09%	<0.01%	0.02%	0%	<0.01%

4.3 Commercial Handgear

4.3.1 Current Management

Commercial handgears, including handline, harpoon, rod and reel, buoy gear and bandit gear, are used to fish for Atlantic HMS by fishermen on private vessels, charter vessels, and headboat vessels. Rod and reel gear may be deployed from a vessel that is at anchor, drifting, or underway (*i.e.*, trolling). In general, trolling consists of dragging baits or lures through, on top of, or even above the water's surface. While trolling, vessels often use outriggers to assist in spreading out or elevating baits or lures and to prevent fishing lines from tangling. Buoy-gear is discussed in detail in Section 4.7.

The handgear fisheries for all HMS are typically most active during the summer and fall although in the South Atlantic and Gulf of Mexico fishing occurs during the winter months. Fishing usually takes place between eight and two hundred km from shore and for those vessels using bait, the baitfish typically includes herring, mackerel, whiting, mullet, menhaden, ballyhoo, butterfish, and squid. The commercial handgear fishery for bluefin occurs mainly in New England, and more recently off the coast of southern Atlantic states, such as Virginia, North Carolina, and South Carolina, with vessels targeting large medium and giant bluefin. Figure 4.7 shows BFT commercial landings, which are predominately handgear landings, in metric tons by geographic region. The majority of U.S. commercial handgear fishing activities for bigeye, albacore, yellowfin, and skipjack tunas take place in the northwest Atlantic. Beyond these general patterns, the availability of Atlantic tunas at a specific location and time is highly dependent on environmental variables that fluctuate from year to year.

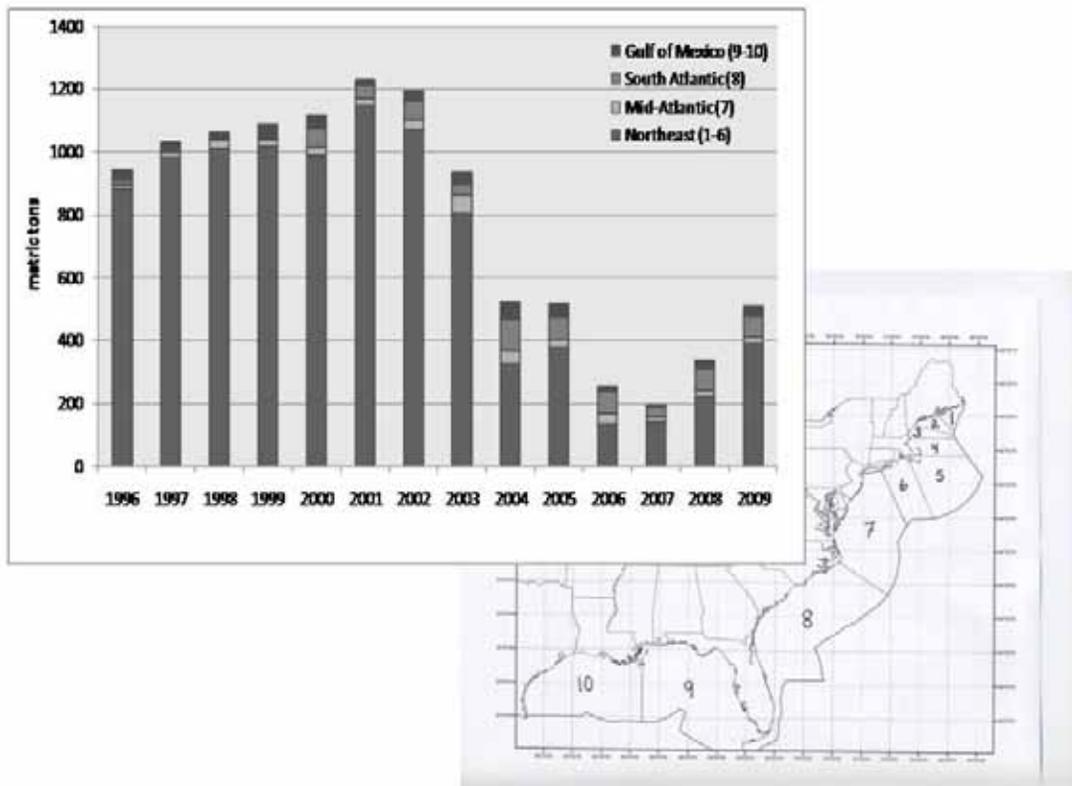


Figure 4.7 Commercial BFT landings by geographic area (1996 – 2009).
 Source: NMFS Commercial BFT Landings Database.

Currently, the U.S. Atlantic tuna commercial handgear fisheries are managed through an open access vessel permit program. Vessels that wish to sell their Atlantic tunas must obtain a permit in one of the following categories: General (handgears include rod and reel, harpoon, handline, bandit gear, and green-stick), Harpoon (harpoon only), or Charter/Headboat (rod and reel, handline, bandit gear, and green-stick). These vessels may also need permits from the states they operate from in order to land and sell their catch. All commercial permit holders are encouraged to check with their local state fish/natural resource management agency regarding these requirements. Permitted vessels are required to sell Atlantic tunas only to federally permitted Atlantic tuna dealers. Because the Atlantic tunas dealer permits are issued by the Northeast Region Permit Office, vessel owner/operators are encouraged to contact the permitting office directly, either by phone at (978) 281-9438 or via the web at <http://www.nero.noaa.gov/ro/doc/vesdata1.htm>, to obtain a list of permitted dealers in their area.

Vessels that are permitted in the General and Charter/Headboat categories commercially fish under the General category rules and regulations. For instance, regarding bluefin, vessels that possess either of the two permits mentioned above have the ability to retain a daily bag limit of one to three bluefin (depending on the current

retention limit authorized), measuring 73 inches or greater curved fork length per vessel per day while the General category bluefin fishery is open. The General category bluefin fishery opens on January 1 of each year and remains open until January 31. The fishery reopens on June 1 and remains open until December 31, or until the quota is filled. Vessel owner/operators should check with the agency via internet (<http://www.hmspermits.com>) or telephone information lines (888-872-8862) to verify the bluefin retention limit on any given day. The General category receives approximately 47 percent of the U.S. bluefin quota.

Vessels that are permitted in the Harpoon category fish under the Harpoon category rules and regulations. For instance, regarding bluefin, vessels have the ability to keep two bluefin measuring 73 inches to less than 81 inches curved fork length per vessel trip per day while the fishery is open. There is no limit on the number of bluefin that can be retained measuring longer than 81 inches curved fork length, as long as the Harpoon category season is open. The Harpoon category season also opens on June 1 of each year and remains open until November 15, or until the quota is filled. The Harpoon category bluefin quota is approximately 3.9 percent of the U.S. quota.

U.S. commercial swordfish fishing in the Atlantic Ocean is reported to have begun in the early 1800s as a harpoon fishery off the coast of New England. This fishery traditionally consisted of harpoon vessels operating out of Rhode Island and Massachusetts where they took extended trips for swordfish north and east of Hudson Canyon and particularly off Georges Bank and could land as many as 20 to 25 large swordfish over a ten-day period. These fish primarily consisted of large fish that finned on the surface and were available to the harpoon gear, some weighing as much as 600 lbs dw, but averaging about 225 to 300 lbs dw at the turn of the century. Because of the limited effort directed towards large fish, the stock was sufficient to support a sustainable seasonal swordfish fishery for more than 150 years. Most swordfish caught in the United States in the early 1900s were harvested with harpoon. Harpoon landings declined from the 1940s through the 1960s. Due to a decreased availability of the large swordfish in the northeast this fishery has essentially ceased to exist. However, in recent years, a new commercial swordfish fishery utilizing handgear, especially buoy-gear, has developed off the east coast of Florida. For information regarding the commercial buoy gear fishery, refer to Section 4.7.

The shark commercial handgear fishery plays a very minor role in contributing to the overall shark landing statistics. For further information regarding the shark fishery, refer to Sections 4.5 and 4.6. Economic and social aspects of all the domestic handgear fisheries are described later in this document (Chapter 5.0).

4.3.2 Recent Catch and Landings

The proportion of domestic HMS landings harvested with handgear varies by species, with Atlantic tunas comprising the majority of commercial landings. Commercial handgear landings of all Atlantic HMS (other than sharks) in the United States are shown in and Table 4.17.

In 2009, bluefin commercial handgear landings accounted for approximately 24 percent of the total U.S. bluefin landings, and almost 72 percent of commercial bluefin landings. Figure 4.8 shows the U.S. Atlantic BFT landings in metric tons by category since 1996. Note that the commercial handgear landings are comprised of BFT landed by both the General and Harpoon categories.

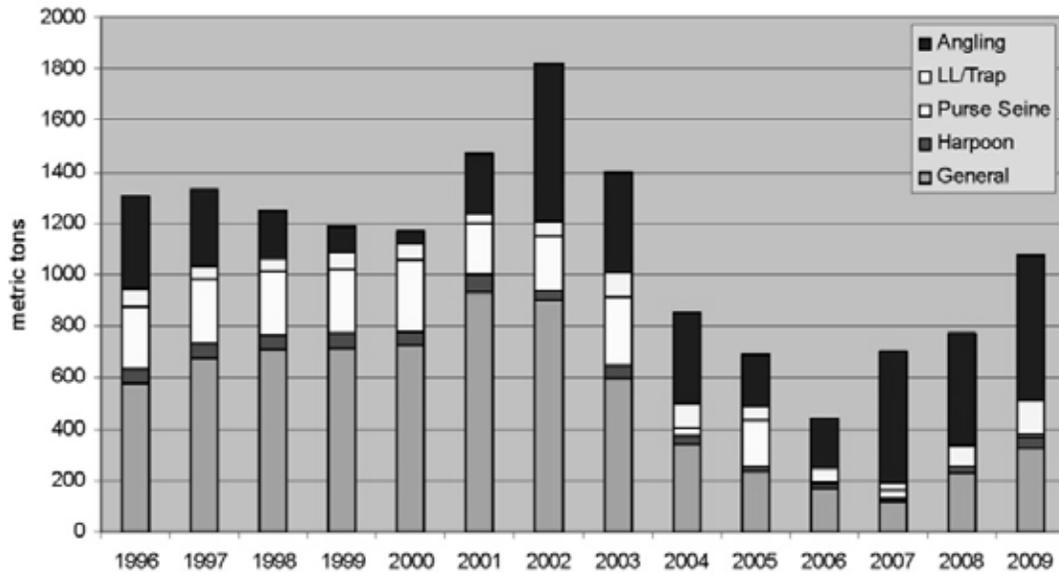


Figure 4.8 Landings of BFT by category (1996 – 2009) Source: NMFS Commercial BFT Landings Database.

Also in 2009, one percent of the total yellowfin catch, or three percent of the commercial yellowfin catch, was attributable to commercial handgear. Commercial handgear landings of skipjack tuna accounted for approximately 10 percent of total skipjack landings, or about 68 percent of commercial skipjack landings. For albacore, commercial handgear landings accounted for approximately less than one percent of total albacore landings, or about one percent of commercial albacore landings. Commercial handgear landings of bigeye tuna accounted for approximately one percent of total bigeye landings and two percent of total commercial bigeye landings. Updated landings for the commercial handgear fisheries by gear and by area for 2002 – 2009 are presented in the following tables.

Table 4.17 Domestic Atlantic Landings for the Commercial Handgear Fishery, by Species and Gear, for 2002-2009 (mt ww). Source: U.S. National Report to ICCAT: 2010.

Species	Gear	2002	2003	2004	2005	2006	2007	2008	2009
Bluefin Tuna	Rod and Reel	878.5	529.2	353.2	226.6	164.1	120.8	226.6	300.6
	Handline	4.5	2.5	1.5	2.3	0.3	0.0	0.6	0.1
	Harpoon	55.6	87.9	41.2	31.5	30.3	22.5	30.2	65.6
	TOTAL	938.6	619.6	395.9	260.4	194.7	143.3	257.4	366.3
Bigeye Tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.9	0.8	0.6
	Handline	14.4	6.3	3.5	6.3	23.0	16.8	6.9	4.7
	TOTAL	14.4	6.3	3.5	6.3	23.0	17.7	7.7	5.3
Albacore Tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1
	Handline	6.6	4.3	8.2	4.2	3.1	5.6	0.6	0.5
	TOTAL	6.6	4.3	8.2	4.2	3.1	5.8	0.8	0.6
Yellowfin Tuna	Troll	0.0	0.0	0.0	0.0	0.0	6.9	2.4	5.4
	Handline	244.0	199.7	248.5	160.3	162.8	148.5	45.0	83.6
	TOTAL	244.0	199.7	248.5	160.3	162.8	155.4	47.4	89.0
Skipjack Tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Handline	12.7	13.1	10.4	11.8	10.2	14.2	16.5	11.8
	TOTAL	12.7	13.1	10.4	11.8	10.2	14.2	16.5	11.8
Swordfish	Handline	11.7	20.6	22.7	34.7	32.6	125.4	84.4	127.1
	Harpoon	2.8	0.0	0.5	0.0	0.3	0.0	0.0	0.1
	TOTAL	14.5	20.6	23.2	34.7	32.9	125.4	84.4	127.2

Table 4.18 Domestic Landings for the Commercial Handgear Fishery by Species and Region for 2000-2009 (mt ww). Source: U.S. National Report to ICCAT: 2010.

Species	Region	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Bluefin Tuna	NW Atl	778.3	1,000.8	938.3	607.3	395.6	260.4	194.7	143.3	257.3	366.3
Bigeye Tuna	NW Atl	4.1	33.2	13.8	6.0	3.3	6.2	21.5	17.7	7.7	5.4
	GOM	0.1	0.5	0.6	0.3	0.2	0.1	1.5	1.2	0.0	0.1
	Caribbean	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Albacore Tuna	NW Atl	2.9	1.7	3.9	1.7	6.1	3.0	2.6	5.6	0.4	0.6
	GOM	0.0	0.0	0.0	≤ .05	0.0	0.1	0.1	0.2	0.0	0.0
	Caribbean	5.0	2.2	2.7	2.6	2.1	1.1	0.4	0.2	0.4	0.0
Yellowfin Tuna	NW Atl	235.7	242.5	137.0	149.1	213.2	105.1	105.1	120.1	32.5	64.1
	GOM	28.6	43.4	100.0	39.9	28.3	45.5	49.9	26.2	11.2	21.6
	Caribbean	19.4	14.3	7.0	10.7	7.0	9.7	7.8	9.1	3.7	3.3
Skipjack Tuna	NW Atl	0.2	0.2	0.2	0.2	0.6	0.9	0.2	0.3	0.4	2.8
	GOM	0.7	0.0	0.0	0.0	0.2	0.0	0.0	0.2	≤ .05	0.2
	Caribbean	8.8	10.3	12.5	12.9	9.6	12.9	10.0	13.7	16.0	8.8
Swordfish	NW Atl	8.3	16.0	11.6	10.8	19.2	34.4	32.8	125.2	83.2	126.3
	GOM	1.2	0.3	2.9	9.8	4.0	0.3	0.1	0.2	1.2	1.0

Handgear Trip Estimates

Table 4.19 displays the estimated number of rod and reel and handline trips targeting large pelagic species, from Maine through Virginia, in 2000 through 2009. The trips include commercial and recreational trips, and are not specific to any particular species. It should be noted that the 2009 estimates are still preliminary and subject to change.

Table 4.19 Estimated number of vessel trips targeting Atlantic large pelagic species, 2002-2009. Source: Large Pelagics Survey database.

Year	AREA							Total
	NH/ME	MA	CT/RI	NY	NJ (north)	NJ (south) + MD/DE	VA	
Private Vessels								
2002	5,090	15,180	2,558	7,692	2,762	22,757	6,524	62,563
2003	4,501	13,411	2,869	12,466	3,214	21,619	5,067	63,147
2004	2,025	10,033	3,491	11,525	3,632	22,433	4,406	57,545
2005	4,607	12,052	7,603	8,051	2,446	19,759	4,631	59,148
2006	3,303	24,951	5,430	11,114	3,043	19,187	5,274	72,302

Year	AREA							Total
	NH/ME	MA	CT/RI	NY	NJ (north)	NJ (south) + MD/DE	VA	
2007	5,929	25,139	6,020	6,809	5,875	17,712	5,012	72,496
2008	3,873	19,157	3,546	7,587	3,099	15,807	3,081	56,150
2009	4,724	27,066	2,670	8,274	3,633	15,458	4,299	66,122
Charter Vessels								
2002	1,132	3,357	937	1,686	1,331	6,300	1,510	16,253
2003	221	2,561	1,246	2,035	1,331	5,201	546	13,141
2004	312	2,021	1,564	2,285	1,094	5,080	1,579	13,935
2005	329	2,397	551	2,033	1,024	3,476	763	10,573
2006	96	1,294	677	1,057	891	3,452	828	8,296
2007	789	4,073	1,141	1,445	1,420	4,579	610	14,057
2008	892	3,295	751	1,525	1,026	4,340	370	12,199
2009	568	4,930	726	1,677	1,142	3,348	534	12,923

4.4 Recreational Handgear

The following section describes the recreational portion of the handgear fishery and is primarily focused upon rod and reel fishing.

4.4.1 Current Management

All Atlantic HMS are also targeted by domestic recreational fishermen using a variety of hand gear including rod and reel gear. Since 2003, an HMS Angling permit has been required to fish recreationally for any HMS-managed species (67 FR 77434, December 18, 2002) and reporting all non-tournament recreational landings of Atlantic marlins, sailfish, and swordfish became mandatory. Additionally, all HMS fishing tournaments are required to register with NMFS at least four weeks prior to the commencement of tournament fishing activities. If selected, tournament operators are required to report the results of their tournament to the NMFS Southeast Fisheries Science Center.

Recreational fishing for Atlantic HMS is managed primarily through the use of minimum size limits and retention limits. Recreational tuna fishing regulations are complex and include a combination of minimum sizes, bag limits, limited season-based quota allotment for bluefin tuna, and reporting requirements (depending upon the particular species and vessel type).

The recreational swordfish fishery is managed through the use of a minimum size limit, trip-based retention limits, and landing requirements (swordfish may be headed and gutted but may not be cut into smaller pieces). For whole (head on) North Atlantic swordfish, the minimum size is 47 in (119 cm) lower jaw fork length (LJFL). If the head or tail of the swordfish has been removed prior to landing, a minimum size of 29 in (73 cm) from cleithrum to caudal keel shall be applied. Recreational anglers may not land

South Atlantic swordfish (south of 5° N latitude). Effective July 9, 2007 (72 FR 31688, June 7, 2007) recreational swordfish retention limits were modified for HMS Angling and Charter/Headboat permit holders. Vessel owners issued an HMS Angling permit may retain one swordfish per person, up to four swordfish per vessel/trip. Vessel owners operating a charter vessel and issued a HMS Charter/Headboat permit may retain one swordfish per paying passenger and up to six swordfish per vessel/trip. Vessel owners operating a headboat vessel and issued a HMS Charter/Headboat permit may retain one swordfish per paying passenger and up to fifteen swordfish per vessel/trip.

The recreational shark fishery is managed using bag limits, minimum size requirements, and landing requirements (sharks must be landed with head and fins naturally attached). Additionally, the possession of 21 species of sharks is prohibited. Recreational fishermen are allowed to keep non-ridgeback large coastal sharks, tiger sharks, pelagic sharks, small coastal sharks, and smoothhound sharks. As of July 24, 2008, recreational fishermen have been prohibited from keeping sandbar or silky sharks.

Atlantic blue and white marlin have a combined annual landings limit (i.e., a maximum of 250 fish that can be landed per year); however, the primary management strategy for the recreational billfish fishery is through the use of minimum size limits. For blue marlin, white marlin, and sailfish, the LJFL minimum sizes are 99 in (251 cm), 66 in (168 cm), and 63 in (160 cm), respectively. There are no recreational retention limits for Atlantic sailfish, blue marlin, and white marlin. On September 22, 2010, NMFS published a rule that added the roundscale spearfish, *Tetrapturus georgii*, to the Atlantic billfish management unit and implemented regulations for this newly recognized species identical to those currently in place for white marlin. Recreational anglers may not land longbill spearfish.

4.4.2 Recent Catch, Landings and Bycatch

The recreational landings database for Atlantic HMS consists of information obtained through surveys including the Marine Recreational Fishery Statistics Survey (MRFSS), Large Pelagic Survey (LPS), Southeast Headboat Survey (HBS), Texas Headboat Survey, Recreational Billfish Survey (RBS) tournament data, and the Recreational non-tournament swordfish and billfish landings database. Descriptions of these surveys, the geographic areas they include, and their limitations, were discussed in Section 2.6.2 of the 1999 FMP and Section 2.3.2 of the 1999 Billfish Amendment.

Historically, fishery survey strategies (including the MRFSS, LPS, and RBS) have not captured all landings of recreationally-caught swordfish. Although some swordfish handgear fishermen have commercial permits¹, many others land swordfish strictly for personal consumption. Therefore, NMFS has implemented regulations to improve recreational swordfish and billfish monitoring and conservation. These regulations stipulate that all non-tournament recreational landings of swordfish and

¹ Access to the commercial swordfish fishery is limited; hand gear fishermen may purchase permits from other permitted fishermen because the permits are transferable.

billfish must be reported by phone at (800) 894-5528 or web portal at <http://www.hmspermits.gov>. All reported recreational swordfish landings are counted against the incidental swordfish quota.

Reported domestic landings of Atlantic bluefin tuna (1983 through 1998) and BAYS tuna (1995 through 1997) were presented in Section 2.2.3 of the 1999 FMP. Updated landings for all recreational rod and reel fisheries are presented below in Table 4.20 from 2002 through 2009. Recreational landings of swordfish are monitored by the LPS, MRFSS, RBS, and mandatory recreational reporting requirements via <http://www.hmspermits.gov>.

The Marine Recreational Information Program, or MRIP, is a new data collection and analysis initiative being implemented by NMFS to help ensure the long-term sustainability of America's fisheries and the health of our oceans. Currently being phased in across the nation, MRIP provides a more comprehensive and detailed picture of the number of trips being taken by recreational anglers, the amount and species of fish they are catching, where and when those fish are being caught, and the economic impact of recreational fishing on local, regional and national economies. Through more timely and accurate fishing data, MRIP provides policy makers the information they need to make sound decisions based on the best science. As a program built on broad and continuing stakeholder input, MRIP also empowers anglers and other ocean enthusiasts to become a part of the resource management, conservation, and economic decision-making processes that impact their lives.

MRIP is a system of coordinated data collection programs designed to address specific regional needs for recreational fishing information. This regional approach based on nationally consistent standards will ensure that the appropriate, targeted, place-based information is being collected to best meet the needs of managers and stakeholders, and that it is being done in a scientifically rigorous way. One MRIP objective is to improve on the information available for the management of HMS. A current project underway is pilot testing specialized data collection approaches for estimating HMS recreational catch and effort in Puerto Rico. Recently completed Atlantic HMS projects funded through MRIP include:

- Characterization of Rod and Reel HMS Fisheries in the South Atlantic and Gulf of Mexico
- Florida HMS Private Angler Telephone Survey
- HMS For-Hire Survey – Florida Pilot Study
- Evaluation of the Sampling Distribution of Tournament Versus Non-tournament Trips in the Large Pelagics Survey

Table 4.20 Updated Domestic Landings for the Atlantic Tunas, Swordfish and Billfish Recreational Rod and Reel Fishery, 2002-2009 (mt ww)*. Sources: NMFS, 2005; NMFS, 2006; NMFS, 2007; NMFS, 2009, NMFS, 2010. (Recreational shark landings are in Table 4)

Species	Region	2002	2003	2004	2005	2006	2007	2008	2009
Bluefin Tuna**	NW Atlantic	519.3	314.6	370.2	254.4	158.2	398.6	352.2	143.3
	GOM	1.5	0.0	0.0	0.0	0.6	0.0	0.0	0.0
	Total	520.8	314.6	370.2	254.4	158.8	398.6	352.2	143.3
Bigeye tuna**	NW Atlantic	49.6	188.5	94.6	165.0	422.3	126.8	70.9	77.6
	GOM	0.0	0.0	6	0.0	24.3	0.0	0.0	0.0
	Caribbean	0.0	4.0	<0.1	0.0	0.0	0.0	0.0	0.0
	Total	49.6	192.5	100.6	165.0	446.6	126.8	70.9	77.6
Albacore**	NW Atlantic	323.0	333.8	500.5	356.0	284.2	393.6	125.2	22.8
	GOM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	323.0	333.8	500.5	356.0	284.2	393.6	125.2	22.8
Yellowfin tuna**	NW Atlantic	2,624.0	4,672.1	3,433.7	3,504.8	4,649.2	2,726.0	657.1	742.6
	GOM	200.0	640.0	247.1	146.9	258.4	227.6	366.3	264.7
	Caribbean	7.2	16.0	0.0	0.0	0.0	12.4	0.0	3.5
	Total	2,831.2	5,328.0	3,684.8	3,651.7	4,907.6	2,966.0	1,023.4	1010.8
Skipjack tuna**	NW Atlantic	23.3	34.1	27.3	8.1	34.6	27.4	21.0	75.7
	GOM	13.2	11.1	6.3	3.1	6.4	23.9	16.3	22.0
	Caribbean	13.2	15.7	40.4	3.9	7.7	0.2	11.3	4.3
	Total	49.7	60.9	74.0	15.1	48.7	51.5	48.6	102

Species	Region	2002	2003	2004	2005	2006	2007	2008	2009
Blue marlin***	NW Atlantic	-	-	-	-	-	-	-	-
	GOM	-	-	-	-	-	-	-	-
	Caribbean	-	-	-	-	-	-	-	-
	Total	84	96	110	64	72	46	59	44
White marlin ***	NW Atlantic	-	-	-	-	-	-	-	-
	GOM	-	-	-	-	-	-	-	-
	Caribbean	-	-	-	-	-	-	-	-
	Total	33	20	25	26	36	31	59	53
Sailfish***	NW Atlantic	-	-	-	-	-	-	-	-
	GOM	-	-	-	-	-	-	-	-
	Caribbean	-	-	-	-	-	-	-	-
	Total	14	24	9	3	4	1	-	-
Swordfish	Total	21.5	6.1	25.2	61.2	52.7	68.2	75.7	31.6

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

** Rod and reel catch and landings estimates of bluefin tuna less than 73 in curved fork length (CFL) based on statistical surveys of the U.S. recreational harvesting sector. Rod and reel catch of bluefin > 73 in CFL are commercial and may also include a few metric tons of "trophy" bluefin (recreational bluefin 73 in).

*** Blue marlin, white marlin, and sailfish landings are based on prior U.S. National Reports to ICCAT and consist primarily of reported tournament landings.

Atlantic Billfish Recreational Fishery

Due to the rare nature of billfish encounters and the difficulty of monitoring landings outside of tournament events, reports of recreational billfish landings are sparse; however, the RBS provides a preliminary source for analyzing recreational billfish tournament landings. Table 4.21 documents the number of billfish reported to the RBS that were landed in tournaments from 2002 – 2010.

Table 4.21. Preliminary RBS Recreational Billfish Landings in Numbers of Fish 2002-2010. Source: NMFS Recreational Billfish Survey (RBS).

Species	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Blue Marlin	84	96	110	64	72	46	44	35	12
White Marlin	33	20	25	26	36	31	47	46	32
Roundscale Spearfish	N/A	5	10						
Sailfish	14	24	9	3	4	1	-	-	3
Swordfish	16	48	168	385	207	274	114	85	38

*Data as of October 2010

All recreational, non-tournament landings of billfish, including swordfish, are required to be reported to NMFS within 24 hours of landing by the permitted owner of the vessel landing the fish. This requirement is applicable to all permit holders, both private and charter/headboat vessels, not fishing in a tournament. In Maryland and North Carolina, vessel owners are required to report their billfish landings at state-operated landings stations. A landed fish means a fish that is kept and brought to shore. Table 4.22 provides a summary of non-tournament billfish landings since 2004. However, due to potential large-scale non-compliance with the non-tournament reporting requirement, the landings in Table 4.22 are considered to be a minimum estimate of non-tournament billfish landings.

Table 4.22. Number of Atlantic billfish reported to NMFS via call-in system by calendar year, 2004-2009. Source: G. Fairclough, pers. comm.

Species	2004	2005	2006	2007	2008	2009	2010*
Blue Marlin	2	4	2	5	7	5	3
White Marlin	0	1	1	4	4	6	5
Sailfish	35	61	58	101	143	140	123
Swordfish	290	388	549	716	369	389	240

* 2010 landings as of November. 3, 2010

Swordfish Recreational Fishery

Table 4.21 shows recreational tournament-caught swordfish landings reported to the RBS from 2002 – 2010. Table 4.22 shows the number of billfish (including swordfish) reported to the NMFS recreational non-tournament reporting system from 2004 – 2010.

The recreational North Atlantic swordfish fishery declined dramatically from about 1980 through 1999, due to decreased stock abundance, but has grown rapidly since 2003 as stock abundance has increased off the east coast of Florida and in the Mid-Atlantic Bight. In the past, the New York recreational swordfish fishery occurred incidentally to overnight yellowfin tuna trips. During the day, fishermen targeted tunas, while at night they fished deeper for swordfish. This appears to have evolved into a year-round directed swordfish fishery off the east coast of Florida and a summer fishery off the coasts of New Jersey and New York. Fish have also been reported from Maryland, Virginia, Texas, Louisiana, South Carolina, and Rhode Island.

The Florida fishery has primarily occurred at night with fishermen targeting swordfish while drift fishing live or dead bait and using additional attractants such as lightsticks, LED lights, and light bars suspended under the boat. Notably, Florida recreational fishermen have recently begun targeting swordfish by fishing on the ocean bottom during the daytime in depths exceeding 1,600 ft. In general, swordfish captured using this method are larger than those captured during nighttime drift fishing. These fishermen use specialized gear including braided lines, high capacity reels (with electric or manual retrieve), heavy weights, and heavy duty rods.

Shark Recreational Fishery

Recreational landings of sharks are an important component of HMS fisheries. Recreational shark fishing with rod and reel is a popular sport at all social and economic levels. Depending upon the species, sharks can be caught virtually anywhere in salt water. Recreational shark fisheries often occur in nearshore waters accessible to private vessels and charter/headboats; however, shore-based and offshore fishing also occur. The following tables provide a summary of landings for each of the three species groups. Since 2003, the recreational fishery has been limited to rod and reel and handline gear only. Similar state regulations along the Atlantic seaboard are being implemented through an Atlantic States Marine Fisheries Commission (ASMFC) interstate fishery management plan.

Table 4.23. Estimates of Total Recreational Harvest of Atlantic Sharks: 2002-2009 (numbers of fish in thousands). Source: Cortés and Neer 2005, Cortés, pers. comm. Estimates include prohibited species.

Species Group	2002	2003	2004	2005	2006	2007	2008	2009
LCS	80.6	89.0	67.4	85.0	59.1	68.8	45.0	63.7
Pelagic	4.7	4.3	5.0	5.4	16.5	9.0	2.8	7.8
SCS	152.5	134.3	127.0	118.9	117.2	167.6	107.9	100.0
Unclassified	5.4	18.4	28.5	47.6	7.5	23.9	6.1	15.1

Table 4.24. Recreational Harvest of Atlantic LCS by Species, in number of fish: 2002-2009. Sources: Cortés and Neer 2005, Cortés, pers. comm.

LCS Species	2002	2003	2004	2005	2006	2007	2008	2009
Basking**	0	0	0	0	0	0	0	0
Bignose*	0	0	17	0	0	55	0	0
Bigeye sand tiger**	0	0	0	0	0	0	0	0
Blacktip	39,126	40,044	30,885	43,408	31,038	28,864	13,318	12,921
Bull	1,916	3,743	5,186	1,561	4,262	5,849	1,735	6,441
Caribbean reef*	741	0	652	5	47	0	0	1
Dusky*	1,047	2,777	36	3,040	194	112	2,391	447
Galapagos*	0	0	0	0	0	0	0	0
Hammerhead, great	4	47	9	55	98	786	13	13
Hammerhead, scalloped	996	2,921	879	5,021	458	1,726	119	1,603
Hammerhead, smooth	2	1	0	0	2	0	0	0
Hammerhead, unclassified	5,247	0	0	2,676	1,099	807	0	0
Lemon	4,921	4,916	5,578	510	1,145	3	818	597
Night*	0	0	0	15	1	2	0	22
Nurse	2,562	563	3,463	2,341	1,553	334	268	822
Sandbar***	8,301	5,151	3,724	2,798	821	7,060	5,801	4,908
Sand tiger**	0	0	0	0	1,040	0	0	0
Silky***	1,795	1,870	399	3,576	2,108	1,973	1,226	782
Spinner	3,997	4,864	4,041	3,269	2,281	6,547	3,824	3,124
Tiger	126	110	1	1,321	1,309	1,815	1,418	4
Whale**	0	0	0	0	0	0	0	0
White**	0	0	0	0	0	0	0	0
Requiem shark unclassified	9,815	22,020	12,488	15,423	11,652	12,837	11,519	32,024
Total:	80,596	89,027	67,359	85,019	59,108	68,770	45,010	63,709

*indicates species that were prohibited in the recreational fishery as of July 1, 1999.

** indicates species that were prohibited as of April 1997.

*** indicates species that were prohibited as of July 2008.

Table 4.25. Recreational Harvest of Atlantic Pelagic Sharks by Species, in number of fish: 2002-2009. Sources: Cortés and Neer 2005, Cortés, pers. comm.

Pelagic Shark Species	2002	2003	2004	2005	2006	2007	2008	2009
Bigeye thresher*	65	0	0	0	42	0	0	0
Bigeye sixgill*	0	0	0	0	0	0	0	0
Blue Shark	0	376	0	31	980	1,622	117	0
Mako, longfin*	0	0	0	0	0	0	0	0
Mako, shortfin	3,206	3,906	5,052	3,857	3,352	2,556	1,904	4,991
Mako, unclassified	0	0	0	0	0	0	0	9
Oceanic whitetip	0	0	0	0	0	0	0	0
Porbeagle	0	0	0	0	0	0	0	0
Sevengill*	0	0	0	0	0	0	0	0

Pelagic Shark Species	2002	2003	2004	2005	2006	2007	2008	2009
Sixgill*	0	0	0	0	0	0	0	0
Thresher	1,467	0	0	1,504	12,171	4,822	755	2,768
Total:	4,673	4,282	5,052	5,392	16,545	9,000	2,776	7,759

* indicates species that were prohibited in the recreational fishery as of July 1, 1999.

Table 4.26. Recreational Harvest of Atlantic SCS by Species, in number of fish: 2002-2009. Sources: Cortés and Neer 2005, Cortés, pers. comm.

SCS Species	2002	2003	2004	2005	2006	2007	2008	2009
Atlantic angel*	0	0	0	0	0	0	0	0
Blacknose	11,390	6,615	15,101	7,101	9,914	9,177	3,718	5,845
Bonnethead	51,667	41,314	42,429	32,227	24,885	42,444	22,973	27,689
Finetooth	3,159	1,788	366	3,129	572	4,048	2,308	733
Sharpnose, Atlantic	86,259	84,626	69,067	76,347	81,817	111,967	78,885	65,709
Sharpnose, Caribbean*	0	0	0	0	0	0	0	0
Smalltail*	0	0	67	71	0	0	0	0
Total:	152,475	134,343	127,030	118,875	117,188	167,636	107,884	99,976

*indicates species that were prohibited in the recreational fishery as of July 1, 1999.

Bycatch Issues

Bycatch in the recreational rod and reel fishery is difficult to quantify because many fishermen simply value the experience of fishing and may not be targeting a particular pelagic species. Recreational “marlin” or “tuna” trips may yield dolphin, tuna, wahoo, and other species, both undersized and legal sized. Bluefin tuna trips may yield undersized bluefin, or a seasonal closure may prevent landing of a bluefin tuna above a minimum or maximum size. Sharks may be discarded because they are a prohibited species or undersized. In these and similar cases, rod and reel catch may be discarded and the fish may be live or dead. The Magnuson-Stevens Act (16 USC 1802 MSA § 3 (2)) specifies that fish released under a recreational catch-and-release program are not considered bycatch.

The 1999 Billfish Amendment established a catch-and-release fishery management program for the recreational Atlantic billfish fishery. As a result of this program, all Atlantic billfish that are released alive, regardless of size, are not considered bycatch. NMFS believes that establishing a catch-and-release fishery in this situation solidifies the existing catch-and-release ethic of recreational billfish fishermen, and thereby increases release rates of billfish caught in this fishery. Current billfish release rates range from 89 to 99 percent. The recreational white shark fishery is by regulation a catch-and-release fishery only, and white sharks are not considered bycatch.

Bycatch can result in death or injury to discarded fish. Therefore, bycatch mortality is incorporated into fish stock assessments, and into the evaluation of management measures. Rod and reel discard estimates from Virginia to Maine during June – October could be monitored

through the expansion of survey data derived from the LPS (dockside and telephone surveys). However, the actual numbers of fish discarded for many species are so low that presenting the data by area could be misleading, particularly if the estimates are expanded for unreported effort in the future. The number of kept and released fish reported or observed through the LPS dockside intercepts for 2001 – 2009 is presented in Table 4.27.

An outreach program to address bycatch and to educate anglers on the benefits of circle hooks has been implemented by NMFS. One of the key elements of the outreach program is to provide information that leads to an improvement in post-release survival from recreational gear by encouraging recreational anglers to use circle hooks. Implementation of this outreach program began in 2007 with the distribution of DVDs to tournament operators showing the proper rigging and deployment of circle hooks with natural baits. This outreach program is anticipated to be expanded by NMFS in future years. Also, a final rule to require the mandatory use of circle hooks when fishing with natural baits and natural/artificial bait combinations in Atlantic, Gulf of Mexico, and U.S. Caribbean billfish tournaments was published in May 2007 (72 FR 26735, May 11, 2007) and became effective on January 1, 2008. As of publication of this report, NMFS has distributed over 9,000 copies of the circle hook DVDs.

4.4.3 Code of Angling Ethics

NMFS developed a Code of Angling Ethics as part of implementing Executive Order 12962 – Recreational Fisheries. NMFS implemented a national plan to support, develop, and implement programs that were designed to enhance public awareness and understanding of marine conservation issues relevant to the wellbeing of fishery resources in the context of marine recreational fishing. This code is consistent with National Standard 9, Minimizing Bycatch and Bycatch Mortality, and is reproduced below. These guidelines are discretionary, not mandatory, and are intended to inform the angling public of NMFS' views regarding what constitutes appropriate angling behavior. Part of the code covers catch-and-release fishing and is directed towards minimizing bycatch mortality.

Code of Angling Ethics

- Promotes, through education and practice, ethical behavior in the use of aquatic resources.
- Values and respects the aquatic environment and all living things in it.
- Avoids spilling, and never dumps any pollutants, such as gasoline and oil, into the aquatic environment.
- Disposes of all trash, including worn-out lines, leaders, and hooks, in appropriate containers, and helps to keep fishing sites litter-free.
- Takes all precautionary measures necessary to prevent the spread of exotic plants and animals, including live baitfish, into non-native habitats.
- Learns and obeys angling and boating regulations, and treats other anglers, boaters, and property owners with courtesy and respect.

- Respects property rights, and never trespasses on private lands or waters.
- Keeps no more fish than needed for consumption, and never wastefully discards fish that are retained.
- Practices conservation by carefully handling and releasing alive all fish that are unwanted or prohibited by regulation, as well as other animals that may become hooked or entangled accidentally. Uses tackle and techniques, which minimize harm to fish when engaging in “catch-and-release” angling.

Table 4.27. Observed or reported number of HMS kept in the rod and reel fishery, Maine through Virginia, 2002-2009. Source: Large Pelagic Survey (LPS) Data.

Species	2002	2003	2004	2005	2006	2007	2008	2009
White marlin ²	8	12	6	5	8	4	13	8
Blue marlin ²	0	4	5	3	2	2	3	3
Sailfish ²	0	0	0	1	0	1	0	0
Swordfish	5	9	9	22	27	42	30	7
Giant bluefin tuna ³	176	58	50	48	15	15	20	46
Large medium bluefin tuna ³	11	11	13	12	1	5	11	0
Small medium bluefin tuna	62	83	30	22	48	69	48	205
Large school bluefin tuna	391	287	291	179	171	298	398	107
School bluefin	556	509	927	638	84	314	228	180
Young school bluefin	7	4	16	25	0	3	4	1
Bigeye tuna	32	21	46	32	35	59	55	58
Yellowfin tuna	2,595	3,216	3,858	3,700	3,572	2,988	1,029	1,886
Skipjack tuna	117	681	197	79	104	34	64	242
Albacore	534	546	1,458	835	542	934	168	67
Thresher shark	20	24	58	45	34	62	59	66
Mako shark	72	141	216	99	111	143	169	159
Sandbar shark	0	9	7	1	1	9	1	1
Dusky shark	1	1	0	0	3	6	1	0
Tiger shark	1	0	0	1	0	1	1	3
Porbeagle	1	0	1	1	1	0	0	0
Blacktip shark	0	1	0	1	1	0	-	-
Atlantic sharpnose shark	0	0	0	0	0	0	-	-
Blue shark	36	65	74	67	61	109	43	54
Hammerhead shark	0	0	1	0	0	0	1	0
Wahoo	49	68	110	112	85	190	172	69

Species	2002	2003	2004	2005	2006	2007	2008	2009
Dolphin	2,509	4,209	3,050	6,366	3,921	2,536	5,739	3,317
King mackerel	36	66	11	376	170	82	67	14
Atlantic bonito	704	315	410	96	262	283	51	138
Little tunny	240	121	231	181	90	195	93	175
Amberjack	7	44	0	2	1	5	31	81
Spanish mackerel	5	35	9	4	1	2	67	9

¹ NMFS typically expands these “raw” data to report discards of bluefin tuna by the rod and reel fishery to ICCAT. If sample sizes are large enough to make reasonable estimates for other species, NMFS may produce estimates for other species in future SAFE reports.

² Amendment One to the Atlantic Billfish FMP established billfish released in the recreational fishery as a “catch-and-release” program, thereby exempting these fish from bycatch considerations.

³ Includes some commercial handgear landings.

Table 4.28. Observed or Reported Number of HMS Released in the Rod and Reel Fishery, Maine through Virginia, 2002-2009. Source: Large Pelagic Survey (LPS) Data.

Species	2002	2003	2004	2005	2006	2007	2008	2009
White marlin ²	215	160	378	397	160	359	454	936
Blue marlin ²	30	39	80	52	42	69	69	60
Sailfish ²	6	6	2	6	3	1	6	69
Swordfish	6	21	22	23	52	40	45	13
Giant bluefin tuna ³	8	0	3	0	3	0	0	0
Large medium bluefin tuna ³	2	0	36	4	1	3	11	7
Small medium bluefin tuna	8	13	21	30	18	32	23	93
Large school bluefin tuna	47	40	107	141	85	99	286	77
School bluefin	200	174	1,297	1,917	290	347	358	173
Young school bluefin	182	10	1,885	282	117	83	55	52
Bigeye tuna	1	3	2	2	2	1	0	13
Yellowfin tuna	328	200	1,093	502	351	171	411	2,038
Skipjack tuna	250	526	362	105	129	17	217	610
Albacore	95	31	66	67	41	40	14	5
Thresher shark	5	8	27	9	15	24	35	23
Mako shark	120	208	350	142	177	190	242	250
Sandbar shark	17	26	68	37	158	168	222	219
Dusky shark	9	44	60	49	73	87	128	152
Tiger shark	3	12	0	6	7	11	20	11
Porbeagle	14	3	1	6	8	2	2	6

Species	2002	2003	2004	2005	2006	2007	2008	2009
Blacktip shark	6	0	1	19	9	31	-	-
Atlantic sharpnose shark	0	0	0	11	0	0	-	-
Blue shark	505	2,060	2,242	920	884	1,978	2,735	4,185
Hammerhead shark	6	38	2	5	0	0	0	0
Wahoo	6	3	5	7	6	9	4	4
Dolphin	111	677	192	375	394	227	372	222
King mackerel	5	5	1	7	20	3	5	5
Atlantic bonito	176	282	389	231	114	60	36	124
Little tunny	585	443	1,130	505	102	387	614	1,028
Amberjack	57	111	1	2	13	33	145	101
Spanish mackerel	0	1	0	0	0	2	37	1

¹ NMFS typically expands these “raw” data to report discards of bluefin tuna by the rod and reel fishery to ICCAT. If sample sizes are large enough to make reasonable estimates for other species, NMFS may produce estimates for other species in future SAFE Reports.

² Amendment One to the Atlantic Billfish FMP established billfish released in the recreational fishery as a “catch-and-release” program, thereby exempting these fish from bycatch considerations.

³ Includes some commercial handgear landings.

4.4.4 International Issues and Catch

Directed recreational fisheries for HMS occur in the United States, Venezuela, the Bahamas, and Brazil. Many other countries and entities in the Caribbean and the west coast of Africa are also responsible for significant HMS recreational landings. Directed recreational fisheries for sailfish occur in the Western Atlantic and include the United States, Venezuela, the Bahamas, Brazil, Dominican Republic, Mexico, and other Caribbean nations. However, of these countries, the United States and Brazil are the only countries that currently report recreational landings to ICCAT. Therefore, a comparison of the percentage of U.S. landings relative to recreational fisheries in other countries is not possible. Further, because total landings data (including recreational landings) are incomplete, HMS stock assessments are often hampered. For more information on some efforts by ICCAT to increase reporting of recreational landings, see previous SAFE reports.

The first meeting of the Working Group on Sport and Recreational Fishing occurred on Friday, November 6, 2009. The United States was the only party to provide information detailing its recreational fisheries as required by the Recommendation that established the Working Group. Discussions of the Recreational Working Group centered around two issues: the need to improve recreational monitoring, data collection, and reporting; and, the development of a common understanding/definition of recreational and sport fishing. There was consensus within the working group regarding the need to improve recreational monitoring, data collection, and reporting. Regarding development of a common definition, the majority of CPCs that commented expressed general agreement that it would be appropriate to include the concept of non-commercial activities as a key component of a definition. There was not consensus on this

point, as some CPCs indicated that there are instances where recreationally caught fish may legitimately enter the stream of commerce. The Working Group agreed that CPCs should submit information similar to that provided by the United States to the ICCAT Secretariat, continue discussions interessionally, seek to define common methodologies for data collection, and that the Commission should work to decide whether it would be helpful to develop a common definition of sport and recreational fisheries related to the non-commercial nature of these fisheries.

4.5 Bottom Longline (BLL)

Bottom longline is the primary commercial gear employed for targeting large coastal sharks (LCS) in all regions. Small coastal sharks (SCS) are also caught on BLL. Gear characteristics vary by region and target species, but in general, BLL consists of a longline between 3 and 8 km (1.8 – 5 miles) long with 200-400 hooks attached and is set for 2 and 20 hours. Depending on the species being targeted, both circle and J hooks are used. Fishermen targeting sharks with BLL gear are opportunistic and often maintain permits for council-managed fisheries such as reef fish, snapper/grouper, tilefish, and other teleosts. Minor modifications to how and where the gear is deployed allow fishermen to harvest sharks and teleosts on the same trip. Seasons, quota availability, market prices, and other factors influence decisions concerning whether or not to target sharks, teleosts, or both on a given trip. The gear typically consists of a heavy monofilament mainline with lighter weight monofilament gangions. Some fishermen may occasionally use a flexible 1/16 inch wire rope as gangion material or as a short leader above the hook (Hale *et al.*, 2010).

4.5.1 Current Management

Regulations for the shark fishery in this section apply to all gear types. The 1993 Fisheries Management Plan (FMP) for Sharks of the Atlantic Ocean established the basis for subsequent shark management, including establishment of three management units (LCS, SCS, and pelagic sharks), commercial quotas, and authorized gears, among other measures. An FMP amendment was completed in 2003 because of updated stock assessments, litigation, and other public comments (December 24, 2003, 68 FR 74746). Management measures enacted in that amendment included: modifying the commercial quotas, eliminating the commercial minimum size restrictions, establishing regions and trimester seasons for LCS and SCS management units, imposing gear restrictions to reduce bycatch, and a time/area closure off the coast of North Carolina effective January 1, 2005.

Based on 2005 and 2006 stock assessments, NMFS further revised shark management measures and rebuilding periods in Amendment 2 to the 2006 Consolidated HMS FMP on June 24, 2008 (73 FR 35778; corrected on July 15, 2008, 73 FR 40658). In the final rule, NMFS removed sandbar sharks from the LCS complex and established a non-sandbar LCS complex. In order to collect data on sandbar sharks, a shark research fishery was established and vessels participating in this fishery are the only vessels permitted to land sandbars when an observer is onboard. Amendment 2 also modified the number of regions (two, Atlantic and Gulf of Mexico) for the non-sandbar LCS, and implemented new annual adjusted quotas for sandbar

sharks (87.9 mt dw), non-sandbar LCS (Atlantic: 187.7 mt dw; Gulf of Mexico: 390.5 mt dw), and a porbeagle shark commercial quota (1.7 mt dw). The sandbar shark and non-sandbar LCS quotas would increase to their annual base quotas of 116.6 mt dw for sandbar sharks, 188.3 mt dw for non-sandbar LCS in the Atlantic region, and 439.5 mt dw for non-sandbar LCS in the Gulf of Mexico region as of January 1, 2013, depending on overharvests. Pelagic shark quotas were reduced for porbeagle sharks (1.7 mt dw), maintained for blue sharks (273 mt dw), and also maintained for other pelagic species (oceanic whitetip, common thresher, and shortfin mako) (488 mt dw). Amendment 2 also required that all sharks be landed with all fins attached to the carcass through landing and offloading.

Recent stock assessments results for blacknose and shortfin mako sharks required NMFS to publish Amendment 3 to the Consolidated HMS FMP on June 1, 2010 (75 FR 30484). This amendment created a species specific quota for blacknose sharks (19.9 mt), modified the quota for the non-blacknose small coastal sharks (221.6 mt), added smooth dogfish to the management unit and established a quota (715 mt dw), and would take action at the international level through international fishery management organizations to establish management measures to end overfishing of shortfin mako sharks and to promote the live release of shortfin mako sharks in the domestic commercial and recreational shark fisheries.

4.5.2 Recent Catch, Landings, and Discards

This section provides information on shark landings, species composition, bycatch, and discards as reported in the shark BLL observer program. Since 2002, shark BLL vessels are required to take an observer if selected. Participants in the shark research fishery are required to take an observer when targeting sandbar sharks. Outside of the shark research fishery, a 4-6 percent coverage rate is attained by selecting vessels at random that target sharks and possess a valid directed shark permit.

In 2009, the shark BLL observer program selected 10 vessels (including seven participants in the shark research fishery) for observer coverage and placed observers on 94 trips. Gear characteristics of trips varied by area (Gulf of Mexico or the U.S. Atlantic Ocean) and target species (grouper/snapper/tilefish, sandbar sharks, non-sandbar sharks, or a mixture) (Hale *et al.*, 2010). Observers documented the gear deployed, catch composition and disposition, bycatch, and protected resource interactions for four unique target species groups during 2009. Of the 94 trips with observers in 2009, four trips (70 hauls) targeted snapper/grouper/tilefish in the Gulf of Mexico, 78 trips targeted sandbar sharks (99 hauls) in the Gulf of Mexico and Atlantic Ocean, 7 trips (9 hauls) targeted non-sandbar shark species in the Gulf of Mexico and Atlantic Ocean, and 5 trips targeted more than one (mixture) species group in the Gulf of Mexico and Atlantic Ocean. Vessels targeting sandbar sharks participating in the shark research fishery are subject to unique retention limits (45 sandbar sharks and 33 non-LCS sandbar sharks/vessel/trip). These vessels averaged 2 trips per month in 2009. Table 4.29 through Table 4.31 summarize the shark catch composition and disposition for observed shark trips in 2009.

Table 4.29 Shark species composition of observed BLL catch during 2009 for BLL trips targeting sandbar sharks in the Gulf of Mexico and South Atlantic. Source: Hale *et al.*, 2010.

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Sandbar shark	3620	56.8	82.6	5.8	11.1	0.6
Tiger shark	726	11.4	20.4	10.2	68.7	0.7
Scalloped hammerhead shark	444	7	91.4	5.9	2	0.7
Atlantic sharpnose shark	435	6.8	50.8	43.7	1.1	4.4
Blacktip shark	385	6	65.2	30.1	4.4	0.3
Bull shark	166	2.6	91.6	0	6.6	1.8
Nurse shark	110	1.7	1.8	0	98.2	0
Great hammerhead shark	104	1.6	92.3	4.8	2.9	0
Dusky shark	94	1.5	0	54.3	45.7	0
Blacknose shark	71	1.1	52.1	45.1	2.8	0
Silky shark	64	1	79.7	14.1	0	6.3
Spinner shark	44	0.7	70.5	25	4.5	0
Night shark	42	0.6	0	100	0	0
Lemon shark	32	0.5	87.5	0	3.1	9.4
Dogfish family	13	0.2	7.7	0	7.7	84.6
Smooth dogfish	7	0.1	42.9	42.9	14.3	0
Caribbean reef shark	4	0.06	0	50	50	0
Sand tiger shark	3	0.04	0	0	100	0
Requiem shark family	2	0.03	0	50	0	50
Finetooth shark	2	0.03	50	0	50	0
Sharks	1	0.01	0	0	0	100
Longfin mako shark	1	0.01	0	0	100	0
Bonnethead shark	1	0.01	100	0	0	0
Total	6371					

Table 4.30 Shark species composition of observed BLL catch during 2009 for BLL trips targeting large coastal sharks in the Gulf of Mexico and South Atlantic.
Source: Hale *et al.*, 2010.

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Blacktip shark	141	29.4	78.0	16.3	5.7	0.0
Nurse shark	111	23.2	0.9	0	98.2	0.9
Atlantic sharpnose shark	53	11	37.7	54.7	5.70	1.9
Scalloped hammerhead shark	32	6.7	93.8	0.0	0.0	6.3
Lemon shark	28	5.8	89.3	0	7.1	3.6
Tiger shark	27	5.6	7.4	7.4	85.2	0
Bull shark	25	5.2	96.0	0	4.0	0
Great hammerhead shark	20	4.2	95.0	5.0	0	0
Blacknose shark	10	2.1	80	10	10	0
Sandbar shark	7	1.5	0.0		33.3	0
Red grouper	5	1.0	80	20	0	0
Coral	4	0.8	0	100	0	0
Carcharhinid sharks	3	0.6	0	-	-	100.0
Caribbean reef shark	2	0.4	0	100	0	0
Southern stingray	2	0.4	0	0	100	0
Green moray eel	2	0.4	100	0	0	0

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Cancer crabs	1	0.2	0	0	100	0
Spinner sharks	1	0.2	0	100	0	0
Goliath grouper	1	0.2	0	0	100	0
Moray eels	1	0.2	0	100	0	0
Eagle rays	1	0.2	0	0	100	0
Skates and rays	1	0.2	0	0	100	0
Bonnethead sharks	1	0.2	0	100	0	0
Total	479	-	-	-	-	-

Table 4.31 Shark species composition of observed BLL catch during 2009 for BLL trips targeting mixed species (tilefish and LCS or sandbar and LCS) in the Gulf of Mexico and South Atlantic. Source: Hale *et al.*, 2010.

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Sandbar shark	203	43	98	0	0	2.0
Tilefish	151	31	100	0	0	0
Scalloped hammerhead shark	63	13.2	100	0	0	0
Southern hake	10	2.1	100	0	0	0
Nurse shark	7	1.5	0	0	100	0
Great hammerhead shark	7	1.5	85.7	0	0	14.3
Tiger shark	5	1	60	0	40	0
Atlantic sharpnose shark	4	0.8	50	25	0	25
Bull shark	3	0.6	100	0	0	0
Dusky shark	3	0.6	0	100	0	0
Eels	2	0.4	100	0	0	0
Silky shark	2	0.4	100	0	0	0
Blacktip shark	2	0.4	100	0	0	0
Caribbean reef shark	2	0.4	0	100	0	0
Chain catshark	2	0.4	0	0	100	0

Species	Total Number Caught	% Total Catch	% Kept	% Discarded Dead	% Discarded Alive	% Unknown
Requiem shark family	1	0.2	0	0	0	100
Blacknose shark	1	0.2	100	0	0	0
Stingrays	1	0.2	0	0	100	0
Goliath grouper	1	0.2	0	0	100	0
Red grouper	1	0.2	100	0	0	0
Snowy grouper	1	0.2	100	0	0	0
Sevengill shark	1	0.2	00	0	100	0
Mutton snapper	1	0.2	100	0	0	0
Moray eel family	1	0.2	100	0	0	0
Lemon shark	1	0.2	100	0	0	0
Bonnethead shark	1	0.2	100	0	0	0
Total	477					

4.5.3 Bottom Longline Bycatch

Under the MMPA (16 U.S.C. 1361 *et seq.*) the Atlantic shark BLL is classified as Category III (remote likelihood or no known serious injuries or mortalities) (November 16, 2009; 74 FR 58859). As required by the Endangered Species Act (ESA), the NMFS Southeast Regional Office's Protected Resources Division prepared a Biological Opinion (BiOp) regarding the actions proposed under Amendment 2 to the 2006 Consolidated HMS FMP on May 20, 2008. The BiOp concluded, based on the best available scientific information, that Amendment 2 to the HMS FMP was not likely to jeopardize the continued existence of endangered green, leatherback, and Kemp's ridley sea turtles; the endangered smalltooth sawfish; or the threatened loggerhead sea turtle. The actions implemented under Amendment 2 were not expected to jeopardize the continued existence of any endangered or threatened species. Furthermore, the BiOp concluded that the actions implemented under Amendment 2 were not likely to adversely affect any listed species of marine mammals, invertebrates (*i.e.*, listed species of coral) or other listed species of fishes (*i.e.*, Gulf sturgeon and Atlantic salmon) in the action area. NMFS is currently engaged in a formal Section 7 consultation in accordance with the ESA to determine the potential level of incremental effect on endangered species that may arise as a result of the preferred measures in Amendment 3 to include smooth dogfish under the Secretary's authority.

Once a Biological Opinion is received from the Office of Protected Resources, it will be reviewed and a determination made concerning the need to supplement analysis in the FEIS for Amendment 3 to consider potential impacts on protected resources as a result of fishing for smooth dogfish.

Table 4.32 provides information on observed interactions with protected resources for BLL vessels fishing in the Gulf of Mexico and South Atlantic regions targeting sandbar shark in 2009. Five (5) smalltooth sawfish and two (2) loggerhead sea turtles were observed caught in bottom longline gear. No interactions with protected resources (sea bird, sea turtle, sawfish, or marine mammal) were observed for BLL vessels fishing in the Gulf of Mexico region targeting non-sandbar LCS, reef fish, or a mixture of species. No sea bird or marine mammal interactions were observed (Hale *et al.*, 2010).

Table 4.32 Number of Protected Species Interactions for all Observed Hauls Targeting Sandbar Shark in the Gulf of Mexico and South Atlantic, 2009. Disposition of Catch is Divided into Released Dead, Released Alive, and Unknown.

Species	Total Number Caught	% Discarded Dead	% Discarded Alive	% Unknown
Loggerhead sea turtle	2	100	0	0
Smalltooth sawfish	5	0	100	0

4.6 Gillnet Fishery

Gillnet is the primary gear for vessels directing on small coastal sharks. Vessels participating in the shark gillnet fishery typically possess permits for other Council and/or state managed fisheries and will deploy nets in several configurations based on target species including drift, strike, and sink gillnets. In 2009, the number of observed trips nearly doubled compared to 2008. In the drift gillnet fishery, 12 drift gillnet vessels were observed. These vessels made 255 sets on 43 trips. Using this gear configuration, the nets are 2.4-11.0 m deep (height), 274-2,103 m in length, with a mesh size of 7.9-23 cm, with total set and haulback time averaging 2.15 hours. Strikenetters use nets that are 365-548 m in length, 18.3-27.4 m deep, and with mesh sizes ranging between 11.4 and 17.8 cm. Average time from deployment to haulback is 2.13 hours. Six strikenet sets were observed in 2009. Sink gillnet catch was observed on 190 sets. These nets had a 6.4-20.3 cm mesh size, were 22.9 to 914 m in length and 2.7-8.5 m deep, and the process lasted for approximately 1.09 hours from setting to haulback. While a variety of shark species were observed landed in all types of gillnets, species composition from observed sets in 2009 shows that these gears were predominantly deployed to target non-HMS species, including Spanish and king mackerel, butterfish, Southern kingfish, and Atlantic croaker.

4.6.1 Current Management

Many of the regulations for the Atlantic shark fishery are the same for both the BLL and gillnet fishery, including, but not limited to: seasons, quotas, species complexes, permit requirements, authorized/prohibited species, and retention limits (see section 4.5.1 above for more information on shark fishery management). Examples of regulations that are specific to shark gillnet fishing, include: gillnet mesh size, requiring that gillnets remain attached to the vessel, and the need to conduct net checks every 2 hours when gear is deployed. Because the majority of the southeast shark gillnet fleet is based out of ports in northern and central Florida (South Atlantic region), regulations implementing the Atlantic Large Whale Take Reduction Plan affect this fishery. In 2007, these regulations were amended, thus removing the requirement for 100 percent observer coverage for drift gillnet vessels during the right whale calving season and prohibiting all gillnets in an expanded southeast U.S. restricted area from Cape Canaveral, Florida to the North Carolina/South Carolina border during November 15 – April 15. The rule has limited exemptions, which allows shark strikenet fishing only in waters south of 29° N. latitude during this same period and for Spanish mackerel, *Scomberomorus maculates*, gillnet fishing in the months of December to March. Operations in this area during this time period require use of VMS and observer coverage, if selected. Based on these regulations, and on current funding levels, the shark gillnet observer program now covers all anchored (sink, stab, set), strike, or drift gillnets fishing by vessels that fish from Florida to North Carolina, year-round.

4.6.2 Recent Shark Catch, Landings, and Discards

The “Catch and Bycatch in U.S. Southeast Gillnet Fisheries, 2010” is a report published every year by the Southeast Fisheries Science Center’s Panama City Laboratory that describes, in detail, the target species, gear configuration, and soak time deployed by drift gillnet, strike gillnet, and sink gillnet fishermen (Passerotti *et al*, 2010). Summary information is provided in Section 4.6 above. Table 4.33 through Table 4.35 of this section outline shark species composition, disposition, and summary information for sharks caught during observed strike, drift, and sink gillnet trips with observers onboard in 2009.

Table 4.33 Total Strike Gillnet Shark Catch by Species in order of Decreasing Abundance for all Observed Trips, 2009. Source: Passerotti *et al.*, 2010.

Species	Total Number Caught	Kept (%)	Discarded Alive (%)	Discarded Dead
Blacktip shark	9	100	0	0
Atlantic sharpnose shark	5	100	0	0
Bull shark	1	100	0	0
Total	15			

Table 4.34 Total Drift Gillnet Shark Catch by Species in Order of Decreasing Abundance for all Observed Trips, 2009. Source: Passerotti *et al.*, 2010

Species	Total Number Caught	Kept (%)	Discarded Alive (%)	Discarded Dead
Atlantic sharpnose shark	481	19.1	72.1	8.7
Blacknose shark	408	91.7	8.3	0
Smooth dogfish	336	37.8	60.1	2.1
Sandbar shark	107	0	81.3	18.7
Blacktip shark	52	13.5	40.4	46.2
Smooth hammerhead shark	14	71.4	28.6	0
Bonnethead shark	13	76.9	15.4	7.7
Spinner shark	10	40	50	10
Scalloped hammerhead shark	6	100	0	0
Common thresher shark	3	100	0	0
Finetooth shark	1	100	0	0
Dusky shark	1	0	100	0
Sand tiger shark	1	0	100	0
Atlantic angel shark	1	0	100	0
Total	1,434			

Table 4.35 Total Sink Gillnet Shark Catch by Species in order of Decreasing Abundance for all Observed Trips, 2009. Source: Passerotti *et al.*, 2010.

Species	Total Number Caught	Kept (#)	Discarded Alive (#)	Discarded Dead (#)
Spiny dogfish	1693	0	1693	0
Atlantic sharpnose shark	1456	964	212	280

Species	Total Number Caught	Kept (#)	Discarded Alive (#)	Discarded Dead (#)
Smooth dogfish	865	862	3	0
Finetooth shark	731	729	2	34.2
Bonnethead shark	323	225	60	38
Blacknose shark	222	217	5	0
Blacktip shark	160	20	32	108
Sandbar shark	4	25	75	0
Scalloped hammerhead shark	3	0	0	100
Spinner shark	2	0	100	0
Great hammerhead shark	2	0	100	0
Common thresher shark	1	0	100	0
Bull shark	3	3	0	0
Angel shark	3	0	3	0
Total	1,835			

4.6.2.1 Gillnet Bycatch

This section describes the non-shark bycatch observed in the southeast shark gillnet fisheries by gear configuration (drift, strike, and sink gillnets) (Passerotti *et al.*, 2010).

The most common non-shark species caught in the drift gillnet fishery were Spanish mackerel (*Scomberomorus maculatus*) and butterfish (*Peprilus triacanthus*) (Table 4.36). Predominant species caught in sink gillnets included Atlantic croaker, Spanish mackerel, and Bluefish. King mackerel were the predominant species observed in the strike net fishery (Table 4.37). There was a much wider range of fish species caught in the sink (Table 4.38) and drift gillnet fisheries than in strikenets, which is likely due to the number of sets observed and gear deployment methods.

4.6.2.2 Sea Turtles

There was one loggerhead and one Kemp's Ridley sea turtle observed caught in gillnet gear in 2009 (Table 4.39). Both were caught in drift gillnet gear and released alive and uninjured (Passerotti *et al.*, 2010).

4.6.2.3 Sea Birds

There was one dovekie (*Alle alle*) which is a member of the Puffin family observed caught in sink gillnet gear in 2009. The bird was released alive and uninjured (Passerotti *et al.*, 2010).

4.6.2.4 Marine Mammals

Under the MMPA (16 U.S.C. 1361 *et seq.*) the Atlantic shark gillnet fishery is classified as Category II (occasional serious injuries and mortalities) (November 16, 2009; 74 FR 58859). In 2009, there was one bottlenose dolphin caught in drift gillnet gear. The dolphin was released dead (Passerotti *et al.* 2010).

4.6.2.5 Smalltooth Sawfish

In 2009, there were no observed interactions with smalltooth sawfish in gillnet gear. The last observed interaction occurred in 2003 and the sawfish was released with no visible injuries. Given the high rate of observer coverage in for these gillnet fisheries consistent with ALWTRT requirements, NMFS believes that smalltooth sawfish interactions in this fishery are rare.

Table 4.36 Total Bycatch by Species Observed in the Drift Gillnet Fishery from the 2009 Observer Data. Source: Passerotti *et al.*, 2010.

Common Name	Total Number Caught	Kept (%)	D.A. (%)	D.D. (%)
Spanish mackerel	12,637	98.9	0	1.1
Butterfish	1,906	98.6	0.2	1.3
Atlantic menhaden	1,679	25.1	6.6	68.3
Bluefish	1,499	79.6	1.3	19.1
Harvestfish	549	97.3	0.5	2.2
Atlantic thread herring	264	0	0.4	99.6
Gulf menhaden	136	95.6	0	4.4
King mackerel	132	81.8	0	18.2
Cobia	113	18.6	47.8	33.6
Frigate mackerel	83	98.8	0	1.2
Banded drum	70	0	8.6	91.4
Blue crab	51	0	88.2	11.8
Weakfish	45	13.3	2.2	84.4
Cownose ray	43	0	97.7	2.3
Little tunny	35	100	0	0
Spadefish	34	11.8	67.6	20.6
Flounder	34	2.9	79.4	17.6
Clearnose skate	34	0	100	0
Lookdown	28	0	46.4	53.6
Florida pompano	26	92.3	0	7.7
Summer flounder	18	5.6	88.9	5.6

Common Name	Total Number Caught	Kept (%)	D.A. (%)	D.D. (%)
Crevalle jack	16	87.5	0	12.5
Jellyfish family	16	0	0	100
Ladyfish	15	6.7	0	93.3
Atlantic croaker	12	16.7	33.3	50
Black drum	9	100	0	0
Roughtail stingray	7	0	100	0
Manta ray	6	0	100	0
Bonito	6	100	0	0
Kingfish	4	0	0	100
Sea robin	4	0	100	0
Red drum	4	0	100	0
Southern stingray	3	0	100	0
Atlantic stingray	3	0	100	0
Spot	3	33.3	0	66.7
Horseshoe Crab	3	0	100	0
Remora	3	0	100	0
Inshore lizardfish	3	0	0	100
Butterfly ray	2	0	100	0
Gar family	2	50	50	0
Southern flounder	2	0	100	0
Penaeid shrimp	2	100	0	0
Sheepshead	1	100	0	0
Jack family	1	100	0	0
Whitespotted filefish	1	0	100	0
Atlantic bumper	1	0	100	0
Spiny pufferfish	1	0	100	0
Tripletail	1	100	0	0
Southern kingfish	1	100	0	0
Northern kingfish	1	100	0	0
Bullnose ray	1	0	100	0
Great barracuda	1	100	0	0
Puffer family	1	0	100	0
Snakefish	1	0	100	0
Houndfish	1	100	0	0
Total	19,558			

Note: Kept (%) – represents the percentage of the catch retained, D.A.(%) – percentage of the catch discarded alive, D.D (%) – percentage of the catch discarded dead

Table 4.37 Total Bycatch By Species Observed in the Strike Gillnet Fishery in 2009.Source: Passerotti *et al.*, 2010.

Common Name	Total Number Caught	Kept (%)	D.A. (%)	D.D. (%)
King mackerel	2,972	100	0	0
Spanish mackerel	2	100	0	0
Flounder	1	0	100	0
Kingfish	1	100	0	0
Total	2,976			

Note: Kept (%) – represents the percentage of the catch retained, D.A.(%) – percentage of the catch discarded alive, D.D (%) – percentage of the catch discarded dead

Table 4.38 Total Bycatch by Species Observed in the Sink Gillnet Fishery in 2009.Source: Passerotti *et al.*, 2010.

Common Name	Total Number Caught	Kept (#)	D.A. (#)	D.D. (#)
Atlantic croaker	10,060	10,056	4	0
Spanish mackerel	7,003	6,903	0	100
Bluefish	4,597	4,491	15	91
Atlantic bumper	4,383	3,154	538	691
Blue runner	3,422	3,380	0	42
Spot	3,353	3,287	4	62
Southern kingfish	853	840	0	13
Banded drum	359	0	44	315
Jellyfish family	300	0	0	300
Atlantic moonfish	286	268	1	17
Seatrout	268	256	1	11
Cubbyu	249	0	0	249
Atlantic menhaden	223	60	0	163
Atlantic cutlassfish	172	172	0	0
Red drum	130	0	116	4
King mackerel	119	63	4	52
Butterfish	117	63	0	54
Crevalle jack	93	93	0	0
Cobia	82	2	51	29
Kingfish	53	53	0	0
Cafftopsail catfish	51	2	34	15
Yellowfin menhaden	51	0	8	43
Little tunny	42	42	0	0
Sheepshead	37	37	0	0
Gulf menhaden	36	35	0	1
Gulf kingfish	27	27	0	0
Harvestfish	27	25	0	1
Bonito	26	26	0	0

Common Name	Total Number Caught	Kept (#)	D.A. (#)	D.D. (#)
Permit	23	0	23	0
Red snapper	22	0	8	14
Menhaden	17	14	0	3
Black drum	16	16	0	0
Silver porgy	11	6	0	5
Sea star family	9	0	7	2
Leatherjacket family	9	0	9	0
Spadefish	8	0	3	5
Headhead catfish	7	0	1	6
Ladyfish	6	6	0	0
Porgy family	6	5	1	0
Bullnose ray	5	0	5	0
Florida pompano	5	1	4	0
Herring family	4	1	0	3
Flounder	4	2	2	0
Inshore lizardfish	4	0	1	3
Flame box crab	3	0	3	0
Weakfish	3	0	0	0
Remora	3	0	1	2
Grey snapper	3	0	0	3
Sea robin	3	0	2	1
Remora family	3	0	3	0
Black seabass	2	2	0	0
Silver seatrout	2	2	0	0
Silver mullet	2	2	0	0
Summer flounder	2	0	2	0
Clearnose skate	2	0	2	0
Cownose ray	2	0	2	0
Grey triggerfish	1	0	1	0
Pomfret family	1	0	1	0
Knobbed porgy	1	1	0	0
Roughtail stingray	1	0	1	0
Horseshoe crab	1	0	1	0
Spider crab	1	0	1	0
Mollusc	1	0	1	0
Skates and rays	1	0	1	0
Lizardfish family	1	0	1	0
Total	26,611			

Table 4.39 Observed Interactions with Protected Species Between 2000-2009 in the Shark Gillnet Fishery. Letters in parentheses indicate whether the animal was released alive (A), dead (D), or unknown (U).

Year	Leatherback Sea Turtle	Loggerhead Sea Turtle	Kemp's Ridley Sea Turtle	Smalltooth Sawfish	Total
2000		1 (U)			1
2001		1 (U)			1
2002		1 (U)			1
2003				1(A)	1
2004					0
2005	1(A)	5 (4A, 1D)			6
2006		3 (2A, 1D)			3
2007		4 (3A, 1U)			4
2008					0
2009		1 (A)	1(A)		2
Total	1	16	1	1	19

4.7 Buoy Gear

4.7.1 Domestic History and Current Management

A detailed history of the buoy gear fishery may be found in the 2006 Consolidated HMS FMP. Commercial buoy gear was authorized in 2006 for Swordfish Directed and Handgear permit holders. Swordfish Directed permit holders may retain swordfish only if they have also been issued a Shark Directed or Incidental limited access permit and an Atlantic Tunas Longline permit. Swordfish Handgear permit holders are not required to be issued other permits to retain swordfish. HMS Charter/Headboat, Angling, and Swordfish Incidental permit holders may not fish with buoy gear.

Buoy gear means a fishing gear consisting of one or more floatation devices supporting a single mainline to which no more than two hooks or gangions are attached. The buoy gear fishery is usually prosecuted at night. Authorized permit holders may not possess or deploy more than 35 floatation devices, and may not deploy more than 35 individual buoy gears per vessel. Buoy gear must be constructed and deployed so that the hooks and/or gangions are attached to the vertical portion of the mainline. Floatation devices may be attached to one, but not both ends of the mainline, and no hooks or gangions may be attached to any floatation device or horizontal portion of the mainline. If more than one floatation device is attached to a buoy gear, no hook or gangion may be attached to the mainline between them. Individual buoy gears may not be linked, clipped, or connected together in any way. Buoy gears must be released and retrieved by hand. All deployed buoy gear must have some type of monitoring equipment affixed to it including, but not limited to, radar reflectors, beeper devices, lights, or reflective tape. If only reflective tape is affixed, the vessel deploying the buoy gear must possess on board an operable spotlight capable of illuminating deployed floatation devices. If a gear monitoring

device is positively buoyant, and rigged to be attached to a fishing gear, it is included in the 35 floatation device vessel limit and must be marked appropriately.

4.7.2 Recent Catch, Landings, and Discards

Buoy gear effort and catch data are available for 2007, 2008, and 2009 (Table 4.40, Table 4.41, and Table 4.42). Prior to 2007, buoy gear catch data were included in handline catch data.

Table 4.40 Buoy Gear Effort. Source: NMFS Pelagic Logbook Program

	2007	2008	2009
Number of Vessels	42	44	53
Number of Trips	745	598	708
Avg. Buoy Gears Deployed per Trip	11.0	11.2	11.9
Total Number of Hooks Set	11,742	8,922	11,595
Avg. Number Hooks per Gear	1.4	1.3	1.4

Table 4.41 Buoy Gear Landings in Pounds Dressed Weight. Source: NMFS Pelagic Logbook Program

	2007	2008	2009
Swordfish	183,982	122,700	154,674
Dolphin	966	1,031	1,427
Oilfish	346	414	245
Shortfin mako shark	308	797	932
Wahoo	63	227	623
Bigeye tuna	150	0	
Blacktip shark	9	0	
King mackerel	0	194	67
Yellowfin tuna	0	0	350
Hammerhead Shark	0	0	350
Silky shark	0	0	20
Greater Amberjack	0	0	10
Bonito	0	0	86

Table 4.42 Buoy Gear Catches and Discards in Numbers of Fish. Source: NMFS Pelagic Logbook Program

	2007	2008	2009
Kept			
Swordfish	2,849	1,843	2,085
Dolphin	63	103	113
Oilfish	7	10	5
Bigeye tuna	5	0	0
Blackfin tuna	3	7	2
Wahoo	2	6	44

	2007	2008	2009
Bonito	0	7	0
King mackerel	0	53	4
Shortfin mako	3	4	8
Hammerhead shark	1	0	1
Blacktip shark	1	0	0
Silky shark	0	1	1
Yellowfin tuna	0	0	9
Bonito	0	0	11
Released Alive			
Swordfish	1,559	1,018	763
Blue marlin	1	0	1
White marlin	0	3	0
Sailfish	2	1	0
Hammerhead shark	14	7	35
Blue shark	0	2	1
Thresher shark	0	1	1
Dusky shark	4	0	0
Night shark	16	1	34
Oceanic whitetip shark	0	1	0
Bigeye thresher shark	4	0	0
Tiger shark	1	2	1
Sandbar shark	1	0	1
Longfin mako shark	4	3	2
Shortfin mako shark	0	1	2
Blacktip shark	0	0	8
Silky shark	0	0	13
Oilfish	0	0	1
Greater amberjack	0	0	1
Discarded Dead			
Swordfish	129	80	51
Silky shark	9	0	0
Hammerhead shark	1	0	0
Blackfin tuna	0	0	1
Blue marlin	0	0	1

4.8 Green-Stick Gear

4.8.1 Current Management

Effective October 23, 2008, green-stick gear was specifically defined and authorized for the harvest of Atlantic tunas on Atlantic Tunas General, HMS Charter/Headboat (CHB), and Atlantic Tunas Longline permitted vessels (73 FR 54721, September 23, 2008). Green-stick gear (Figure 4.9) is defined as “an actively trolled mainline attached to a vessel and elevated or suspended above the surface of the water with no more than 10 hooks or gangions attached to the mainline. The suspended line, attached gangions and/or hooks, and catch may be retrieved collectively by hand or mechanical means. Green-stick does not constitute a pelagic longline or a bottom longline as defined in this section or as described at §635.21(c) or §635.21(d),

respectively.” Green-stick gear may be used to harvest bigeye, northern albacore, yellowfin, and skipjack tunas (collectively referred to as BAYS tunas) and bluefin tuna aboard Atlantic Tunas General, HMS Charter/Headboat, and Atlantic Tunas Longline permitted vessels.

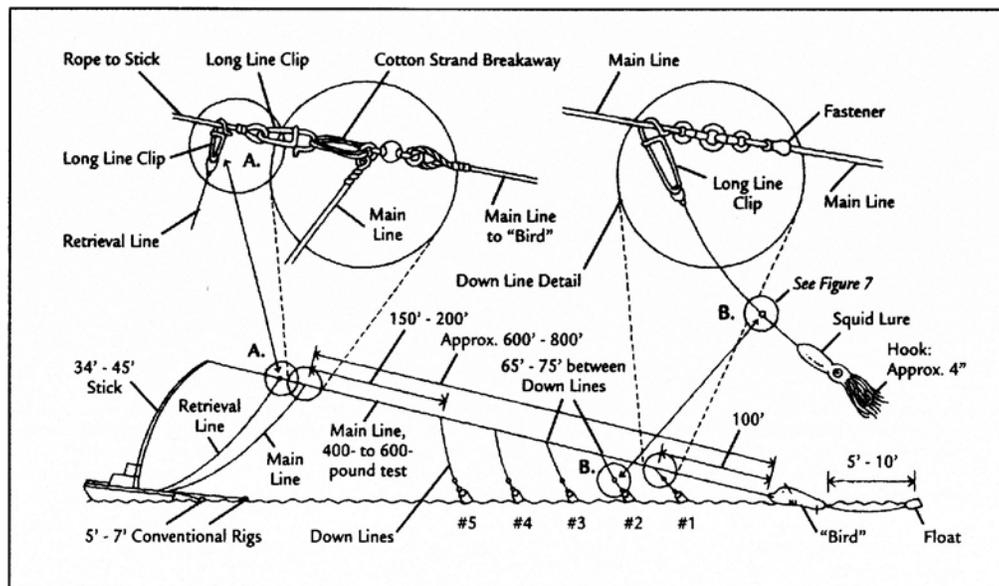


Figure 4.9 A diagram of green-stick fishing gear. Source: Wescott (1996).

Onboard Atlantic Tunas Longline permitted vessels, up to 20 J-hooks may be possessed for use with green-stick gear and no more than 10 J-hooks may be used with a single green-stick gear. J-hooks may not be used with PLL gear and no J-hooks may be possessed onboard a PLL vessel unless green-stick gear is also onboard. J-hooks possessed and used onboard PLL vessels may be no smaller than 1.5 inch (38.1 mm) when measured in a straight line over the longest distance from the eye to any other part of the hook.

Green-stick gear is used in Atlantic tuna fisheries. These fisheries are typically most active during the summer and fall, although in the South Atlantic and Gulf of Mexico fishing occurs during the winter months. Fishing usually takes place between eight and two hundred km from shore. Baits used with green-stick gear may be artificial or natural with the most common bait being artificial squid. The use of green-stick gear is most common off the mid and south Atlantic states of North Carolina and South Carolina with some use also occurring off the New England states. A limited number of vessels use green-stick gear in the northern Gulf of Mexico as well.

Commercial Atlantic tunas permits authorized to use green-stick gear are Atlantic Tunas General, HMS Charter/Headboat, and Atlantic Tunas Longline. Atlantic Tunas General and HMS CHB are open access. The Atlantic Tunas Longline permit is limited access and, in order to be valid, a vessel must also hold a shark and swordfish limited access permit. These vessels may also need permits from the states they operate out of in order to land and sell their catch. All commercial permit holders are encouraged to check with their local state fish/natural resource management office regarding these requirements. Permitted vessels are also required to sell their Atlantic tunas to federally permitted Atlantic tuna dealers. Atlantic tunas dealer

permits are issued by the Northeast Region Permit Office and vessel owner/operators are encouraged to contact the permitting office directly, either by phone at (978) 281-9438 or via the web at <http://www.nero.noaa.gov/ro/doc/vesdata1.htm>, to obtain a list of permitted dealers in their area.

Vessels that are permitted in the General and Charter/Headboat categories commercially fish under the General category rules and regulations. For instance, regarding bluefin tuna, vessels that possess either the Atlantic Tunas General or HMS Charter/Headboat permits have the ability to retain a daily bag limit of zero to three bluefin tuna, measuring 73 inches or greater curved fork length per vessel per day while the General category BFT fishery is open. Each year the General category bluefin tuna fishery season is open January 1-31 or until the quota (or subquota) is filled and is again open June 1 – December 31 or until the quota is filled. Vessel owner/operators should check with the agency via websites (www.hmspermits.gov) or telephone information lines (1-888-872-8862) to verify the bluefin tuna retention limit on any given day.

In order to characterize the catch and bycatch of green-stick gear, NMFS began a study in 2009 off North Carolina in partnership with the North Carolina Division of Marine Fisheries and with funding from the NOAA Bycatch Reduction Engineering Program. The purpose of the study is to investigate the potential feasibility of green-stick gear as an alternative to tuna fishing gear in some areas where bycatch is problematic for other gears. Preliminary information after 10 observed trips of 1-3 days in length showed that the catch included yellowfin tuna, skipjack tuna, blackfin tuna, and dolphin. Bycatch during the 10 trips included one undersized bluefin tuna, one sailfish, and some undersized yellowfin tuna, all of which were released alive and in good condition. Data collection was completed in 2010 and a final report will be produced.

4.8.2 Recent Catch and Landings

Recent Atlantic tuna catches are presented earlier in Chapter 4 (See Table 4.1). An unknown portion of these landings were made with green-stick gear as the gear has been used in the Atlantic tuna fisheries since the mid-1990s. Reporting mechanisms that are in place do not enable the number of vessels using green-stick gear to be quantified; although, limited data allow the catch to be characterized and were presented in the 2008 SAFE Report (NMFS 2008). Data on landings specific to green-stick gear are expected to improve because a green-stick gear code was designated for use in dealer reporting systems such as trip tickets in the southeast and electronic reporting programs in the northeast. NMFS has also encouraged states to utilize the green-stick gear code in their trip ticket programs with some success. In 2009, the states of South Carolina, Louisiana, and Texas indicated that they would add a green-stick gear code to their trip ticket programs and Florida confirmed that the code has been added to their program.

A portion, but not all, of green-stick gear landings has been reported via the NMFS Southeast Region's Coastal Fisheries Logbook when Atlantic Tunas General, HMS Charter/Headboat, or Atlantic Tunas Longline category fishermen also hold a NMFS Southeast Region fishing permit that requires logbook reporting. Some green-stick gear landings from 1999-2007 that were designated by hand writing "green-stick gear" as an "other" gear in the Southeast Region's Coastal Logbook were reported in the 2008 SAFE Report (NMFS 2008). Also, commercial green-stick gear catches that were reported in the PLL Logbook Program from

1999 – 2002 were reported in the 2008 SAFE Report (NMFS 2008). From 1999 - 2002, the PLL logbook format included a green-stick gear data field; however, this data field was eliminated beginning in 2003 probably because green-stick gear was not an authorized gear at the time.

Neither the Southeast Region’s Coastal Logbook nor the PLL Logbook currently have a green-stick gear data field on the forms; although, green-stick gear landings are sometimes recorded on the Coastal Fisheries Logbook form with “green-stick gear” hand written as an “other” gear. These data that are recorded with “green-stick gear” hand written as an “other” gear are very difficult to query in the logbook database. As a result, NMFS is unable to fully characterize the existing green-stick gear fishery with the data collection capability provided by the logbook program as it currently exists. NMFS is working to improve green-stick gear data collection in the future.

4.9 Safety Issues

The following section describes safety issues by fishery and gear type. More specific information regarding safety issues and statistics may be obtained from the following two U.S. Coast Guard (USCG) documents.

- “Analysis of Fishing Vessel Casualties – A Review of Lost Fishing Vessels and Crew Fatalities 1992-2007”:
http://www.nts.gov/events/forum_fishing_vessel_safety/Background/USCG%20FV%20Casualty%20Analysis%20-%201992%20to%202007.pdf
- “Recreational Boating Statistics 2009”:
http://www.uscgboating.org/assets/1/workflow_staging/Publications/394.PDF

A summary of the key findings from both reports can be found in previous SAFE reports.

Pelagic and Bottom Longline

Like all offshore fisheries, pelagic longlining can be dangerous. Although frequently closer to shore, bottom longline fishing can be equally dangerous. Trips are often long, the work is arduous, and the nature of setting and hauling longline gear may result in injury or death. Like all other HMS fisheries, longline fishermen are exposed to unpredictable weather. NMFS does not wish to exacerbate unsafe conditions through the implementation of regulations. Therefore, NMFS considers safety factors when implementing management measures in the PLL and BLL fishery. For example, all time/area closures are expected to be closed to fishing, but not transiting, in order to allow fishermen to take a more direct route to and from fishing grounds. NMFS seeks comments from fishermen on any safety concerns they may have. Fishermen have pointed out that, due to decreasing profit margins, they may fish with fewer, possibly less experienced crew members or may not have the time or money to complete necessary maintenance tasks. NMFS encourages fishermen to be responsible in fishing and maintenance activities.

Purse Seine

Accidents that can occur on purse seine vessels include general injuries caused by handling fish (*e.g.*, poisoning from being stuck by fin spines), as well as accidents related to the vessels fishing operations themselves, such as, deploying the skiff or using cables and winches to move giant bluefin tuna from the net to the hold.

Commercial Handgear

The USCG conducts routine vessel safety inspections at sea on a variety of vessels throughout the year. During the General category bluefin tuna season, the USCG has been known to concentrate patrol activities on General category bluefin tuna boats. Boarding officers indicate that the majority of the commercial handgear vessels have the necessary safety equipment. However, many part-time fishermen operating smaller vessels do not meet the necessary safety standards. There have been several cases of vessels participating in the commercial handgear fishery that have capsized due to weight while attempting to boat commercial-sized bluefin tuna (measuring 73 inches or greater and weighing several hundred pounds).

Over the last few years, the USCG focused boardings on small vessels, especially those owned by “part-time” commercial handgear fishermen, and terminated several dozen trips due to the lack of safety equipment on board. If a vessel is boarded at sea and found to be lacking major survival equipment, the USCG will terminate the trip and escort the vessels back to port.

Currently, NMFS does not require proof of proper safety equipment as a condition to obtain a commercial handgear permit. Instead, NMFS informs permit applicants that commercial vessels are subject to the Fishing Vessel Safety Act of 1988 and advises them to contact their local USCG office for further information. The USCG District Boston office reports receiving 50 to 75 calls a week during the peak fishing season. Since NMFS regulations do not require USCG inspection or safety equipment in order to obtain a commercial handgear permit, NMFS cannot be certain that all participants in the commercial handgear fisheries are adequately prepared for the conditions they may encounter. NMFS is concerned about the safety of all vessels participating in the commercial handgear fisheries and continues to work with the USCG to improve communication of vessel safety requirements to commercial handgear vessel operators.

It is unlawful for Atlantic tuna vessels to engage in fishing unless the vessel travels to and from the area where it will be fishing under its own power and the person operating that vessel brings any bluefin tuna under control (secured to the catching vessel or on board) with no assistance from another vessel, except when shown by the operator that the safety of the vessel or its crew was jeopardized or other circumstances existed that were beyond the control of the operator (50 CFR Part 635.71 (b)(1)). NMFS Enforcement and USCG boarding officers have recently encountered vessels participating in the bluefin tuna fishery that are unable to transit to and from the fishing grounds due to their limited fuel capacity. Occasionally these smaller vessels will work in cooperation with a larger documented vessel to catch a bluefin tuna. Others have been observed leaving lifesaving equipment at the dock to make room for extra fuel, bait,

and staples. NMFS is concerned that use of such inadequately equipped vessels jeopardizes crew in that the vessel may not be able to safely return to shore without assistance of the larger vessel due to insufficient fuel or to adverse weather conditions.

Over the last couple of years, NMFS has received a number of vessel permit applications from kayak owner/operators. In addition to the requirement mentioned above, NMFS only issues permits to vessels that possess a USCG documentation number, a state registration number, or a foreign registration number (recreational permit only). As kayaks typically do not require such documentation, NMFS has denied all applications for a permit for kayaks to date.

NMFS also has concerns regarding individuals embarking on HMS trips by themselves. Recently, there have been a few incidents of fishermen either severely injuring themselves or dying while pursuing HMS by themselves. Certain hazardous situations could be mitigated by having an additional person onboard the vessel while conducting a trip targeting large pelagic species. NMFS encourages vessel owner/operators to practice safe fishing techniques.

NMFS will consider all safety comments and information, including those from the USCG and NMFS Enforcement, when planning future General category effort control schedules and will discuss these issues in future meetings with the HMS Advisory Panel.

Recreational Handgear

The USCG does not maintain statistics on boating accidents, rescue, or casualty data specifically pertaining to particular recreational fisheries as it does for the commercial industry. As a result, this document contains only minimal information regarding safety in recreational HMS fisheries. However, the USCG compiles statistics on the total number of recreational boating accidents and casualties, independent of the activity or fishery in which they are engaged (Table 4.43). Three common situations often place HMS recreational HMS anglers in potential danger. Individuals in small vessels often venture out farther than their vessels are designed to travel without proper navigational equipment and may encounter rougher water than their boats are designed to withstand. Since fishermen targeting HMS species, particularly marlin, often travel 75 to 100 miles offshore, having a properly equipped, well-maintained vessel of adequate size is very important for the safety of recreational HMS constituents. Additionally, as the recreational swordfish fishery off the southeastern coast of Florida occurs at night and usually in small boats ranging from 23 to 40 feet in length, it presents other unique risks. Shipping traffic regularly transits through areas utilized by the recreational swordfish fleet, which can lead to collisions if someone is not on watch at all times. Finally, another frequent safety concern of the USCG is the potential for someone to fall overboard when on the flying bridge.

Table 4.43 Total 2009 Reported Recreational Boating Accident Types. Source: USCG Recreational Boating Statistics, 2009.

2009 Primary Accident Type	# Accidents	# Deaths	# Injuries	Total Property Damage
Total	4730	736	3358	\$35,903,921
Capsizing	369	199	220	\$1,153,740
Carbon Monoxide Exposure	17	1	39	\$0
Collision with Fixed Object	446	41	345	\$4,391,151
Collision with Floating Object	73	3	37	\$562,190
Collision with Submerged Object	165	13	56	\$1,469,119
Collision with Another Vessel	1139	65	865	\$7,292,981
Departed Vessel	100	51	49	\$40,225
Ejected from Vessel	176	24	193	\$405,535
Electrocution	0	0	0	\$0
Fall in Vessel	207	4	213	\$15,725
Falls Overboard	349	188	173	\$57,745
Fire/Explosion (fuel)	174	3	113	\$4,641,477
Fire/Explosion (non-fuel)	74	2	13	\$6,269,936
Fire/Explosion (unknown origin)	12	0	4	\$1,646,100
Flooding/Swamping	436	99	130	\$4,178,887
Grounding	308	13	197	\$3,623,040
Sinking	8	3	5	\$34,800
Skier Mishap	464	13	490	\$3,460
Struck by Vessel	49	6	47	\$6,100
Struck by Propeller	67	3	66	\$2,000
Other	101	1	103	\$107,710
Unknown	4	4	0	\$2,000

4.10 Fishery Data: Landings by Species

The following tables (Table 4.44 through Table 4.52) of Atlantic HMS landings are taken from the 2010 National Report of the United States to ICCAT (ANN-045) (NMFS, 2010). The purpose of this section is to provide a summary of recent domestic landings of HMS by gear and species allowing for interannual comparisons. Landings for sharks were compiled from the most recent stock assessment documents and updates provided from the SEFSC.

Table 4.44 U.S. Landings (mt) of Atlantic Bluefin Tuna by Gear and Area, 2002-2009.
Source: NMFS, 2010.

Area	Gear	2002	2003	2004	2005	2006	2007	2008	2009
NW Atlantic	Longline**	7.8	36.1	63.6	72.7	104.4	70.7	107.1	123.7
	Handline	4.5	2.5	1.5	2.3	0.3	0.0	0.6	0.1
	Purse seine	207.7	265.4	31.8	178.3	3.6	27.9	0.0	11.4
	Harpoon	55.5	87.9	41.2	31.5	30.3	22.5	30.2	65.6
	*Rod and reel (>145 cm LJFL)	1,008.4	676.4	348.0	170.4	217.2	235.4	305.7	717.1
	*Rod and reel (<145 cm LJFL)	519.3	314.6	370.2	254.4	158.2	398.6	352.2	143.3
	Unclassified	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0
Gulf of Mexico	Longline	32.8	80.0	102.8	118.5	88.1	81.2	111.6	111.3
	*Rod and reel	1.5	0.0	0.0	0.0	0.6	0.0	0.0	0.0
NC Area 94a	Longline	9.3	17.8	13.7	20.3	12.1	12.4	12.3	56.0
All Areas	All Gears	1,846.8	1,480.7	973.0	848.4	614.8	848.7	919.9	1,228.6

* 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.

**from 2003-2009, this includes landings and estimated discards from scientific observer and logbook sampling programs.

Table 4.45 U.S. Landings (mt) of Atlantic Yellowfin Tuna by Gear and Area, 2002-2009.
Source: NMFS, 2010.

Area	Gear	2002	2003	2004	2005	2006	2007	2008	2009
NW Atlantic	Longline	400.0	275.3	658.9	394.2	701.7	752.8	460.5	416.4
	Rod and reel*	2,624	4,672.1	3,433.7	3,504.8	4,649.2	2,756.0	657.1	742.6
	Troll	0.0	0.0	0.0	0.0	0.0	0.0	2.4	5.4
	Gillnet	5.0	0.9	3.2	0.1	4.7	4.2	0.6	0.0
	Trawl	0.0	2.2	1.6	0.2	0.7	2.4	0.0	0.0
	Handline	137.0	149.1	213.2	105.1	105.1	118.1	30.1	58.7
	Trap	0.0	0.3	0.0	0.01	0.0	0.0	0.05	0.1
	Unclassified	**	0.1	10.6	3.8	3.9	7.0	1.4	2.2
Gulf of Mexico	Longline	2,109.0	1,835.8	1,811.9	1,210.9	1,128.5	1,377.7	756.5	1,147.0
	Rod and reel*	200.0	640.0	247.1	146.9	258.4	227.6	366.3	264.7
	Handline	100.0	39.9	28.3	45.5	49.9	34.3	11.2	21.6
	Gillnet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unclassified	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Caribbean	Longline	12.0	5.6	4.5	140.6	179.7	255.6	107.1	136.7
	Handline	7.0	9.0	7.0	9.7	7.8	9.1	3.7	3.3
	Gillnet	0.0	0.02	0.06	**	0.0	0.0	0.04	0.04
	Trap	0.0	0.2	0.1	**	0.4	0.0	0.0	0.0
	Rod and reel*				5.5	0.0	12.4	9.7	3.5
NC Area 94a	Longline	0.0	5.2	0.08	0.5	0.0	1.8	0.4	0.0
SW Atlantic	Longline	52.0	42.0	16.8	0.0	0.0	0.0	0.0	0.0
All Areas	All Gears	5,646.0	7,677.7	6,515.7	5,568.1	7,090.0	5,529.5	2,407.2	2,802.7

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

** \leq 0.05 mt

Table 4.46 U.S. Landings (mt) of Atlantic Skipjack Tuna by Gear and Area, 2002-2009.
Source: NMFS, 2010.

Area	Gear	2002	2003	2004	2005	2006	2007	2008	2009
NW Atlantic	Longline	**	0.9	0.1	0.05	0.04	0.0	0.1	0.4
	Rod and reel*	23.3	34.1	27.3	8.1	34.6	27.4	21.0	75.7
	Gillnet	**	0.9	16.7	2.2	0.2	0.05	0.04	3.3
	Trawl	**	0.5	0.2	0.07	0.7	0.005	0.003	0.0
	Handline	0.2	0.2	0.6	0.9	0.2	0.3	0.4	2.8
	Trap	**	1.5	0.006	0.0	0.3	0.0	0.0	0.0
	Pound net	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.0
	Unclassified	0.0	0.1	0.2	0.01	0.06	0.6	0.5	1.2
Gulf of Mexico	Longline	**	0.05	0.3	0.3	0.0	0.0	0.05	0.05
	Rod and reel*	13.2	11.1	6.3	3.1	6.4	23.9	16.3	22.0
	Handline	0.0	0.04	0.2	0.02	0.0	0.2	0.06	0.2
Caribbean	Longline	2.5	0.4	0.3	0.2	0.2	0.02	1.3	0.05
	Gillnet	0.6	0.4	0.3	0.06	0.02	0.0	0.01	0.6
	Rod and reel*	NA	15.7	40.4	3.9	7.7	0.2	11.3	4.3
	Handline	12.5	12.9	9.6	10.9	10.0	13.7	16.0	8.8
	Trap	0.7	0.2	0.02	0.1	0.05	0.0	0.0	0.0
All Areas	All Gears	53.0	79.1	102.5	29.9	61.0	66.5	67.1	119.4

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

** \leq 0.05 mt

Table 4.47 U.S. Landings (mt) of Atlantic Bigeye Tuna by Area and Gear, 2002-2009.
Source: NMFS, 2010.

Area	Gear	2002	2003	2004	2005	2006	2007	2008	2009
NW Atlantic	Longline	328.6	169.2	267.0	272.9	469.4	331.9	380.2	386.1
	Rod and reel*	49.6	188.5	94.6	165.0	422.3	126.8	70.9	77.6
	Troll	0.0	0.0	0.0	0.0	0.0	0.9	0.8	0.6
	Gillnet	0.0	0.07	0.0	0.0	0.2	1.0	0.04	0.0
	Handline	13.8	6.0	3.3	6.2	21.5	16.8	6.9	4.6
	Trawl	0.5	0.03	0.9	0.6	0.0	0.4	0.0	0.0
	Unclassified	0.0	0.0	0.5	0.6	0.8	0.9	2.1	1.9
Gulf of Mexico	Longline	41.0	26.2	20.2	25.2	37.7	37.0	14.0	19.5
	Rod and reel*	0.0	0.0	6.0	0.0	24.3	0.0	0.0	0.0
	Handline	0.6	0.3	0.2	0.1	1.5	0.01	0.0	0.07
Caribbean	Longline	29.7	7.0	3.5	6.9	10.5	3.4	8.9	3.8
	Handline	0.0	0.0	0.0	0.04	0.0	0.0	0.0	0.0
NC Area 94a	Longline	45.2	36.9	5.0	6.9	3.0	8.4	4.6	0.0
SW Atlantic	Longline	91.3	44.6	14.4	0.0	0.0	0.0	0.0	0.0
All Areas	All Gears	600.3	478.8	416.0	484.4	991.4	527.3	488.5	516.5

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

** ≤ 0.05

Table 4.48 U.S. Landings (mt) of Atlantic Albacore Tuna by Gear and Area, 2002-2009.
Source: NMFS, 2010.

Area	Gear	2002	2003	2004	2005	2006	2007	2008	2009
NW Atlantic	Longline	124.0	95.7	106.6	88.9	84.8	109.9	107.2	140.1
	Gillnet	2.6	0.1	4.9	6.0	2.1	1.0	2.1	5.6
	Handline	3.9	1.7	6.1	3.0	2.6	5.4	0.2	0.5
	Trawl	0.3	0.02	2.7	1.7	1.1	0.3	0.01	0.08
	Troll	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.07
	Rod and reel*	323.0	333.8	500.5	356.0	284.2	393.6	125.2	22.8
	Unclassified	0.0	0.0	3.6	9.9	5.6	4.2	2.0	1.3
Gulf of Mexico	Longline	9.5	4.4	9.9	6.9	7.6	15.4	10.2	16.7
	Rod and reel*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Handline	0.0	0.01	0.0	0.1	0.07	0.0	0.0	0.01
Caribbean	Longline	8.4	3.9	3.2	12.1	10.5	1.2	0.4	0.3
	Gillnet	**	0.04	0.005	0.002	0.0	0.0	0.0	0.0
	Trap	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Handline	2.7	2.6	2.1	1.1	0.4	0.2	0.4	0.003
NC Area 94a	Longline	4.8	1.6	0.2	0.6	0.03	0.3	0.8	0.3
SW Atlantic	Longline	8.3	2.0	0.5	0.0	0.0	0.0	0.0	0.0
All Areas	All Gears	488.1	446.1	646.6	488.0	399.0	532.1	248.1	187.9

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

** \leq 0.05 mt

Table 4.49 U.S. Catches and Landings (mt) of Atlantic Swordfish by Gear and Area, 2002-2009. Source: NMFS, 2010.

Area	Gear	2002	2003	2004	2005	2006	2007	2008	2009
NW Atlantic	*Longline	1,132.8	1,341.3	1,169.7	1,096.2	1,165.2	1,649.6	1,622.5	1,642.1
	Gillnet	0.1	0.0	0.05	0.0	0.0	0.2	0.0	0.0
	Handline	8.8	10.8	18.7	34.4	32.5	125.2	83.2	126.2
	Trawl	3.9	5.6	8.3	8.2	3.5	6.5	7.6	22.9
	Unclassified	0.1	1.6	0.0	0.5	0.2	0.2	0.2	4.4
	Unclassified discards			3.9	4.2	5.1	5.5	4.1	25.1
	Harpoon	2.8	0.0	0.5	0.0	0.3	0.0	0.0	0.05
	***Rod and reel	21.5	5.9	24.3	53.1	50.6	65.9	56.7	19.0
	Trap	**	0.06	0.0	0.0	0.0	0.0	0.0	0.0
Gulf of Mexico	*Longline	549.1	507.6	453.0	480.9	328.1	457.7	361.6	473.1
	Handline	2.9	9.8	4.0	0.3	0.1	0.2	1.2	0.9
	Rod and reel		0.03	0.5	1.5	2.1	2.3	19.0	12.6
	Unclassified		3.4	0.0	0.2	0.0	0.0	0.0	2.9
	Unclassified discards			0.03	3.9	2.7	5.5	4.6	19.4
Caribbean	*Longline	329.0	274.5	295.9	143.5	88.9	27.8	57.9	22.6
	Trap	0.1	0.0	0.0	0.0	0.0	0.0	0.0	
	Rod and reel		0.0	0.4	6.6	0.0	0.0	0.0	0.0
	Handline		0.02	0.006	0.0	0.0	0.0	0.0	0.003
	Unclassified discards		0.2	0.08	0.7	0.0	0.0	0.0	1.0
NC Atlantic	*Longline	587.9	632.8	599.9	552.2	378.6	338.9	311.6	511.2
SW Atlantic	*Longline	199.9	20.5	15.7	0.0	0.0	0.0	0.0	0.0
All Areas	All Gears	2,838.9	2,814.13	2,595.1	2,387.6	2,057.9	2,682.8	2,530.3	2,838.0

* Includes landings and estimated dead discards from scientific observer and logbook sampling programs.

** ≤ 0.5 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.

Table 4.50 Commercial Landings of Atlantic Large Coastal Sharks in lb dw: 2002-2009. Sources: Cortés 2003; Cortés and Neer 2002, 2005; Cortés pers. comm., 2010.

Large Coastal Sharks	2002	2003	2004	2005	2006	2007	2008	2009
Basking**	0	0	0	0	0	0	0	0
Bignose*	0	318	0	98	46	0	104	0
Bigeye sand tiger**	0	0	0	0	0	0	0	0
Blacktip	1,099,194	1,474,362	1,092,600	894,768	1,255,255	1,091,502	573,723	601,116
Bull	40,463	93,816	49,556	118,364	173,375	154,945	186,882	207,502
Caribbean reef*	0	0	0	0	0	0	0	0
Dusky*	8,779	23,288	1,025	874	4,209	2,064	0	486
Galapagos*	0	0	0	0	0	0	0	0
Hammerhead, great	0	0	0	0	0	0	0	0
Hammerhead, scalloped	0	0	0	0	0	0	0	0
Hammerhead, smooth	0	0	92	54	150	0	358	4,025
Hammerhead, unclassified	108,160	150,368	116,546	182,387	141,068	65,232	55,907	159,937
Large coastal, unclassified	147,359	51,433	0	0	0	0	0	0
Lemon	56,921	80,688	67,810	74,436	65,097	72,583	53,427	82,311
Narrowtooth*	0	0	0	0	0	0	0	0
Night*	0	20	0	0	0	0	0	0

Large Coastal Sharks	2002	2003	2004	2005	2006	2007	2008	2009
Nurse	69	70	317	152	2,258	15	58	147
Sandbar	1,863,420	1,425,628	1,223,241	1,246,966	1,501,277	691,928	86,640	167,958
Sand tiger**	409	624	1,832	4,149	3,555	210	0	15
Silky	30,731	51,588	11,808	18,237	16,173	16,496	4,794	5,474
Spinner	8,447	12,133	14,806	47,670	96,259	17,888	123,660	37,047
Tiger	16,115	18,536	30,976	39,387	50,749	34,169	29,712	23,046
Whale**	0	0	0	0	0	0	0	0
White**	0	1,454	58	0	122	0	117	0
Unclassified, assigned to large coastal	771,450	908,077	603,229	519,654	499,069	182,240	247,639	224,137
Unclassified, fins	142,565	181,431	137,375	135,774	152,111	98,010	55,482	79,849
Total (excluding fins)	4,151,594 (1,883 mt dw)	4,292,403 (1,947 mt dw)	3,213,896 (1,458 mt dw)	3,147,196 (1,428 mt dw)	3,808,662 (1,728 mt dw)	2,329,272 (1,057 mt dw)	1,363,021 (618 mt dw)	1,513,201 (686 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.

** indicates species that were prohibited as of April 1997.

Table 4.51 Commercial Landings of Atlantic Small Coastal Sharks in lb dw: 2002-2009. Sources: Cortés and Neer, 2002, 2005; Cortés, 2003; Cortés pers. comm.

Small coastal sharks	2002	2003	2004	2005	2006	2007	2008	2009
Atlantic angel*	495	1,397	818	3,587	500	29	91	0
Blacknose	144,615	131,511	68,108	124,039	187,907	91,438	134,255	149,874
Bonnethead	36,553	38,614	29,402	33,295	33,408	53,638	60,970	55,319
Finetooth	185,120	163,407	121,036	109,774	80,536	138,542	80,833	150,932
Sharpnose, Atlantic	213,301	190,960	230,880	354,255	459,184	332,160	324,622	277,261
Sharpnose, Caribbean*	0	0	0	0	0	0	0	0
Unclassified, assigned to small coastal	35,831	8,634	1,407	9,821	1,289	2,384	23,077	34,429
Total (excluding fins)	615,915 (279 mt dw)	534,523 (242 mt dw)	451,651 (205 mt dw)	634,885 (288 mt dw)	763,327 (346 mt dw)	618,191 (280 mt dw)	623,848 (283 mt dw)	667,815 (303 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.

Table 4.52 Commercial landings of Atlantic Pelagic Sharks in lb dw: 2002-2009. Sources: Cortés and Neer 2002, 2005; Cortés 2003; Cortés pers. comm.

Pelagic Sharks	2002	2003	2004	2005	2006	2007	2008	2009
Bigeye thresher*	0	0	719	267	68	0	0	0
Bigeye sixgill*	0	0	0	0	0	0	0	0
Blue shark	137	6,324	423	0	588	0	3,229	4,793
Mako, longfin*	3,008	1,831	1,827	403	2,198	2,042	1,896	25,264
Mako, shortfin	159,840	151,428	217,171	156,082	103,040	165,966	120,255	141,456
Mako, unclassified	58,392	33,203	50,978	35,241	28,557	38,170	39,661	9,383
Oceanic whitetip	1,590	2,559	1,082	713	354	787	1,899	933
Porbeagle	2,690	1,738	5,832	2,452	3,810	3,370	5,259	3,609
Sevengill*	0	0	0	0	0	0	0	0
Sixgill*	0	0	0	0	0	0	0	0
Thresher	53,077	46,502	44,915	41,230	27,740	46,391	47,528	33,333
Unclassified, pelagic	5,965	79,439	0	0	571	0	0	154
Unclassified, assigned to pelagic	182,983	314,300	356,522	16,427	25,917	5,453	14,819	6,650
Unclassified, pelagic, fins	0	0	41	0	0	0	0	0
Total (excluding fins)	467,682 (212 mt dw)	637,324 (289 mt dw)	679,469 (308 mt dw)	252,815 (115 mt dw)	192,843 (87 mt dw)	262,179 (119 mt dw)	234,546 (106 mt dw)	225,575 (102 mt dw)

* indicates species that were prohibited in the commercial fishery as of June 21, 2000.

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