

4. FISHERY DATA UPDATE

In this chapter, HMS fishery data are analyzed by gear type. 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 of this document.

The list of authorized fisheries and fishing gear used in those fisheries became effective December 1, 1999 (64 FR 67511) and has been modified several times in subsequent final rules. The list 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).”

HMS Fishery	Authorized Gear Types
Swordfish handgear	Rod and reel, harpoon, handline, bandit gear, buoy gear, green-stick (beginning in the 2014 fishing year)
Swordfish recreational	Rod and reel, handline
Pelagic longline	Longline, green-stick
Shark gillnet	Gillnet
Shark bottom longline	Longline
Shark handgear	Rod and reel, handline, bandit gear
Shark recreational	Rod and reel, handline
Tuna purse seine	Purse seine
Tuna recreational	Rod and reel, handline, speargun (allowed for tunas other than bluefin), green-stick (only for vessels possessing the Atlantic HMS Charter/Headboat permit)
Tuna handgear	Rod and reel, harpoon, handline, bandit gear
Tuna harpoon	Harpoon
Atlantic billfish recreational	Rod and reel only
Tuna green-stick	Green stick
HMS commercial Caribbean small boat	Rod and reel, handline, harpoon, bandit gear, green-stick, and buoy gear

The U.S. percentage of regional and total catch of HMS is presented to provide a basis for comparison of the U.S. catch relative to other nations/entities (Table 4.1). International catch levels and U.S. reported catches for HMS (other than sharks) are taken from the 2014 ICCAT Standing Report of the SCRS (SCRS, 2014). The SCRS data collection is reported by species; therefore, Table 4.1 depicts a summary of U.S. and international HMS catches by species rather than gear type. Catch of billfish includes both recreational landings and dead discards from commercial fisheries; bluefin tuna includes commercial landings and dead discards and recreational landings; and swordfish includes recreational landings and commercial landings and dead discards. International catch and landings data for the pelagic longline and purse seine fisheries are in Sections 4.1.3 and 4.2.3, respectively. Data necessary to compare the U.S. regional and total percentage of international catch levels for most Atlantic shark species are

currently limited; therefore, Table 4.1 provides information only on the species that have been assessed by the SCRS.

Table 4.1 U.S. vs. International Catch of HMS Reported to ICCAT (Calendar Year 2013)

Species	Total International Reported Catch (mt ww)	Region	Total Regional Catch (mt ww)	U.S. Catch (mt ww)	U.S. Percentage of Regional Catch	U.S. Percentage of Total Atlantic Catch
Atlantic swordfish	19,767	North Atlantic	11,980	2,834	23.6	14.33
		South Atlantic	7,787	0	0.0	
Atlantic bluefin tuna	14,817	West Atlantic	1,484	518	34.9	3.49
		East Atlantic/Med.	13,333	0	0.0	
Atlantic bigeye tuna	63,066	Atlantic/Med.	63,066	880	1.3	1.39
Atlantic yellowfin tuna	92,615	West Atlantic	20,702	2,332	11.2	2.51
		East Atlantic/Med.	71,913	0	0.0	
Atlantic albacore tuna	41,772	North Atlantic	20,948	599	2.8	1.43
		South Atlantic/Med.	20,823	0	0.0	
Atlantic skipjack tuna	249,845	West Atlantic	27,086	75	0.27	0.03
		East Atlantic/Med.	222,759	0	0.0	
Atlantic blue marlin	1,098	North Atlantic	641	9	1.4	0.81
		South Atlantic	457	0	0.0	
Atlantic white marlin	415	North Atlantic	189	4	2.1	0.96
		South Atlantic	225	0	0.0	
Atlantic sailfish	1,502	West Atlantic	412	3	0.72	0.19
		East Atlantic	1,090	0	0.0	
Blue sharks	56,552	North Atlantic	37,137	32	0.08	0.05
		South Atlantic/Med.	19,415	0	0.0	
Porbeagle sharks	188	North Atlantic	158	27	17.0	14.36
		South Atlantic/Med.	30	0	0.0	
Shortfin mako sharks	5,543	North Atlantic	3,635	402	11.0	7.25
		South Atlantic/Med.	1,907	0	0.0	

Source: SCRS, 2013.

4.1 Pelagic Longline

4.1.1 Current Management

The pelagic longline (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. PLL vessel operators are opportunistic, switching gear style and making subtle changes to target the best available economic opportunity on 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 that cannot be landed due to fishery regulations (or undersized catch of permitted species) is required to be released, regardless of whether the catch is dead or alive.

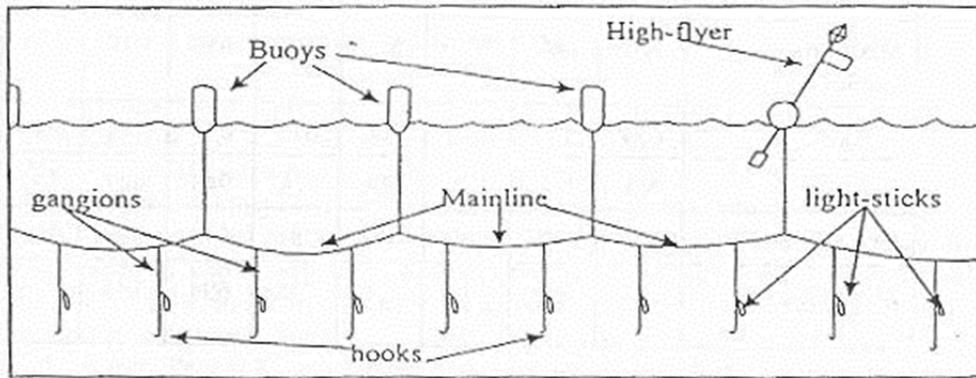


Figure 4.1 Typical U.S. Pelagic Longline Gear

Source: Arocha, 1997.

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. 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 Pelagic Longline Set (2004-2013)

Target Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Swordfish	701	747	742	672	708	687	759	728	683	735
Bigeye tuna	400	634	754	773	751	755	653	802	865	620
Yellowfin tuna	696	691	704	672	678	689	687	645	628	638
Mix of tuna species	779	692	676	640	747	744	837	786	728	694
Shark	717	542	509	494	377	354	455	348	525	NA
Dolphin	1,033	734	988	789	989	1,033	1,131	1,082	1,129	933
Other species	270	889	236	NA	NA	NA	467	400	300	NA
Mix of species	777	786	777	757	749	781	761	749	758	717

Source: Fisheries Logbook System.

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.

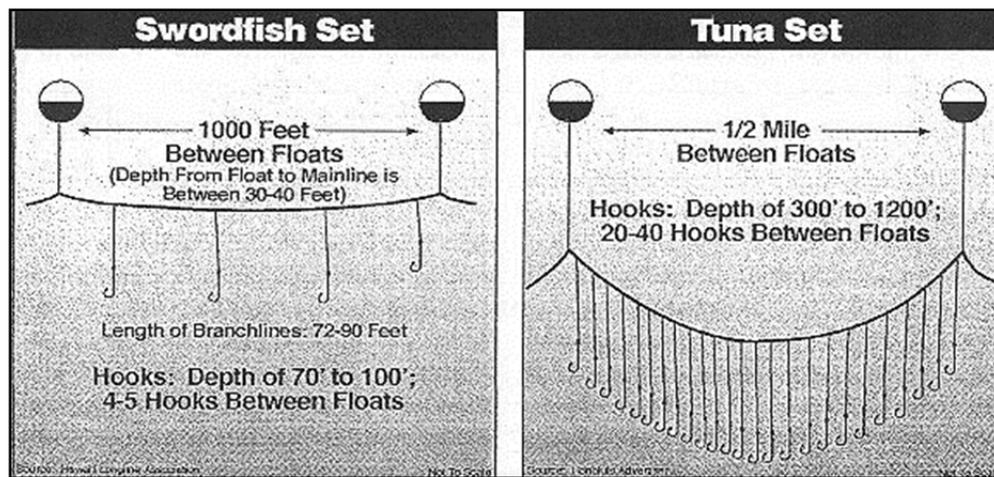


Figure 4.2 Pelagic Longline Gear Deployment Techniques

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. Source: Hawaii Longline Association and Honolulu Advertiser.

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 November 2014, approximately 246 tuna longline LAPs had been issued. In addition, approximately 183 directed swordfish LAPs, 66 incidental swordfish LAPs, 206 directed shark LAPs, and 258 incidental shark LAPs had been issued (see Table 8.1 for more detailed data on LAPs). Not all vessels with limited access swordfish and shark permits use PLL gear, but these are the only permits ((1) tuna longline; (2) shark LAP; and, (3) swordfish LAP (other than handgear)) that allow for the use of PLL gear in HMS fisheries.

On December 2, 2014, NMFS announced the final rule to implement Amendment 7 to the 2006 Consolidated HMS FMP. This action was necessary to meet domestic management objectives under the Magnuson-Stevens Act including preventing overfishing, achieving optimum yield, and minimizing bycatch to the extent practicable, as well as the objectives of ATCA and obligations pursuant to binding recommendations of ICCAT. Amendment 7 is intended to reduce and account for bluefin dead discards in all categories; optimize fishing opportunities in all categories within the United States' quota; enhance reporting and monitoring; and adjust other management measures as necessary. Most of the management measures in the final rule will take effect January 1, 2015, while some measures will take effect on either June 1, 2015, or January 1, 2016. More detailed information regarding this rule is available at <http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am7/index.html>.

PLL Observer Program

During 2013, NMFS observers recorded 1,474 PLL sets for overall non-experimental fishery coverage of 14.1 percent (Garrison, pers comm). Table 4.3 details the amount of observer coverage in past years for this fleet.

The Pelagic Longline Take Reduction Plan (PLTRP) (74 FR 23349, May 19, 2009) recommended that NMFS increase observer coverage to 12 to 15 percent throughout all Atlantic PLL 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 Pelagic Longline Take Reduction Team (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 2013, total observer coverage, including experimental sets, was 14.4 percent (Table 4.3).

Table 4.3 Observer Coverage of the Atlantic Pelagic Longline Fishery (1999-2013)

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 ¹	584	398	186	5.4	3.7	100
2002 ¹	856	353	503	8.9	3.9	100
2003 ¹	1,088	552	536	11.5	6.2	100
	Total	Non-EXP	EXP	Total	Non-EXP	EXP
2004 ²	702	642	60	7.3	6.7	100
2005 ²	796	549	247	10.1	7.2	100
2006	568	-	-	7.5	-	-
2007	944	-	-	10.8	-	-
2008 ³	1,190	-	101	13.6	-	100
2009 ³	1,588	1,376	212	17.3	15	100
2010 ³	884	725	159	11	9.7	100
2011 ³	879	864	15	10.9	10.1	100
2012 ⁴	1,060	945	115	9.5	8.6	100
2013	1,528	1,474	54	14.4	14.1	100

NED – Northeast Distant Area; EXP – experimental. 1In 2001, 2002, and 2003, 100 percent observer coverage was required in the NED research experiment. 2In 2004 and 2005, there was 100 percent observer coverage in EXP. 3In 2008- 2011, 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. 4In 2012, 100 percent observer coverage was required in a cooperative research program in the GOM to test the effectiveness of “weak hooks” on target species and bycatch rates, but these sets are not included in extrapolated bycatch estimates because they are not representative of normal fishing. Sources: 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, 2011, 2012, 2013, 2014; Garrison, pers. comm. 2014.

4.1.2 Recent Catch, Landings, and Bycatch

U.S. Atlantic PLL catch (including bycatch, incidental catch, and target catch) is largely related to vessel characteristics and gear configuration. The reported catch, in numbers of fish, is summarized for the whole fishery in Table 4.4. Table 4.5 provides a summary of U.S. Atlantic PLL landings, as reported to the International Commission for the Conservation of Atlantic Tunas (ICCAT).

Table 4.4 Catch Reported in the U.S. Atlantic Pelagic Longline Fishery, in Number of Fish per Species (2004-2013)

Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Swordfish kept	46,440	41,139	38,241	45,933	42,800	45,378	33,831	38,721	51,544	44,556
Swordfish discarded	10,675	11,134	8,900	11,823	11,194	7,484	6,107	8,736	7,996	4,756
Blue marlin discarded	712	567	439	611	687	1,013	504	544	896	844
White marlin discarded	1,053	989	557	744	670	1,064	605	943	1,432	1,239
Sailfish discarded	424	367	277	321	506	774	312	581	795	456
Spearfish discarded	172	150	142	147	197	335	212	281	270	342
Bluefin tuna kept	475	375	261	337	343	629	392	347	392	273
Bluefin tuna discarded	1,031	765	833	1,345	1,417	1,290	1,488	765	563	266
Bigeye, albacore, yellowfin, and skipjack tunas kept	76,962	57,132	73,058	70,390	50,108	57,461	51,786	69,504	84,707	67,083
Pelagic sharks kept	3,440	3,149	2,098	3,504	3,500	3,060	3,872	3,732	2,794	3,384
Pelagic sharks discarded	25,355	21,550	24,113	27,478	28,786	33,721	45,511	43,806	23,038	28,151
Large coastal sharks kept	2,292	3,362	1,768	546	115	403	434	131	86	49
Large coastal sharks discarded	5,230	5,877	5,326	7,133	6,732	6,672	6,726	6,351	7,716	7,997
Dolphin kept	38,769	25,707	25,658	68,124	43,511	62,701	30,454	30,054	42,445	34,250
Wahoo kept	4,633	3,348	3,608	3,073	2,571	2,648	749	1,922	3,121	2,721
Sea turtle interactions	369	152	128	300	476	137	94	66	61	92
Number of Hooks (× 1,000)	7,276	5,911	5,662	6,291	6,498	6,979	5,729	6,035	7,679	7,306

Source: Fisheries Logbook System.

Table 4.5 Reported Landings (mt ww) in the U.S. Atlantic Pelagic Longline Fishery (2004-2013)

Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Yellowfin tuna	2,492.2	1,746.2	2,009.9	2,394.5	1,324.5	1,700.1	1,188.8	1,458.3	2,281.0	1,543.5
Skipjack tuna	0.7	0.6	0.2	0.02	1.45	0.5	1.4	0.6	0.4	0.4
Bigeye tuna	310.1	311.9	520.6	380.7	407.7	430.1	443.2	600.2	583.2	508.4
Bluefin tuna*	180.1	211.5	204.6	164.3	232.6	335.0	238.7	241.4	291.9	190.4
Albacore tuna	120.4	108.5	102.9	126.8	126.5	158.3	159.9	240.0	261.4	255.8
Swordfish N.*	2,518.5	2,272.8	1,960.8	2,474.0	2,353.6	2,691.3	2,206.2	2,570.9	3,384.5	2,823.1
Swordfish S.*	15.7	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.06

* Includes landings and estimated discards from scientific observer and logbook sampling programs. Source: NMFS, 2014.

Consistent with ICCAT Recommendations 09-07, 10-07, 10-08, and 11-08, the United States has prohibited the retention of bigeye thresher sharks in all fisheries (since 1999); prohibited retaining, transshipping, landing, storing, or selling oceanic whitetip sharks (*Carcharhinus longimanus*) or hammerhead sharks in the family Sphyrnidae (except for *Sphyrna tiburo*) caught in association with ICCAT fisheries (since 2011); and prohibited retaining on board, transshipping, or landing silky sharks (*C. falciformis*) since 2012. Additionally, in 2012, to be consistent with the oceanic whitetip and hammerhead shark prohibitions, the United States also prohibited the storing, selling, or purchasing of silky sharks caught in association with ICCAT fisheries. The data on the number of releases (and status) of ICCAT prohibited species from pelagic longline vessels during 2013 can be found in Table 4.6.

Table 4.6 ICCAT-Designated Prohibited Shark Interactions and Dispositions (2013)

Species	Released Unknown	Kept	Released Dead	Released Alive	Lost at Surface
Bigeye thresher	0	0	30	33	0
Silky	0	0	169	194	1
Great hammerhead	0	0	15	18	0
Oceanic whitetip	0	0	4	29	0
Smooth hammerhead	0	0	0	1	0
Scalloped hammerhead	0	0	141	105	0

Source: NMFS Pelagic Observer Program.

Bycatch mortality of marlins, sailfish, swordfish, and bluefin tuna from all fishing nations may significantly affect 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 and required the use of weak hooks by PLL vessels in the Gulf of Mexico.

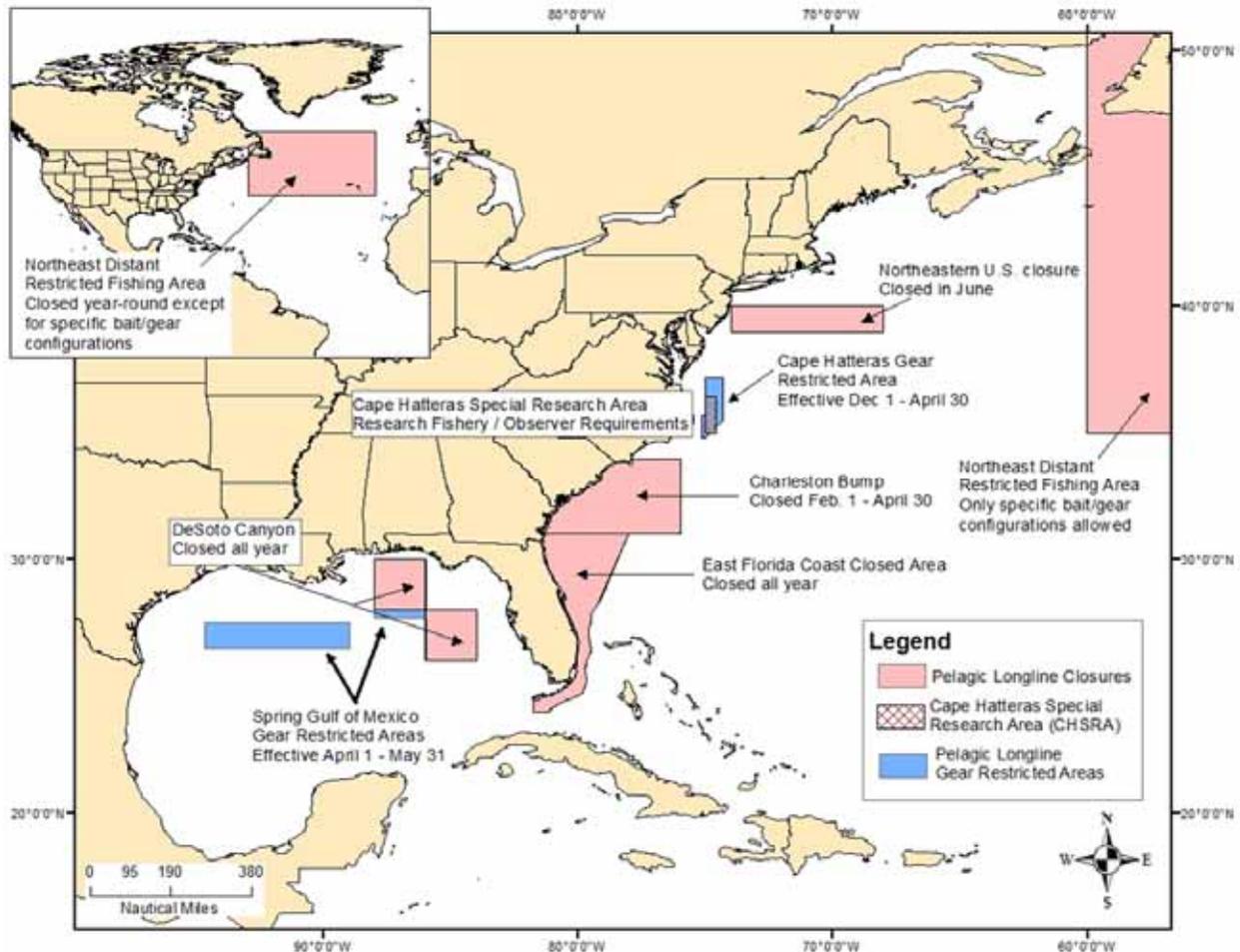


Figure 4.3 Areas Closed to Pelagic Longline Fishing by U.S. Flagged Vessels

Bluefin Tuna – Amendment 7 to the Consolidated Atlantic HMS FMP

To reduce and account for bluefin tuna dead discards in all categories; optimize fishing opportunities in all categories within the U.S. quota; enhance reporting and monitoring; and to adjust other management measures, as necessary, NMFS recently published a final rule to implement Amendment 7 to the Consolidated Atlantic HMS FMP (79 FR 71510, December 2, 2014). Four components of Amendment 7 will primarily affect the U.S. PLL fishery. These include: (1) new PLL Gear Restricted Areas (GRAs); (2) an Individual Bluefin Quota (IBQ) program; (3) mandatory electronic monitoring of PLL gear at haulback; and, (4) catch reporting of each PLL set using vessel monitoring systems (VMS).

The locations of the new GRAs are provided in Figure 4.3 above. The GRAs encompass regions with elevated bluefin interaction rates for PLL vessels, as determined from observer and logbook data. The primary objectives of the GRAs are to reduce bluefin interactions (and the potential for dead discards), and to minimize economic and social impacts on the PLL fishery.

The Cape Hatteras GRA is located off the coast of North Carolina and is effective from December through April of a given year. A vessel that has been issued, or is required to have been issued, an Atlantic tunas limited access longline permit (and other associated permits as

required) may be granted conditional access to fish with PLL gear in the Cape Hatteras GRA provided the permit holder/ eligible vessel have demonstrated an ability to avoid bluefin and comply with reporting and monitoring requirements. The use of other gear types authorized for the pelagic longline permit, such as buoy gear, green-stick gear, or rod and reel gear would be allowed by pelagic longline vessels.

The Spring Gulf of Mexico GRA consists of two areas in the Gulf of Mexico and limits access to these areas for vessels fishing with pelagic longline gear during the 2-month period from April through May of a given year. Other gear types authorized for use by PLL vessels such as buoy gear, green-stick gear, or rod and reel are allowed in these areas provided the vessel abides by any rules/regulations that apply to those gear types.

The IBQ program is a limited access privilege program that limits the total incidental catch (landings and dead discards) of bluefin for individual vessels in the Longline category. This program is intended to reduce bluefin tuna dead discards by capping the amount of catch (landings and dead discards) for individual vessels; provide strong incentives to reduce interactions and flexibility for vessels to continue to operate profitably; accommodate different fishing practices within the pelagic longline fleet; and create new potential for revenue (from a market for leasable IBQ allocation).

HMS permit holders that have an eligible Atlantic Tunas Longline permit have been issued an IBQ share percentage of the overall Longline quota (“quota share”), and are eligible to receive annual allocations associated with that permit. Participants in the IBQ program may also lease additional quota from other participants to account for landings of bluefin, dead discards, and to resolve quota debt.

Mandatory electronic monitoring of PLL gear at haulback (effective June 1, 2015) will require permit owner/operators (or their representatives) that intend to fish using an Atlantic Tunas Longline permit with pelagic longline gear to coordinate with NMFS-approved contractors to install, test, and certify electronic monitoring equipment. NMFS has identified funds to pay for the equipment and its installation for all of the vessels currently eligible for IBQ shares. Amendment 7 also requires vessels fishing with PLL gear to report through VMS the following information within 12 hours of completion of each PLL set: date the set was made; area in which the set was made; the number of hooks in the set; and the approximate length of all bluefin tuna retained, discarded dead, or released alive (by standardized size ranges). If a vessel is fishing both inside and outside of the Northeast Distant Area (NED) on the same trip, that vessel must submit two VMS bluefin catch reports noting the location of the catch. Permit holders must also submit a landing notification at least 3 hours, but no more than 12 hours, prior to any landing.

Additional information regarding requirements for PLL vessels can be found in the HMS Commercial Fishing Compliance Guide (<http://www.nmfs.noaa.gov/sfa/hms/compliance/guides/index.html>), and in the Amendment 7 Compliance Guide and IBQ Program FAQ documents (<http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am7/index.html>).

Protected Species - Marine Mammals

Many of the marine mammals that are hooked by U.S. PLL fishermen are released alive, although some animals suffer serious injuries and may die after being released. The observed and estimated marine mammal interactions for 2003 – 2013 are summarized in Table 4.7. Marine mammals are caught primarily during the third and fourth quarters in the Mid Atlantic Bight (MAB), and the South Atlantic Bight (SAB) in quarter 2. In 2013, the majority of observed interactions were with pilot whales (Garrison and Stokes, 2014). NMFS monitors observed interactions with sea turtles and marine mammals on a quarterly basis and reviewed data for appropriate action, if any, as necessary.

On March 31, 2014, NMFS requested reinitiation of Section 7 consultation under the Endangered Species Act (ESA) on the Atlantic pelagic longline fishery. Despite sea turtle takes that were lower than specified in the ITS, leatherback mortality rates and total mortality levels had exceeded the level specified in the reasonable and prudent alternatives (RPAs) in the 2004 biological opinion. Additionally, new information has become available about leatherback and loggerhead sea turtle populations and sea turtle mortality. While the mortality rate measure will be re-evaluated during consultation, the overall ability of the RPA to avoid jeopardy is not affected, and NMFS is continuing to comply with the terms and conditions of the RPA and RPMs pending completion of consultation. NMFS also has confirmed that there will be no irreversible or irretrievable commitment of resources that would foreclose the formulation or implementation of any reasonable and prudent alternative measures pending completion of consultation, consistent with section 7(d) of the Act.

On July 3, 2014, NMFS issued the final determination to list the Central and Southwest Atlantic Distinct Population Segment (DPS) of scalloped hammerhead shark (*Sphyrna lewini*) as threatened species pursuant to the ESA. On August 27, 2014, NMFS published a final rule to list the following 20 coral species as threatened: five in the Caribbean including Florida and the Gulf of Mexico (*Dendrogyra cylindrus*, *Orbicella annularis*, *O. faveolata*, *O. franksi*, and *Mycetophyllia ferox*); and 15 in the Indo-Pacific (*Acropora globiceps*, *A. jacquelineae*, *A. lokani*, *A. pharaonis*, *A. retusa*, *A. rudis*, *A. speciosa*, *A. tenella*, *Anacropora spinosa*, *Euphyllia paradivisa*, *Isopora crateriformis*, *Montipora australiensis*, *Pavona diffluens*, *Porites napopora*, and *Seriatopora aculeata*). Additionally, in that August 2014 rule, two species that had been previously listed as threatened (*A. cervicornis* and *A. palmata*) in the Caribbean were found to still warrant listing as threatened. The Central and Southwest Atlantic DPS of scalloped hammerhead sharks and seven Caribbean species of corals occur within the management area of Atlantic HMS commercial and recreational fisheries which are managed by NMFS's Office of Sustainable Fisheries, HMS Management Division. Therefore, on October 30, 2014, NMFS requested reinitiation of ESA section 7 consultation on the continued operation and use of HMS gear types (bandit gear, bottom longline, buoy gear, handline, and rod and reel) and associated fisheries management actions in the 2006 Consolidated Atlantic HMS FMP and its amendments.

Table 4.7 Marine Mammal Interactions in the Atlantic Pelagic Longline Fishery (2003–2013)

Year	Species	Total		Mortality		Serious Injury		Alive	
		Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.
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	2.0	-	-	-	-	1	2.0
	Common dolphin	2	45.6	-	-	-	-	2	45.6
	Risso's dolphin	14	109.5	1	1.0	3	40.1	10	68.4
	Striped dolphin	1	1.0	-	-	-	-	1	1.0
	Pilot whale	4	32.1	-	-	2	21.4	1	11.3
	Baleen whale	1	1.0	-	-	-	-	1	1.0
	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		1.0	-	-	-	1.0	-	-
	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

Year	Species	Total		Mortality		Serious Injury		Alive	
		Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.
	Unidentified marine mammal	2	34.7	-	-	1	20.4	1	14.3
2009	Bottlenose dolphin	3	23.0	-	-	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	-	-
2010	Bottlenose dolphin	2	16.9	-	-	1	1.0	1	15.9
	Minke whale	1	24.4	-	-	-	-	2	24.4
	Pantropical spotted dolphin	3	6.1	-	-	-	-	2	5.1
	Pilot whale	10	149.9	-	-	8	126.5	2	20.5
	Pygmy sperm whale	1	1.2	1	1.2	-	-	-	-
	Risso's dolphin	1	9.9	-	-	-	-	1	9.9
	Unidentified dolphin	1	1.5	-	-	-	-	1	1.5
	Unidentified marine mammal	4	27.5	1	5.5	3	21.9	-	-
2011	Bottlenose dolphin	3	40.5	-	-	1	12.2	2	28.3
	False killer whale	1	11.0	-	-	-	-	1	11.0
	Atlantic spotted dolphin	1	0.8	-	-	-	-	1	0.8
	Pilot whale	16	291.7	1	18.7	12	233.8	3	39.5
	Short-finned pilot whale	4	58.3	-	-	3	46.5	1	11.8
	Pygmy/Dwarf sperm whale	1	17.0	-	-	1	17.0	-	-
	Risso's dolphin	7	31.3	-	-	3	13.3	4	18.0
	Unidentified dolphin	1	1.1	-	-	1	1.1	-	-
2012	Bottlenose dolphin	6	101.0	-	-	4	77.5	2	23.5
	Pilot whale	19	242.6	-	-	14	170.1	5	72.4
	Short-finned pilot whale	1	10.0	-	-	-	-	1	10.0
	Pantropical spotted dolphin*	1	1.0	1	1	-	-	-	-
	Risso's dolphin	3	58.2	-	-	2	45.0	1	13.2
2013	Beaked whale	1	11.0	-	-	1	11.0	-	-
	Bottlenose dolphin	2	9.1	-	-	-	-	2	9.1
	Harbor porpoise	1	13.6	-	-	1	13.6	-	-
	Minke whale	1	12.4	-	-	1	12.4	-	-
	Pantropical spotted dolphin	3	8.8	-	-	1	3.1	2	6.7
	Pilot whale	24	189.6	-	-	15	126.3	9	63.3
	Pygmy sperm whale	1	3.6	-	-	-	-	1	3.6
	Risso's dolphin	2	17.1	-	-	2	17.1	-	-
	Unidentified dolphin	3	10.8	-	-	2	3.1	1	7.7
	Unidentified marine mammal	1	12.5	-	-	1	12.5	-	-

Obs. – observed; Est. – estimated. * Pantropical spotted dolphin was observed dead in an experimental set.
Sources: 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, 2011, 2012, 2013, 2014.

Protected Species - Sea Turtles

As a result of increased sea turtle interactions in 2001 and 2002, NMFS reinitiated consultation for the PLL fishery and completed a new biological opinion on June 1, 2004. The June 2004 biological opinion concluded that long-term continued operation of the Atlantic PLL 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 biological opinion included a 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, 2004). The estimated sea turtle takes for regular fishing and experimental fishing effort for 2003- 2013 are summarized in Table 4.9 and Table 4.10. Loggerhead interactions are more widely distributed; however, the NED and the NEC appear to be areas with high interaction levels each year.

Sea turtle bycatch in the U.S. Atlantic PLL fishery has decreased significantly in the last decade. From 1999 to 2003, the 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 fleet was estimated to have interacted with 734 loggerhead and 1,362 leatherback sea turtles (Garrison, 2005). These numbers have been reduced and in 2013, the U.S Atlantic PLL fishery was estimated to have interacted with 376 loggerhead sea turtles and 363 leatherback sea turtles outside of experimental fishing operations (Garrison and Stokes, 2013) (Table 4.10). In 2013, the majority of loggerhead sea turtle interactions occurred in the NEC, MAB, and NED areas (Table 4.8). Interactions with leatherback sea turtles were highest in the GOM, NEC, and MAB areas (Table 4.9). *The total interactions for the most recent 3-year ITS period (2010-12) were below the level established by the ITS in the 2004 biological opinion for both loggerheads and leatherbacks.* 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.

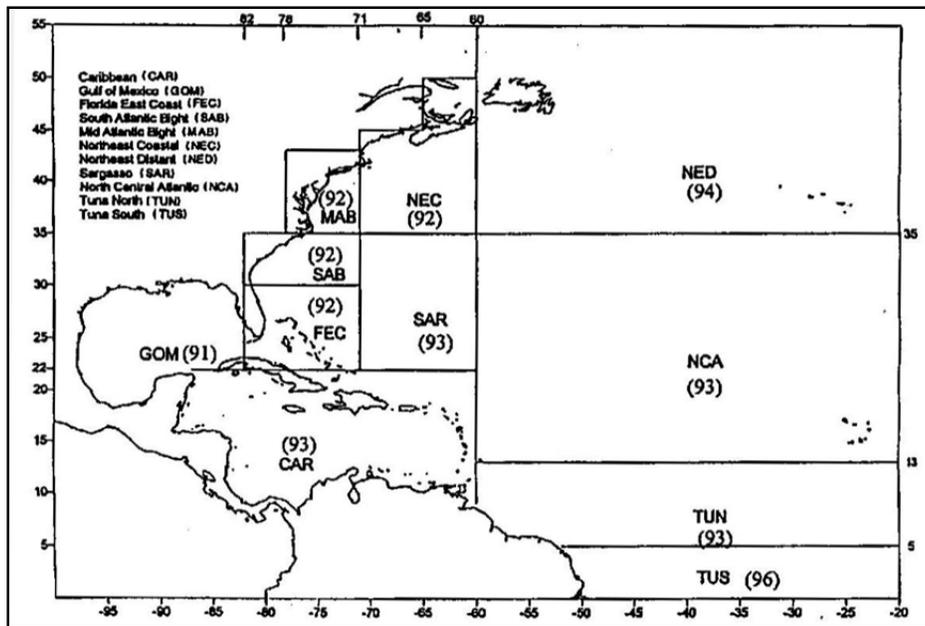


Figure 4.4 Geographic Areas Used in Summaries of Pelagic Logbook Data

Source: Cramer and Adams, 2000.

Table 4.8 Estimated Number of Loggerhead Sea Turtle Interactions in the U.S. Atlantic Pelagic Longline Fishery, by Statistical Area (2004-2013)

Area	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CAR	61	40	16	7	17	9	12	4	0	4
GOM	45	19	17	10	10	38	2	0	56	20
FEC	99	0	40	83	47	41	26	92	157	50
SAB	194	34	18	34	70	47	39	9	37	14
MAB	92	54	70	155	20	37	55	81	71	91
NEC	150	67	135	48	237	43	101	103	199	139
NED	52	20	235	200	352	22	97	105	161	49
SAR	41	38	19	4	16	7	13	44	0	11
NCA	0	3	10	2	1	0	0	0	0	0
TUN	0	0	0	0	0	9	0	0	0	0
TUS	0	0	0	0	0	0	0	0	0	0
Total	734	275	559	543	770	243	344	438	681	376
NED experimental fishery (2001-03)	-	-	-	-	-	-	-	-	-	-
Experimental fishery (2004-05; 2008-12)	0	8	-	-	1	0	0	0	0	1
Total	734	283	559	543	771	243	344	438	681	377

Sources: Garrison and Richards, 2004; Garrison, 2005; Walsh and Garrison, 2006; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008; Garrison et al., 2009; Garrison and Stokes, 2010, 2011, 2012, 2013, 2014.

Table 4.9 Estimated Number of Leatherback Sea Turtle Interactions in the U.S. Atlantic Pelagic Longline Fishery, by Statistical Area (2004-2013)

Area	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CAR	17	2	4	1	2	1	10	3	0	3
GOM	780	179	109	212	144	93	26	33	250	144
FEC	64	62	28	7	30	19	20	17	75	41
SAB	164	7	39	0	0	31	13	12	119	11
MAB	184	11	30	114	43	31	0	140	46	52
NEC	33	6	73	76	140	73	40	26	60	93
NED	98	63	116	84	0	37	55	8	41	11
SAR	18	20	14	5	14	3	2	0	3	6
NCA	0	0	1	0	0	0	0	0	0	0
TUN	0	0	0	0	8	1	0	1	2	2
TUS	0	0	0	0	0	0	0	0	0	0
Total	1,359	351	415	499	381	286	166	239	596	363
NED experimental fishery (2003)	-	-	-	-	-	-	-	-	-	-
Experimental fishery (2004-05; 2008-12)	3	17	-	-	4	4	2	1	2	3
Total	1,362	368	415	499	385	290	168	240	598	366

Sources: Garrison and Richards, 2004; Garrison, 2005; Walsh and Garrison, 2006; Fairfield-Walsh and Garrison, 2007; Fairfield and Garrison, 2008; Garrison et al, 2009; Garrison and Stokes, 2010, 2011, 2012, 2013, 2014.

Table 4.10 Estimated Sea Turtle and Marine Mammal Interactions and Incidental Take Levels (ITS) in the US Atlantic Pelagic Longline Fishery (by Species, 2004-2013)

Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	3 year ITS (2004-06 / 2007-09*)
											Total
Leatherback	1,362	368	415	499	385	290	168	240	598	366	1,981 / 1,764
Loggerhead	734	283	559	543	771	243	344	438	681	377	1,869 / 1,905
Other/unidentified sea turtles	0	0	11	1	0	0	3	4	15	0	105 / 105
Marine mammals	164	372	313	151	265	144	237	452	413	289	N/A

* Applies to all subsequent 3-year ITS periods

Protected Species - Seabirds

Observer data indicate that seabird bycatch is low in the U.S. Atlantic PLL fishery (Table 4.11 and Table 4.12) (NMFS, 2012). In 2013, there were 115 active U.S. PLL vessels fishing for swordfish in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea that reportedly set approximately 7.3 million hooks. Two seabirds were observed taken, a laughing gull and a parasitic jaeger. These seabirds were released dead.

Table 4.11 Observed Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery (2004-2013)

Year	Quarter	Area	Type of Bird	Number observed	Status
2004	1	MAB	Gull	5	dead
	3	MAB	Shearwater greater	1	alive
	3	MAB	Shearwater greater	4	dead
	4	NED	Seabird	1	dead
2005	1	SAB	Gull herring	1	dead
	1	SAB	Shearwater spp	1	dead
	3*	NEC	Shearwater greater	1	alive
	3*	NEC	Shearwater greater	1	dead
2006	4	MAB	Shearwater greater	1	dead
	4	NEC	Shearwater spp	1	alive
	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
	1	MAB	Northern gannet	1	dead
	2	GOM	Brown pelican	1	dead
	3	MAB	Shearwater greater	3	dead
	3	MAB	Unid	1	dead
2010	4	MAB	Gull herring	1	dead
2011	3	NED	Northern gannet	1	dead
	3	NED	Unid	1	dead
	4	MAB	Herring gull	3	dead
	4	MAB	Unid gull	1	dead
	4	MAB	Greater shearwater	1	dead
2012	4	GOM	Laughing gull	1	dead
2013	2	GOM	Laughing gull	1	dead
	4	GOM	Parasitic jaeger	1	dead

* Experimental fishery takes. Source: NMFS Pelagic Observer Program.

Table 4.12 Status of Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery (1992-2013)

Species	Release Status		Total	Percent Dead
	Dead	Alive		
Greater shearwater	29	3	32	90.6
Cory's shearwater	1	-	1	100.0
Unidentified shearwater	2	1	3	66.7
Herring gull	12	-	12	100.0
Great black-backed gull	9	1	10	90.0
Laughing gull	3	1	4	75.0
Unidentified gull	15	8	23	65.2
Northern gannet	3	9	12	25.0
Storm petrel	1	-	1	100.0
Unidentified seabird	41	19	60	68.3
Brown pelican	2	0	2	100.0
Parasitic jaeger	1	0	1	100.0
Total	119	42	161	73.9

Source: NMFS Pelagic Observer Program.

In 2014, NMFS released a report titled “Implementation of the United States National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries.” It highlighted advancements made by the United States toward the objectives of the 2001 U.S. “National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries.” Since 2001, the United States has improved research, outreach and education on, and domestic management of incidental seabird catch, resulting in a significant decrease in seabird incidental catch in its domestic fisheries.

The Seabirds on the Western North Atlantic and Interactions with Fisheries project, as described in the 2014 report, was carried out at the Southeast Fisheries Science Center (SEFSC). This project aimed to improve the identification of incidental seabird catch on the Western North Atlantic U.S. pelagic longline fishery where, beginning in 2004, all birds observed caught were identified at least to genus and most to species. The project also worked to improve the estimation of incidental catch of the pelagic longline fleet based on observer reports of seabird interactions and allowed for preparation of the U.S. National Report on Seabird Bycatch of the Western North Atlantic U.S. Pelagic Longline Fishery for ICCAT. Figure 4.5 provides extrapolated estimates of incidental seabird catch in U.S. Atlantic longline fisheries, which includes the Gulf of Mexico and Western North Atlantic fisheries.

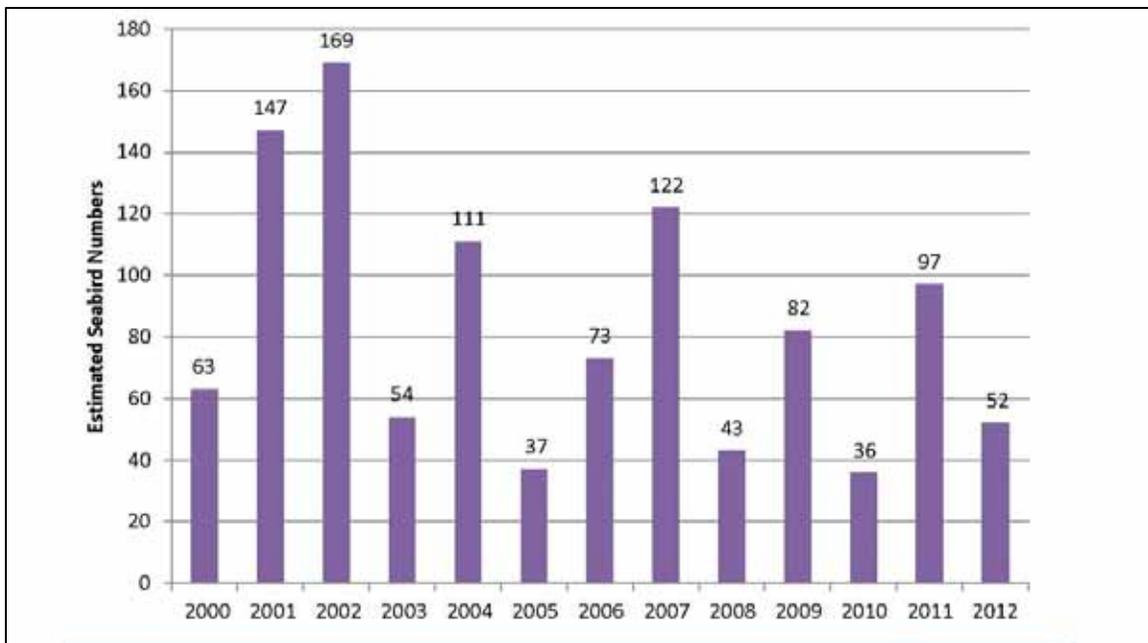


Figure 4.5 Incidental Seabird Catch in Atlantic Longline Fisheries

Source: Li, Y. and Y. Jiao, 2014.

Protected Species – Reinitiation of ESA Section 7 Consultation on the Atlantic PLL Fishery

On March 31, 2014, NMFS requested reinitiation of Section 7 consultation under the Endangered Species Act (ESA) on the Atlantic pelagic longline fishery. Despite sea turtle takes that were lower than specified in the ITS, leatherback mortality rates and total mortality levels had exceeded the level specified in the reasonable and prudent alternatives (RPAs) in the 2004 biological opinion. Additionally, new information has become available about leatherback and loggerhead sea turtle populations and sea turtle mortality. While the mortality rate measure will be re-evaluated during consultation, the overall ability of the RPA to avoid jeopardy is not affected, and NMFS is continuing to comply with the terms and conditions of the RPA and RPMs pending completion of consultation. NMFS also has confirmed that there will be no irreversible or irretrievable commitment of resources that would foreclose the formulation or implementation of any reasonable and prudent alternative measures pending completion of consultation, consistent with section 7(d) of the Act.

On July 3, 2014, NMFS issued the final determination to list the Central and Southwest Atlantic Distinct Population Segment (DPS) of scalloped hammerhead shark (*Sphyrna lewini*) as threatened species pursuant to the ESA. On August 27, 2014, NMFS published a final rule to list the following 20 coral species as threatened: five in the Caribbean including Florida and the Gulf of Mexico (*Dendrogyra cylindrus*, *Orbicella annularis*, *O. faveolata*, *O. franksi*, and *Mycetophyllia ferox*); and 15 in the Indo-Pacific (*Acropora globiceps*, *A. jacquelineae*, *A. lokani*, *A. pharaonis*, *A. retusa*, *A. rudis*, *A. speciosa*, *A. tenella*, *Anacropora spinosa*, *Euphyllia paradivisa*, *Isopora crateriformis*, *Montipora australiensis*, *Pavona diffluens*, *Porites napopora*, and *Seriatopora aculeata*). Additionally, in that August 2014 rule, two species that had been

previously listed as threatened (*A. cervicornis* and *A. palmata*) in the Caribbean were found to still warrant listing as threatened.

The Central and Southwest Atlantic DPS of scalloped hammerhead sharks and seven Caribbean species of corals have been determined to occur within the management area of Atlantic HMS fisheries. Therefore, on October 30, 2014, NMFS requested reinitiation of ESA section 7 consultation on the continued operation and use of several HMS gear types (bandit gear, bottom longline, buoy gear, handline, and rod and reel) and associated fisheries management actions in the 2006 Consolidated Atlantic HMS FMP and its amendments.

With regard to the ongoing reinitiation of ESA section 7 consultation on the Atlantic PLL fishery, NMFS asked that the information in the document evaluating the effects of HMS fishery interactions with the central and southwest Atlantic DPS of scalloped hammerhead shark and the seven threatened coral species also be used to supplement the ongoing PLL consultation. This will most effectively evaluate the effects of the PLL fishery on all listed species in the action area. A new Atlantic PLL fishery biological opinion is anticipated in the future.

4.1.3 International Issues and Catch

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 (2004 - 2013), U.S. longline landings have averaged 5.0 percent of total Atlantic longline landings, ranging from a high of 6.9 percent in 2012 to a low of 4.2 percent in 2010. Table 4.13 contains aggregate longline landings of HMS, other than sharks, for all countries in the Atlantic for the period 2004 – 2013.

Table 4.13 Estimated International Longline Landings (mt ww) of HMS (Excluding Sharks) for All Countries in the Atlantic (2004-2013)

Species (Region)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Swordfish (N. Atl + S. Atl)	24,205	24,765	24,778	26,806	22,343	23,703	23,179	22,909	23,546	19,108
Yellowfin tuna (W. Atl) ²	16,019	14,449	14,249	13,557	13,192	12,660	13,095	10,521	12,146	10,919
Bigeye tuna	48,396	38,035	34,182	46,232	41,063	43,985	42,925	38,211	38,679	31,727
Bluefin tuna (W. Atl.) ²	644	425	565	420	606	366	529	743	478	474
Albacore tuna (N. Atl + S. Atl)	21,652	19,888	22,963	18,324	15,865	14,732	17,390	20,111	21,605	20,157
Skipjack tuna (W. Atl) ²	206	207	286	52	49	20	30	41	96	650
Blue marlin (N. Atl. + S. Atl.) ³	1,911	2,065	1,827	2,503	2,584	2,337	2,053	1,613	1,500	710
White marlin (N. Atl. + S. Atl.) ³	685	594	374	554	532	558	363	336	347	238
Sailfish (W. Atl.) ⁴	754	1,065	651	838	1,038	975	662	704	730	320
Total International longline landings ⁶	114,472	101,493	99,875	109,286	97,272	99,336	100,226	95,189	99,127	84,303
Total U.S. longline landings ⁵	5,638	4,652	4,799	5,540	4,446	5,315	4,238	5,111	6,802	5,322
U.S. landings as a percent of total International landings	4.9	4.6	4.8	5.1	4.6	5.3	4.2	5.4	6.9	6.3

¹ Landings include those classified by the SCRS as longline landings. ² Note 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. ³ Includes U.S. dead discards and Brazilian live discards. ⁴ Includes U.S. dead discards. ⁵ From U.S. National Reports to ICCAT, 2005-2014. Includes swordfish, blue marlin, white marlin, and sailfish longline discards. ⁶ From SCRS, 2014. Sources: U.S. ICCAT National Reports 2005 – 2014; SCRS, 2014.

Atlantic Sharks

Stock assessments and data collection for international shark fisheries have improved in recent years due to increased reporting requirements adopted by ICCAT. Since 2004, there have been several shark-related Recommendations and Resolutions (e.g., 04-10, 06-10, 07-06, 08-07, 08-08, 09-07, 10-06, 10-07, and 11-08, 12-05). 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 the ICCAT webpage (<http://www.iccat.int/en/>). Table 4.14 provides the most recent catch totals for blue, shortfin mako, and porbeagle sharks.

Table 4.14 Estimated International Longline Landings (mt ww)¹ of Pelagic Sharks for All Countries in the Atlantic (2004-2013)

Species (Region)	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Blue shark (N. Atl + S. Atl + Med)	34,750	41,809	39,116	46,126	53,375	58,002	64,285	72,064	62,534	56,439
Shortfin mako (N. Atl + S. Atl + Med)	7,104	6,305	6,022	6,714	5,175	5,599	6,034	6,396	6,982	5,180
Porbeagle (N. Atl + S. Atl + Med)	745	572	508	525	611	484	137	89	149	188
Total International longline catches	42,599	48,686	45,646	53,365	59,161	64,085	70,456	78,549	69,665	61,807
U.S. blue shark catches ¹	72	68	47	55	138	107	176	271	162	263
U.S. shortfin mako catches ¹	521	469	386	382	354	385	394	392	430	417
U.S. porbeagle catches ¹	1	0	0	0	1	1	4	12	4	31
Total U.S. catches¹	594	537	433	437	493	493	574	675	596	711
U.S. catches ¹ as a percent of total International catch	1.4	1.1	0.9	0.8	0.8	0.8	0.8	0.9	0.9	1.1

¹Includes catches and discards. Source: SCRS, 2014.

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 of this report. A brief history of the Atlantic purse seine fishery and regulations is available in Amendment 7 to the 2006 Consolidated HMS FMP.

The bluefin tuna baseline percentage quota share for the Purse Seine category is 18.6 percent of the U.S. quota. The purse seine fishery is managed under a limited entry system with transferable individual vessel quotas (IVQs), excluding any new entrants into this category. Equal baseline quota allocations of bluefin tuna are assigned to individual fishery participants by regulation and those allocations are adjusted based on the individuals fishing activity in the previous year. The quotas are transferable among the five purse seine fishery participants or, as authorized under Amendment 7 to the 2006 Consolidated Atlantic HMS FMP, limited access pelagic longline permitted vessels provided they are eligible as specified in the Amendment.

Vessels participating in the Atlantic tunas purse seine fishery are required to target the larger size class bluefin tuna, more specifically the giant size class (≥ 81 inches) and are granted

a tolerance limit for large medium size class bluefin tuna (73 to < 81 inches) (i.e., large medium catch may not exceed 15 percent by weight of the total amount of giant bluefin tuna landed during a season). Currently, these vessels may commence fishing starting between June 1 and August 15, with NMFS establishing the start date via an annual notice 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 bluefin tuna quota. In 2008, 2010, and 2011, the Purse Seine category did not harvest any Atlantic tunas (Table 4.15).

4.2.2 Recent Catch and Landings

Table 4.15 shows purse seine landings of Atlantic tunas from 2005 through 2013. Purse seine landings historically have made up approximately 20 percent of the total annual U.S. landings of bluefin tuna (about 25 percent of total commercial landings), but recently only account for a small percentage. 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 tuna; therefore, Table 4.15 only includes bluefin tuna.

Table 4.15 Domestic Atlantic Tuna Landings (mt ww) for the Purse Seine Fishery in the Northwest Atlantic Fishing Area (2005-2013)

Species	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bluefin tuna	178.3	3.6	27.9	0.0	11.4	0.0	0.0	1.7	29.0

Source: NMFS, 2014.

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 since 2005, the U.S. purse seine fishery has contributed to less than 0.10 percent of the total purse seine landings reported to ICCAT. In Recommendation 10-10, ICCAT established a minimum standard for scientific fishing vessel observer programs and adopted a minimum of 5% observer coverage of fishing effort in the purse seine fishery, as measured in number of sets or trips.

Table 4.16 Estimated International Atlantic Tuna Landings (mt ww) for the Purse Seine Fishery in the Atlantic and Mediterranean (2005-2013)

Tuna Species	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bluefin	23,524	20,356	22,980	12,641	9,479	4,985	4,293	6,096	8,098
Yellowfin	61,410	62,761	52,733	70,047	77,757	74,172	69,802	70,716	65,917
Skipjack	89,704	71,215	81,335	73,080	84,494	125,467	149,307	157,666	182,877
Bigeye	18,595	16,457	17,553	15,536	22,658	23,769	27,544	21,469	22,868
Albacore	949	3,432	1,289	169	259	213	192	586	184
Total	194,182	174,221	175,890	171,473	194,659	228,606	251,138	256,533	279,944
U.S. total	178	4	28	0	11	0	0	2	29
U.S. percentage	0.09	< 0.01	0.02	0	< 0.01	0	0	< 0.01	< 0.01

Source: SCRS, 2014.

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 on private vessels, charter vessels, and headboat vessels. Rod and reel gear may be deployed from a vessel that is anchored, drifting, or underway (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 4.6.

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 tuna 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 tuna. Figure 4.6 shows bluefin tuna commercial landings, which are predominately handgear landings, in metric tons by geographic region (Gulf of Mexico, South Atlantic, Mid-Atlantic, and Northeast). The South Atlantic region ends at Cape Hatteras, and the Mid-Atlantic region ends at eastern Long Island (New York). Commercial landings declined from peak in 2001 until 2007, increased from 2007 through 2010, decreased slightly in 2011 and in 2012, and declined in 2013. Targeting bluefin tuna in the Gulf of Mexico is prohibited. 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.

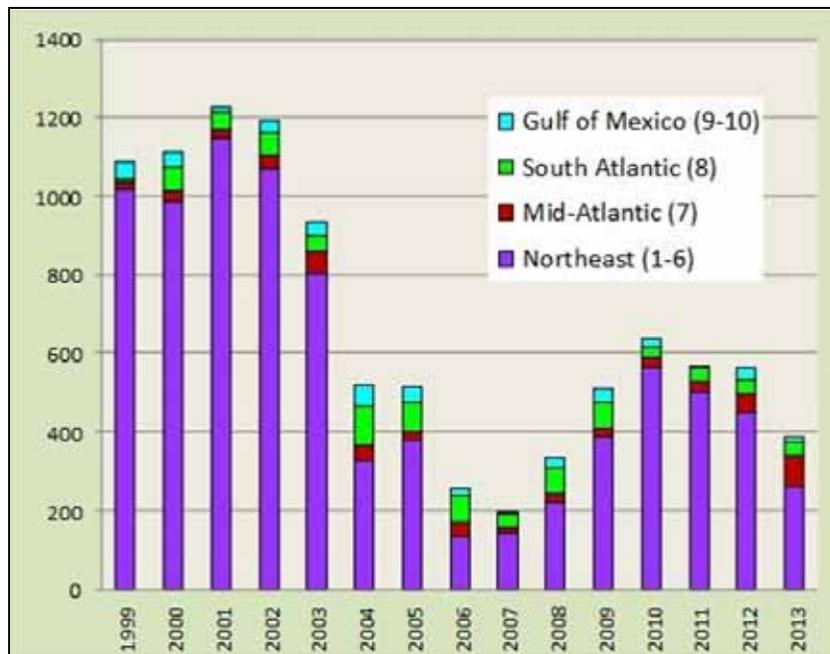


Figure 4.6 U.S. Atlantic and Gulf of Mexico Commercial Bluefin Tuna Landings by Geographic Area (1999 – 2013)

Source: NMFS Commercial BFT Landings Database.

The U.S. Atlantic tuna commercial handgear fisheries are currently 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 (handgear including 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 federally-permitted vessels may also need permits from the states they operate from in order to land and sell their catch, and are encouraged to check with their local state fish/natural resource management agency regarding these requirements. Federally-permitted vessels are required to sell Atlantic tunas only to federally-permitted Atlantic tunas dealers. Because the Atlantic tunas dealer permits are issued by the Greater Atlantic Region Permit Office, vessel owner/operators are encouraged to contact the permitting office directly, either by phone at (978) 281-9438 or online 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 fish commercially under the General category rules and regulations. For instance, vessels that possess either of the two permits mentioned above have the ability to retain an Agency-specified daily bag limit of one to five bluefin tuna (measuring 73 inches or greater curved fork length per vessel per day while the General category bluefin tuna fishery is open). The General category bluefin tuna fishery opens on January 1 of each year and remains open until either the General category quota allocation has been caught, or until March 31, whichever comes first. The fishery then reopens on June 1 and remains open until December 31 or until the quota is filled. Vessel owners/operators should check with the agency online (<http://www.hmspermits.com>) or via telephone information lines (888-872-8862) to verify the bluefin tuna retention limit on any given day. In accordance with the fishery management plan, the General category receives

approximately 47 percent of the U.S. bluefin tuna quota. A brief history of the General category fishery in the United States is available in Amendment 7 to the 2006 Consolidated HMS FMP.

Vessels that are permitted in the Harpoon category fish under the Harpoon category rules and regulations. For instance, regarding bluefin tuna, vessels have the ability to keep four bluefin tuna measuring 73 inches to less than 81 inches curved fork length (“large medium”) per vessel trip per day while the fishery is open. There is no limit on the number of bluefin tuna that can be retained measuring longer than 81 inches curved fork length (“giant”), 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 tuna quota is approximately 3.9 percent of the U.S. quota. A brief history of the harpoon fishery in the United States is available in Amendment 7 to the 2006 Consolidated HMS FMP.

A commercial swordfish fishery utilizing handgear (especially buoy-gear) exists primarily off the east coast of Florida, but also occurs in other locations of the Atlantic, Gulf of Mexico, and U.S. Caribbean. For information regarding the commercial buoy gear fishery, refer to Section 4.6.

On August 21, 2013, NMFS established a new commercial fishing vessel permit (the Swordfish General Commercial permit) that allows permit holders to retain and sell a limited number of swordfish caught on rod and reel, handline, harpoon, green-stick, or bandit gear. The HMS Charter/Headboat permit regulations were also modified to allow for the commercial retention of swordfish on non-for-hire trips, and regional swordfish retention limits were implemented for the new and modified permits, along with gear authorizations, and reporting requirements. The new and modified permits became available in November 2013 for the 2014 fishing year.

The shark commercial handgear fishery plays a very minor role in contributing to the overall shark landing statistics. For information regarding the shark fishery, refer to Sections 4.4 and 1.2. Economic and social aspects of all the domestic handgear fisheries are described in Chapter 5.

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 Table 4.17. In 2013, bluefin tuna commercial handgear landings accounted for approximately 57 percent of the total U.S. bluefin tuna landings and 76 percent of commercial bluefin tuna landings. Figure 4.7 shows the U.S. Atlantic bluefin tuna landings in metric tons by category since 1997. Note that the commercial handgear landings are comprised of bluefin tuna landed by both the general and harpoon categories.

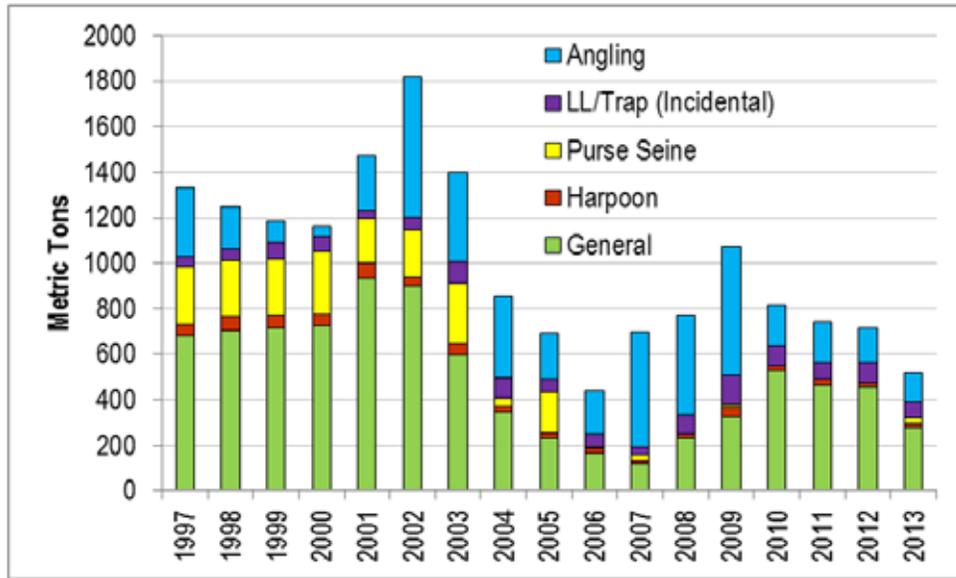


Figure 4.7 Landings of Bluefin Tuna by Category (1997 – 2013)

Source: NMFS Commercial BFT Landings Database.

Also in 2013, four percent of the total yellowfin catch, or six percent of the commercial yellowfin catch, was attributable to commercial handgear. Commercial handgear landings of skipjack tuna accounted for approximately one percent of total skipjack landings, or about 46 percent of commercial skipjack landings. For albacore, commercial handgear landings accounted for approximately less than one percent of total albacore landings, and less than one percent of commercial albacore landings. Commercial handgear landings of bigeye tuna accounted for approximately three percent of total bigeye landings and four percent of total commercial bigeye landings. Updated landings for the commercial handgear fisheries by gear and by area for 2005 – 2013 are presented in the following tables.

Table 4.17 U.S. Atlantic Commercial Handgear Landings of Tunas and Swordfish (mt ww) by Gear Type (2005-2013)

Species	Gear	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bluefin tuna	Rod and Reel	226.6	164.1	120.8	226.6	301.7	515.1	418.6	419.5	249.5
	Handline	2.3	0.3	0.0	0.6	0.1	2.7	0.9	1.3	0.5
	Harpoon	31.5	30.3	22.5	30.2	65.6	29.0	70.1	52.3	45.0
	Total	260.4	194.7	143.3	257.4	367.4	546.8	489.6	473.1	295.0
Bigeye tuna	Troll	0.0	0.0	0.9	0.8	0.6	0.0	0.1	0.2	5.0
	Handline	6.3	21.5	16.8	6.6	4.6	1.8	3.4	7.9	16.1
	Total	6.3	21.5	17.7	7.4	5.2	1.8	3.5	8.0	21.1
Albacore tuna	Troll	0.0	0.0	0.2	0.2	0.07	0.04	0.0	0.0	0.2
	Handline	4.2	2.6	5.4	0.2	0.5	1.9	1.7	0.6	0.0
	Total	4.2	2.6	5.6	0.4	0.57	1.94	1.7	0.6	0.2
Yellowfin tuna	Troll	0.0	0.0	6.9	2.4	5.4	1.2	0.5	0.3	23.5
	Handline	160.3	105.1	113.2	30.1	58.7	43.5	34.0	66.0	67.4
	Total	160.3	105.1	120.1	32.5	64.1	44.7	34.5	66.3	90.9
Skipjack tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Handline	11.8	0.2	0.3	0.4	2.8	1.2	1.5	2.0	1.2
	Total	11.8	0.2	0.3	0.4	2.8	1.2	1.5	2.0	1.2
Swordfish	Handline	34.7	32.5	125.2	83.2	123.0	126.9	120.4	151.3	104.6
	Harpoon	0.0	0.3	0.0	0.0	0.05	0.6	0.6	0.3	0.5
	Total	34.7	32.8	125.2	83.2	123.05	127.5	121.0	154.5	105.1

Source: NMFS, 2014.

Table 4.18 U.S. Atlantic Commercial Handgear Landings of Tunas and Swordfish (mt ww) by Region (2005-2013)

Species	Region	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bluefin tuna	NW Atl	260.4	194.7	143.3	257.3	366.3	546.8	489.6	473.1	295.0
Bigeye tuna	NW Atl	6.2	21.5	16.8	6.9	4.6	1.8	3.4	7.9	16.1
	GOM	0.1	1.5	1.01	0.0	0.07	1.8	0.0	0.0	0.0
	Caribbean	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.0	0.0
Albacore tuna	NW Atl	3.0	2.6	5.4	0.2	0.5	1.9	0.7	0.6	0.0
	GOM	0.1	0.07	0.0	0.0	0.01	0.0	0.0	0.0	0.0
	Caribbean	1.1	0.4	0.2	0.4	0.003	0.05	0.1	0.4	2.3
Yellowfin tuna	NW Atl	105.1	105.1	113.2	30.1	58.7	43.5	34.0	66.0	67.4
	GOM	45.5	49.9	26.2	11.2	21.6	2.9	8.7	17.5	6.8
	Caribbean	9.7	7.8	9.1	3.7	3.3	1.9	1.5	3.2	0.0
Skipjack tuna	NW Atl	0.9	0.2	0.3	0.4	2.8	1.2	1.5	2.0	1.2
	GOM	0.0	0.0	0.2	0.06	0.2	0.02	0.2	0.06	0.02
	Caribbean	12.9	10.0	13.7	16.0	8.8	6.2	6.6	4.0	0.0
Swordfish	NW Atl	34.4	32.8	125.2	83.2	123.05	126.9	120.4	151.6	105.1
	GOM	0.3	0.1	0.2	1.2	1.9	2.6	0.5	3.3	0.5

Source: NMFS, 2014.

Handgear Trip Estimates

Table 4.19 displays the estimated number of rod and reel and handline trips targeting large pelagic species (e.g., tunas, billfishes, swordfish, sharks, wahoo, dolphin, and amberjack) from Maine through Virginia, in 2003 through 2013. The trips include commercial and recreational trips, and are not specific to any particular species. It should be noted that the 2013 estimates are preliminary and subject to change.

Table 4.19 Estimated Number of Rod and Reel and Handline Trips Targeting Atlantic Large Pelagic Species, by State (ME-VA, 2004-2013)

Year	AREA							Total
	NH/ME	MA	CT/RI	NY	NJ (North)	NJ (South) and MD/DE	VA	
Private Vessels								
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
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
2010	6,102	19,679	2,276	6,737	3,898	12,493	2,591	53,776
2011	6,931	20,227	2,175	5,480	4,549	12,109	2,630	54,101
2012	8,408	19,096	6,189	6,425	5,447	13,682	2,445	61,692
2013	7,100	12,883	2,366	6,648	4,104	11,519	2,187	46,807
Charter Vessels								
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
2010	917	3,581	549	1,432	1,111	2,679	511	10,780
2011	1,318	4,339	322	2,019	1,279	3,685	774	13,736
2012	1,570	4,248	465	1,211	1,437	2,910	619	12,462
2013	868	3,181	999	1,010	1,113	2,763	399	10,333

Source: Large Pelagics Survey.

4.4 Recreational Handgear

The following section describes the recreational portion of the handgear fishery with a primary focus on rod and reel fishing.

4.4.1 Current Management

Most Atlantic HMS are targeted by domestic recreational fishermen using a variety of handgear including rod and reel gear. Since 2003, recreational fishing for any HMS-managed

species requires an HMS Angling permit (67 FR 77434, December 18, 2002), and all non-tournament recreational landings of Atlantic marlins, roundscale spearfish, sailfish, and swordfish must be reported. 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. All billfish and swordfish tournaments are selected for reporting. For more information on recreational HMS handgear fisheries, please see the 2006 Consolidated HMS FMP and the 2011 HMS SAFE Report.

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 Information Program (MRIP), Large Pelagics Survey (LPS), Southeast Headboat Survey (HBS), Texas Headboat Survey, Recreational Billfish Survey (RBS) tournament data, and the HMS Recreational Reporting Program (non-tournament swordfish, billfishes, and bluefin tuna). Descriptions of these surveys, the geographic areas they include, and their limitations are discussed in the 2006 Consolidated HMS FMP and previous HMS SAFE Reports.

Tuna and swordfish landings for HMS recreational rod and reel fisheries are presented below in Table 4.20 from 2004 through 2013.

Table 4.20 Domestic Landings (mt ww)* for the Atlantic Tunas and Swordfish Recreational Rod and Reel Fishery (2004-2013)

Species	Region	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bluefin tuna*	NW Atlantic	370.2	254.4	158.2	398.6	352.2	143.3	111.4	173.3	148.7	131.4
	GOM	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	370.2	254.4	158.8	398.6	352.2	143.3	111.4	173.3	148.7	131.4
Bigeye tuna**	NW Atlantic	94.6	165.0	422.3	126.8	70.9	77.6	116.8	72.4	269.6	337.5
	GOM	6.0	0.0	24.3	0.0	0.0	0.0	0.8	34.9	0.1	7.0
	Caribbean	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0
	Total	100.6	165.0	446.6	126.8	70.9	77.6	117.6	109.6	269.7	344.5
Albacore**	NW Atlantic	500.5	356.0	284.2	393.6	125.2	22.8	46.2	170.6	144.3	340.3
	GOM and Caribbean	0.0	0.0	0.0	0.0	0.0	0.0	103.4	0.0	0.7	0.0
	Total	500.5	356.0	284.2	393.6	125.2	22.8	149.6	170.6	145.0	340.3
Yellowfin tuna**	NW Atlantic	3,433.7	3,504.8	4,649.2	2,726.0	657.1	742.6	1,209.0	1,134	1,433	495.4
	GOM	247.1	146.9	258.4	227.6	366.3	264.7	18.0	362.8	294.1	191.8
	Caribbean	0.0	0.0	0.0	12.4	0.0	3.5	4.5	0.9	0.0	0.0
	Total	3,684.8	3,651.7	4,907.6	2,966.0	1,023.4	1,010.8	1,231.5	1,497.7	1,721.1	687.2
Skipjack tuna**	NW Atlantic	27.3	8.1	34.6	27.4	21.0	75.7	29.1	50.3	98.0	37.7
	GOM	6.3	3.1	6.4	23.9	16.3	22.0	15.5	23.7	2.5	77.1
	Caribbean	40.4	3.9	7.7	0.2	11.3	4.3	0.4	3.0	3.0	0.0
	Total	74.0	15.1	48.7	51.5	48.6	102.0	45.0	77.0	103.5	114.8
Swordfish	Total	25.2	61.2	52.7	68.2	75.7	31.6	49.3	53.6	70.8	22.0

* Rod and reel catch and landings estimates of bluefin tuna < 73 in curved fork length (CFL) based on statistical surveys of the U.S. recreational harvesting sector. Rod and reel catch of bluefin tuna > 73 in CFL are commercial and may also include a few metric tons of "trophy" bluefin (recreational bluefin ≥ 73 in). ** 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. Sources: NMFS, 2005; NMFS, 2006; NMFS, 2007; NMFS, 2009; NMFS, 2010; NMFS, 2011; NMFS, 2012; and NMFS 2013.

Atlantic Billfish Recreational Fishery

Table 4.21 provides a summary of reported billfish and swordfish landings from 2009 through 2013. 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 Recreational Billfish Survey (RBS) provides a preliminary source for analyzing recreational billfish tournament landings (“Tournament” columns). Recreational report totals are developed from analysis of multiple datasets, including the HMS Recreational Reporting Program, the Large Pelagics Survey (LPS), Maryland and North Carolina Catch Cards, the RBS, and MRIP (“Non-Tournament” columns). In 2012, NMFS established a new accounting protocol that analyzes tournament and non-tournament landings reports of billfishes using all available programs (see sources in Table 4.21).

“Total landings of marlin and RSP” by year and “Balance Remaining (from 250 Marlin Limit)” rows summarize billfish monitoring as required under ICCAT and the Atlantic Tunas Convention Act. Under ICCAT Recommendation 06-09 and as specified in § 635.27(d)(1), the recreational billfish fishery is limited to maximum of 250 Atlantic blue and white marlin landings, combined, per year. Sailfish and swordfish are presented underneath the ICCAT accounting rows and do not count towards the 250 Marlin Limit.

Table 4.21 Atlantic HMS Recreational Billfish Landings, in Numbers of Fish (2009-2013)

Species	Recreational Reporting	2009	2010	2011	2012	2013
Blue Marlin	Tournament*	35	18	27	45	44
	Non-Tournament**	5	3	3	18	11
	Total***	44	28	43	63	55
White Marlin	Tournament*	46	63	31	23	34
	Non-Tournament**	6	5	6	7	15
	Total***	53	72	56	30	49
Roundscale Spearfish (RSP)	Tournament*	5	10	3	4	1
	Non-Tournament**	-	0	0	0	0
	Total***	5	19	7	4	1
Total Landings of Marlin and RSP		97	119	106	97	100
Balance Remaining (from 250 Marlin Limit)		153	131	144	153	150
Sailfish	Tournament*	0	3	7	21	2
	Non-Tournament**	140	185	166	163	171
	Total***	140	192	173	184	173
Swordfish	Tournament*	85	46	29	29	16
	Non-Tournament**	389	285	318	386	263
	Total	474	331	347	415	279

– Prior to 2010, RSP was not included in the 250 Marlin Limit. Sources: 2009-2011 for all billfishes (2009-2013 for swordfish): * RBS; ** HMS Recreational Reporting Program; *** RBS, HMS Recreational Reporting Program, MD and NC HMS Catch Cards, LPS, and MRIP. 2012-2013 for all billfishes (excludes swordfish): * RBS, MD and NC HMS Catch Cards, LPS, and MRIP; ** HMS Recreational Reporting Program, MD and NC HMS Catch Cards, LPS, and MRIP. *** Sum total of tournament and non-tournament reports.

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 through the submission of catch cards at state-operated landings stations.

Table 4.22 Tournament Landings of Billfishes by State or Area (2013)

State(s)	Tournaments	White Marlin	Blue Marlin	Sailfish	Roundscale	Spearfish
MA/RI/NY	4	-	-	-	-	-
NJ	10	-	2	-	-	-
MD	9	34	3	-	-	1
NC	12	-	7	-	-	-
VA	4	-	-	-	-	-
SC	6	-	2	-	-	-
FL	54	-	9	-	-	-
AL/MS	15	-	10	-	-	-
LA	15	-	1	-	-	-
TX	18	-	6	2	-	-
PR	13	-	4	-	-	-
VI	8	-	-	-	-	-

Some states are aggregated to protect tournament reporting privacy if at least three tournaments were not held in one or more state(s). Sources: RBS, HMS Recreational Reporting Program, NC and MD HMS Catch Cards, LPS, and MRIP.

Shark Recreational Fishery

Unlike billfish or bluefin tuna, recreational shark landings are not required to be reported to NMFS unless an angler is required to participate in the LPS or MRIP. However, as of 2013, vessel owners in Maryland are required to report their shark landings on catch cards at state-operated landings stations.

Table 4.23 Number of Recreational Shark Landings Reported from the Maryland Catch Card Program (2013)

Species	2013
Atlantic sharpnose	13
Common thresher	8
Shortfin mako	47
Spinner	1
Total	69

Source: R. Salz, pers comm; MD DNR, 2014.

The following tables provide estimated recreational landings for each of the three shark species groups: large coastal sharks (Table 4.24 and Table 4.25), pelagic sharks (Table 4.26), and small coastal sharks (Table 4.27 and Table 4.28).

Table 4.24 Estimated Recreational Harvest of Large Coastal Sharks in the Atlantic Region, in Number of Fish per Species (2008-2013)

Species	2008	2009	2010	2011	2012	2013
Basking ²	0	0	0	0	0	0
Bignose ¹	0	0	0	0	0	0
Bigeye sand tiger ²	0	0	0	0	0	0
Blacktip	5,317	1,902	1,656	754	1,164	962
Bull	247	2	1	698	68	77
Caribbean reef ¹	0	0	0	0	0	0
Dusky ¹	1,501	506	4	23	15	16
Galapagos ¹	0	0	0	0	0	0
Hammerhead, great	3	5	0	0	37	0
Hammerhead, scalloped	1	569	13	179	4	248
Hammerhead, smooth	0	0	0	0	0	352
Hammerhead, unclassified	0	0	0	0	0	0
Lemon	1	291	0	14	0	0
Night ¹	0	0	0	0	0	0
Nurse	331	156	209	301	706	13
Sandbar ³	4,210	6,461	2,193	1,125	857	365
Sand tiger ²	1	0	0	0	0	0
Silky ³	0	208	13	0	232	0
Spinner	0	179	693	679	1,145	390
Tiger	4	4	2	1	2	8
Whale ²	0	0	0	0	0	0
White ²	0	0	0	0	0	0
Requiem shark, unclassified	11,541	8,794	2,966	4,949	6,069	97
Total	23,157	19,077	7,750	8,723	10,299	2,528

¹Prohibited in the recreational fishery as of July 1, 1999. ²Prohibited as of April 1997. ³Prohibited as of July 2008.
Source: Cortés pers. comm.

Table 4.25 Estimated Recreational Harvest of Large Coastal Sharks in the Gulf of Mexico Region, in Number of Fish per Species (2008-2013)

Species	2008	2009	2010	2011	2012	2013
Basking ²	0	0	0	0	0	0
Bignose ¹	0	0	0	0	0	0
Bigeye sand tiger ²	0	0	0	0	0	0
Blacktip	9,283	12,600	23,781	16,083	22,530	105,315
Bull	964	6,957	260	581	2,415	2,786
Caribbean reef ¹	0	1	0	0	0	0
Dusky ¹	58	40	87	125	42	20
Galapagos ¹	0	0	0	0	0	0
Hammerhead, great	10	123	3	126	5	7
Hammerhead, scalloped	118	105	140	22	24	517
Hammerhead, smooth	0	0	0	0	0	0
Hammerhead, unclassified	0	0	0	0	0	0
Lemon	1,065	3	781	1,274	0	0
Night ¹	0	22	0	0	0	55
Nurse	14	729	25	1,098	2	2
Sandbar ³	211	701	883	200	46	1,404
Sand tiger ²	0	0	0	0	0	0
Silky ³	390	0	64	74	0	615
Spinner	3,111	2,461	6,040	1,694	4,975	6,022
Tiger	1	0	366	52	0	3
Whale ²	0	0	0	0	0	0
White ²	0	0	0	0	0	0
Requiem shark, unclassified	2,937	24,972	68,134	38,876	16,454	17,606
Total	18,162	48,714	100,564	60,205	46,493	134,352

¹Prohibited in the recreational fishery as of July 1, 1999. ²Prohibited as of April 1997. ³Prohibited as of July 2008.
Source: Cortés pers. comm.

Table 4.26 Estimated Recreational Harvest of Pelagic Sharks in the Atlantic and Gulf of Mexico, in Number of Fish per Species (2008-2013)

Species	2008	2009	2010	2011	2012	2013
Bigeye thresher*	0	0	0	0	0	0
Bigeye sixgill*	0	0	0	0	0	0
Blue Shark	87	0	1,512	0	0	2,582
Mako, longfin*	0	0	0	0	0	0
Mako, shortfin	1,087	5,271	3,297	301	689	6,855
Mako, unclassified	0	0	0	396	14	36
Oceanic whitetip	0	0	0	0	0	0
Porbeagle	0	0	0	19	0	0
Sevengill*	0	0	0	0	0	0
Sixgill*	0	0	0	0	0	0
Thresher	798	3,422	214	0	0	0
Pelagic shark, unclassified	0	0	0	0	0	0
Total	1,972	8,693	5,023	716	703	9,473

*Prohibited in the recreational fishery as of July 1, 1999. Source: Cortés, pers. comm.

Table 4.27 Estimated Recreational Harvest of Small Coastal Sharks in the Atlantic Region, in Number of Fish per Species (2008-2013)

Species	2008	2009	2010	2011	2012	2013
Atlantic angel*	0	0	0	0	0	0
Blacknose	2	947	0	573	0	70
Bonnethead	12,225	8,009	10,073	8,598	9,798	14,375
Finetooth	1,347	0	239	0	0	0
Atlantic sharpnose	33,489	33,568	41,217	28,252	23,207	44,832
Caribbean sharpnose*	0	0	0	0	0	0
Smalltail*	0	0	0	0	0	0
Total	47,063	42,524	51,529	37,423	33,005	59,277

*Prohibited in the recreational fishery as of July 1, 1999. Source: Cortés, pers. comm.

Table 4.28 Estimated Recreational Harvest of Small Coastal Sharks in the Gulf of Mexico Region, in Number of Fish per Species (2008-2013)

Species	2008	2009	2010	2011	2012	2013
Atlantic angel*	0	0	0	0	0	0
Blacknose	2,468	5,276	1,463	1,533	2,638	232
Bonnethead	8,939	14,189	6,084	51,714	6,746	7,757
Finetooth	665	395	380	47	248	239
Atlantic sharpnose	38,927	31,237	29,494	19,072	40,302	45,616
Caribbean sharpnose*	0	0	0	0	0	0
Smalltail*	0	0	0	0	0	0
Total	50,999	51,097	37,421	72,366	49,934	53,844

*Prohibited in the recreational fishery as of July 1, 1999. Source: Cortés, pers. comm.

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 species. 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. 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. The number of kept and released fish reported or observed through the LPS dockside intercepts for 2004 – 2013 is presented in Table 4.29 and Table 4.30.

An outreach program to address bycatch and to educate anglers on the benefits of circle hooks has been implemented by NMFS. In January 2011, NMFS developed and released a brochure that provides guidelines on how to increase the survival of hook-and-line caught large pelagic species. This brochure is available at:

http://www.nmfs.noaa.gov/sfa/hms/compliance/guides/careful_release_brochure.pdf.

Table 4.29 Observed or Reported Number of HMS Kept in the Rod and Reel Fishery (ME-VA, 2004-2013)

Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
White marlin ²	6	5	8	4	13	8	9	17	5	14
Blue marlin ²	5	3	2	2	3	3	3	1	3	6
Sailfish ²	0	1	0	1	0	0	0	0	0	0
Swordfish	9	22	27	42	30	7	9	27	28	15
Giant bluefin tuna ³	50	48	15	15	20	46	54	51	65	37
Large medium bluefin tuna ³	13	12	1	5	11	0	36	28	23	14
Small medium bluefin tuna	30	22	48	69	48	205	11	14	21	29
Large school bluefin tuna	291	179	171	298	398	107	174	77	73	97
School bluefin	927	638	84	314	228	180	201	180	146	104
Young school bluefin	16	25	0	3	4	1	2	0	2	1
Bigeye tuna	46	32	35	59	55	58	36	66	97	250
Yellowfin tuna	3,858	3,700	3,572	2,988	1,029	1,886	1,906	3,474	3,296	2,719
Skipjack tuna	197	79	104	34	64	242	151	278	200	109
Albacore	1,458	835	542	934	168	67	154	550	358	1,040
Thresher shark	58	45	34	62	59	66	44	41	39	31
Mako shark	216	99	111	143	169	159	159	172	151	179
Sandbar shark	7	1	1	9	1	1	0	1	0	0
Dusky shark	0	0	3	6	1	0	1	0	0	0
Tiger shark	0	1	0	1	1	3	1	0	2	0
Porbeagle	1	1	1	0	0	0	2	2	2	6
Blacktip shark	0	1	1	0	-	-	0	0	0	0
Atlantic sharpnose shark	0	0	0	0	-	-	10	5	3	22
Blue shark	74	67	61	109	43	54	26	30	28	12
Hammerhead shark	1	0	0	0	1	0	0	0	0	0
Smooth hammerhead	0	0	0	0	1	0	0	0	0	0
Scalloped hammerhead	0	0	1	0	0	0	0	0	0	0
Unidentified hammerhead	0	0	0	0	0	0	0	0	0	0
Wahoo	110	112	85	190	172	69	111	63	206	92
Dolphin	3,050	6,366	3,921	2,536	5,739	3,317	6,063	4,935	3,055	3,902
King mackerel	11	376	170	82	67	14	14	3	3	7
Atlantic bonito	410	96	262	283	51	138	57	41	79	77
Little tunny	231	181	90	195	93	175	239	151	172	84
Amberjack	0	2	1	5	31	81	99	25	40	37
Spanish mackerel	9	4	1	2	67	9	8	24	146	66

¹NMFS 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. ²Amendment 1 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. ³Includes some commercial handgear landings. Source: Large Pelagics Survey.

Table 4.30 Observed or Reported Number of HMS Released in the Rod and Reel Fishery (ME-VA, 2004-2013)

Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
White marlin ²	378	397	160	359	454	936	1,070	1,355	1,996	1,200
Blue marlin ²	80	52	42	69	69	60	86	106	137	109
Sailfish ²	2	6	3	1	6	69	11	11	61	15
Swordfish	22	23	52	40	45	13	15	27	12	18
Giant bluefin tuna ³	3	0	3	0	0	0	1	0	0	2
Large medium bluefin tuna ³	36	4	1	3	11	7	22	2	9	1
Small medium bluefin tuna	21	30	18	32	23	93	46	32	45	70
Large school bluefin tuna	107	141	85	99	286	77	172	53	64	87
School bluefin tuna ⁴	1,297	1,917	290	347	358	173	392	345	184	135
Young school bluefin tuna ⁴	1,885	282	117	83	55	52	68	44	21	14
Bigeye tuna	2	2	2	1	0	13	0	2	3	5
Yellowfin tuna ^{4, 5}	1,093	502	351	171	411	2,038	374	1,479	195	999
Skipjack tuna ⁴	362	105	129	17	217	610	188	479	325	464
Albacore tuna	66	67	41	40	14	5	10	84	25	112
Thresher shark ⁵	27	9	15	24	35	23	21	9	16	10
Mako shark	350	142	177	190	242	250	276	224	238	206
Sandbar shark	68	37	158	168	222	219	37	45	14	44
Dusky shark	60	49	73	87	128	152	116	84	76	90
Tiger shark	0	6	7	11	20	11	13	25	26	19
Porbeagle	1	6	8	2	2	6	11	31	18	22
Blacktip shark	1	19	9	31	-	-	34	10	346	89
Atlantic sharpnose shark	0	11	0	0	-	-	5	3	4	22
Blue shark ^{4, 5}	2,242	920	884	1,978	2,735	4,185	3,333	3,752	2,705	2,240
Hammerhead shark	2	5	0	0	0	0	0	1	2	0
Smooth hammerhead shark	0	0	1	2	0	1	1	3	3	0
Scalloped hammerhead shark	0	0	0	0	4	2	0	0	4	0
Unidentified hammerhead shark	0	0	11	14	27	31	32	10	30	20
Wahoo	5	7	6	9	4	4	6	2	5	2
Dolphin ⁵	192	375	394	227	372	222	344	380	192	209
King mackerel	1	7	20	3	5	5	1	0	0	0
Atlantic bonito ⁴	389	231	114	60	36	124	55	55	120	46
Little tunny	1,130	505	102	387	614	1,028	886	640	993	133
Amberjack	1	2	13	33	145	101	119	17	48	56
Spanish mackerel ⁴	0	0	0	2	37	1	8	0	0	0

¹NMFS 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 HMS SAFE Reports. ²Amendment 1 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. ³Includes some commercial handgear landings. ⁴Includes dead releases in 2010. ⁵Includes dead releases in 2011. Source: Large Pelagics Survey.

4.5 Bottom Longline

Bottom longline (BLL) gear 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. In 2013, hauls targeting LCS used BLL consisting of a longline between 0.6 to 7.4 km (0.4 – 4.6 miles) long with 26-254 hooks attached and the average soak duration was 2.4 hours. Depending on the species being targeted, both circle and J hooks are used. Fishermen targeting LCS with BLL gear most commonly used 18.0 circle hook (75 percent of the time). Hauls targeting sandbar sharks used BLL consisting of longline average of 6.9 km (4.3 miles) long with 70-300 hooks attached and the average soak duration was 6 hours. The most commonly used hook was the 18.0 circle hook (61.3 percent) with 9.0 J hooks used 38.7 percent of the hauls (Gulak et al., 2014).

4.5.1 Current Management

For a description of the history of bottom longline fishery management, please see the Amendment 5a to the 2006 Consolidated HMS FMP. Current commercial regulations include limited access vessel permits requirements, commercial quotas, vessel retention limits, a prohibition on landing 20 species of sharks (one of these species can be landed in the shark research fishery), numerous closed areas, gear restrictions, landing restrictions (including requiring all sharks be landed with fins naturally attached), fishing regions, vessel monitoring system requirements, dealer permits, and vessel and dealer reporting requirements.

NMFS is currently working on two additional shark proposals to amend the 2006 Consolidated HMS FMP, which could impact fishermen using BLL gear. Amendment 5b to the 2006 Consolidated HMS FMP could change certain shark regulations based on recent stock assessment for dusky sharks. Based on this determination and results of the SEDAR 34 assessment, NMFS intends to consider implementing total allowable catches (TAC) and commercial quotas for the non-blacknose SCS complexes in the Atlantic and Gulf of Mexico regions in a proposed rule for Amendment 6 to the 2006 Consolidated HMS FMP. The proposed rule could consider a range of other management measures for the commercial shark fisheries including modifying the commercial retention limits, implementing regional and sub-regional quotas in the Atlantic and Gulf of Mexico, and removing upgrading restrictions for shark directed permit holders.

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 have been required to take an observer if selected. Participants in the shark research fishery are required to take an observer when targeting sandbar sharks. Outside the research fishery and depending on the time of year and fishing season, vessels that target sharks, possessed current valid directed shark permit, and reported fishing with longline gear in the previous year were randomly selected for coverage with a target coverage level of 2-3% for shark directed (Gulak et al., 2014).

In 2013, the BLL observer program selected 9 vessels with a total of 113 BLL hauls (defined as setting gear, soaking gear for some duration of time, and retrieving gear) were

observed in a total of 61 trips (defined as from the time a vessel leaves the port until the vessel returns to port and lands catch, including multiple hauls therein). Gear characteristics of trips varied by area (Gulf of Mexico or the U.S. Atlantic Ocean) and target species (non-sandbar LCS or sandbar shark) (Gulak et al., 2014). The selected observed trips were from two fishing regions: the southern Atlantic (refers to the coastline from North Carolina to Florida) and the Gulf of Mexico (refers to the coastline from the Florida Keys to Texas). The observed non-research shark fishery hauls targeted non-sandbar LCS species in the southern Atlantic. Only 7 trips with 20 hauls were observed. These trips caught mostly blacktip sharks with Atlantic sharpnose, finetooth, and spinner sharks being the next most caught species (Table 4.31).

Table 4.31 Shark Species Caught on Observed Bottom Longline Targeting Non-Sandbar Large Coastal Sharks in the Southern Atlantic (2013)

Species	Total Caught (%)	Kept (%)	Discarded Dead (%)	Discarded Alive (%)	Disposition Unknown (%)
Blacktip shark	151	88.1	10.6	0.0	1.3
Atlantic sharpnose shark	140	72.9	27.1	0.0	0.0
Finetooth shark	21	52.4	47.6	0.0	0.0
Spinner shark	15	100.0	0.0	0.0	0.0
Bull shark	12	100.0	0.0	0.0	0.0
Nurse shark	10	0.0	0.0	100.0	0.0
Tiger shark	5	20.0	0.0	80.0	0.0
Blacknose shark	3	33.3	66.7	0.0	0.0
Sandbar shark	3	0.0	33.3	66.7	0.0
Lemon shark	3	100.0	0.0	0.0	0.0
Sand tiger shark	1	0.0	0.0	100.0	0.0
Sharks	1	0.0	0.0	100.0	0.0
Scalloped hammerhead shark	1	0.0	100.0	0.0	0.0
Great hammerhead shark	1	0.0	0.0	100.0	0.0
Total	367				

Source: Gulak et al., 2014.

In 2013, the Shark Research Fishery commenced with 6 participants; however in April, another vessel was selected after a vessel withdrew from the fishery. Due to the number of observed vessels, the observed data were combined for the Gulf of Mexico and southern Atlantic to protect confidentiality of vessels consistent with the requirements of the MSA. NMFS changed the regulations for vessels participating in the shark research fishery in 2013 by implementing a regional dusky bycatch cap and revised the set limit per research trip (Table 4.32).

Table 4.32 Summary of Shark Research Fishery Management Measures (2011-2013)

Management Measure	2011	2012	2013
Number of Vessels	10	5	6
Number of Trips per Month	2-3	1	1
Captain's Meeting Held	No	Yes	Yes
Retention Limits	33 sandbar per trip 33 non-sandbar LCS per trip	None. All sharks, except for prohibited species, brought to vessel dead must be landed.	None. All sharks, except for prohibited species, brought to vessel dead must be landed.
Gear Restrictions	Hook restriction: ≤ 500 hooks per set	Set limit: one longline set per trip Hook restriction: ≤ 150 or fewer hooks on board <i>Amendment 1</i> Set limit: two non-concurrent longline sets per trip: 1 st set ≤ 75 hooks; soak time no more than 2 hours; 2 nd set ≤ 150 hooks; no soak time limit Hook restriction: ≤ 250 hooks on board <i>Amendment 2</i> Set limit: two non-concurrent longline sets per trip: 1 st set ≤ 150 hooks; soak time no more than 2 hours; 2 nd set ≤ 300 hooks; no soak time limit Hook restriction: ≤ 500 hooks on board	Set limit: two non-concurrent longline sets per trip: 1 st set ≤ 150 hooks; soak time no more than 2 hours; 2 nd set ≤ 300 hooks; no soak time limit Hook restriction: ≤ 500 hooks on board
Individual Vessel Quota	None. All landings counted towards the overall sandbar and LCS research quotas Sandbar: 87.9 mt dw Non-sandbar LCS: 37.5 mt dw	Sandbar quota and LCS research quota split equally among selected vessels Sandbar: 14.06 mt dw Non-sandbar LCS: 6.0 mt dw	Sandbar quota and LCS research quota split equally among selected vessels Sandbar: 15.5 mt dw Non-sandbar LCS: 6.7 mt dw
Mid-Atlantic Closed Area	Vessels could fish in the closed area	Vessels could fish in the closed area	Vessels could not fish in the closed area
Dusky Bycatch Cap	None	None	No more than five dusky shark interactions were allowed in any of the designated regions (North Carolina, Georgia/ South Carolina, east coast of Florida, the Florida Keys, west coast of Florida, and rest of the Gulf of Mexico) through the entire year (Figure 4.8)

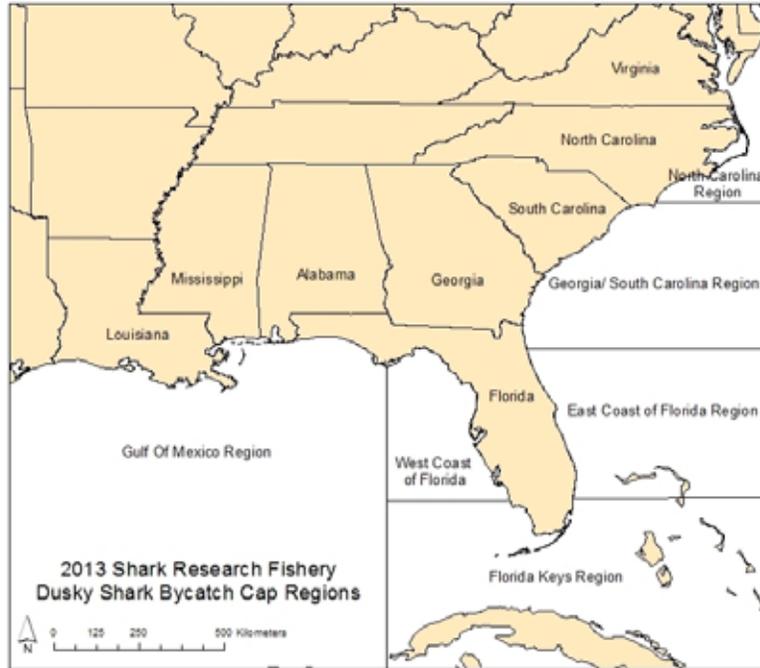


Figure 4.8 **Designed Regional Dusky Bycatch Cap Regions for the Shark Research Fishery**

The Shark Research Fishery targeted sandbar sharks in the Gulf of Mexico and southern Atlantic. A total of 54 trips with 93 hauls were observed. These trips caught mostly sandbar sharks with tiger, blacktip, Atlantic sharpnose, and nurse sharks being the next most caught species (Table 4.33). All of the dusky sharks were observed on trips targeting sandbar sharks.

Table 4.33 Shark Species Caught on Observed Bottom Longline Trips Targeting Sandbar Shark in the Gulf of Mexico and Southern Atlantic (2013)

Species	Total Caught (#)	Kept (%)	Discarded Dead (%)	Discarded Alive (%)	Disposition Unknown (%)
Sandbar shark	1,748	98.2	0.2	0.1	1.5
Tiger shark	520	31.9	0.8	65.8	1.5
Blacktip shark	370	97.0	2.7	0.0	0.3
Atlantic sharpnose shark	250	28.4	64.8	6.8	0.0
Nurse shark	187	0.5	0.0	99.5	0.0
Bull shark	139	96.4	0.0	0.0	3.6
Blacknose shark	124	78.2	20.2	1.6	0.0
Great hammerhead shark	89	78.7	6.7	11.2	3.4
Scalloped hammerhead shark	77	87.0	3.9	9.1	0.0
Spinner shark	63	95.2	3.2	0.0	1.6
Lemon shark	40	97.5	0.0	0.0	2.5
Sand tiger shark	29	0.0	0.0	100.0	0.0
Dusky shark	24	4.2 ¹	29.1	66.7	0.0
Silky shark	13	69.2	15.4	15.4	0.0
Hammerhead sharks	3	66.7	0.0	33.3	0.0
Bonnethead shark	2	50.0	0.0	50.0	0.0
Caribbean reef shark	1	0.0	100.0	0.0	0.0
Total	3,679				

¹ One dusky shark was initially identified as a silky shark. Source: Gulak et al., 2014.

4.5.3 Bottom Longline Bycatch

For more detailed information on the fishery classification and requirements under the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1361 *et seq.*) and the Endangered Species Act (ESA), please see the Final Environmental Impact Statement (FEIS) prepared for Amendment 5a to the 2006 Consolidated HMS FMP. On July 3, 2014, NMFS issued the final determination to list the Central and Southwest Atlantic Distinct DPS of scalloped hammerhead shark as threatened species pursuant to the Endangered Species Act (ESA) (79 FR 38214). The Central and Southwest Atlantic DPS of scalloped hammerhead sharks occur within the management area of Atlantic HMS commercial and recreational fisheries which are managed by NMFS's Office of Sustainable Fisheries, HMS Management Division. On August 27, 2014, NMFS published a final rule to list 7 coral species as threatened: five in the Caribbean including Florida and the Gulf of Mexico (*Dendrogyra cylindrus*, *Orbicella annularis*, *Orbicella faveolata*, *Orbicella franksi*, and *Mycetophyllia ferox*). Two Caribbean species currently listed as threatened (*Acropora cervicornis* and *Acropora palmata*) still warranted listing as threatened.

On October 30, 2014, NMFS requested reinitiation of ESA section 7 consultation on the continued operation and use of HMS gear types (including bottom longline) and associated fisheries management actions in the 2006 Consolidated Atlantic HMS FMP and its amendments, which were previously consulted on in the 2001 Atlantic HMS biological opinion and the 2012 Shark and Smoothhound biological opinion, to assess potential adverse effects of these gear types on the Central and Southwest DPS of scalloped hammerhead sharks and seven threatened coral species. NMFS has preliminarily determined that the ongoing operation of the fisheries is consistent with existing biological opinions and is not likely to jeopardize the continued

existence or result in an irreversible or irretrievable commitment of resources which would foreclose formulation or implementation of any reasonable and prudent alternative measures on the threatened coral species.

Table 4.34 provides information on observed interactions with protected resources for BLL vessels targeting sharks in the Gulf of Mexico and Atlantic regions. In 2013, two smalltooth sawfish were observed on sets targeting sharks. No sea turtle, sea bird, or marine mammal interactions were observed. No interactions with protected resources (sea bird, sea turtle, sawfish, or marine mammal) were observed for BLL vessels fishing in the Gulf of Mexico and South Atlantic regions targeting LCS (Gulak et al., 2014).

Table 4.34 Protected Species Interactions Observed Bottom Longline Trips Targeting Sharks in the Gulf of Mexico and Atlantic Ocean (2007-2013)

Year	Sea Turtles	Sea Birds	Marine Mammals	Smalltooth Sawfish	Total
2007	4 (2A, 2D)	-	-	3 (2A, 1D)	7
2008	1 (A)	-	-	2 (A)	3
2009	2 (D)	-	-	5 (A)	7
2010	4 (2A, 2D)	-	-	10 (A)	14
2011	4 (1A, 3D)	-	-	2 (A)	6
2012	2 (A)	-	-	1 (D)	3
2013	-	-	-	2 (A)	2
Total	17	0	0	25	42

Letters in parentheses indicate whether the animal was released alive (A), dead (D), or unknown (U).

4.6 Gillnet Fishery

Gillnet gear is the primary gear for vessels directing on small coastal sharks, although vessels directing on other species can also catch shark species. 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. The data presented in this chapter focus on the gillnet fisheries that occur in the southeast and Gulf of Mexico regions and target small coastal sharks or finfish.

In addition to these southeast gillnet fisheries, in the northeast and mid-Atlantic regions, gillnet gear is the predominant gear type used in the smoothhound shark fishery. Smoothhound sharks are subject to federal management as a highly migratory species, but federal management measures have not yet been implemented. On August 7, 2014, NMFS published a proposed rule for Amendment 9 to the 2006 Consolidated HMS FMP (Amendment 9) that considers implementation of management measures for the smoothhound shark fishery and the shark gillnet fishery (79 FR 46217). A final rule is expected sometime in 2015. At this time, the data presented in this chapter do not focus on the smoothhound gillnet fisheries in the northeast or mid-Atlantic regions.

4.6.1 Current Management

Many of the commercial regulations for the Atlantic shark fishery are the same for both the bottom longline and gillnet fishery, including, but not limited to: seasons, quotas, species

complexes, permit requirements, authorized/prohibited species, and retention limits. Examples of regulations that are specific to shark gillnet fishing include requiring that gillnets remain attached to the vessel and requiring vessel operators to conduct net checks every two hours when gear is deployed.

In addition to considering federal management measures for smoothhound sharks, Draft Amendment 9 also considers modifying two shark gillnet requirements. First, Amendment 9 proposes to establish gear-tending requirements in order to implement the Terms and Conditions of the 2012 Shark and Smoothhound biological opinion. The proposed measures would limit soak times to 24 hours for fishermen using sink gillnet gear and require a 2-hour net check for fishermen using drift gillnet gear. Second, Draft Amendment 9 proposes to require federal directed Atlantic shark limited access permit holders with gillnet gear on board to use a vessel monitoring system (VMS) only in the vicinity of the Southeast U.S. Monitoring Area, consistent with the Atlantic Large Whale Take Reduction Plan, instead of anywhere the fishermen uses gillnets (as currently required).

4.6.2 Recent Catch, Landings, and Discards of the Southeast Gillnet Fisheries

In 2013, a total of 225 sets comprised of various southeast gillnet fisheries were observed by the Southeast Gillnet Observer Program. A total of 4 strike gillnet fishery vessels were observed making 12 strike sets on 10 trips in 2013. During the strike gillnet trips, 42 Atlantic sharpnose sharks, 25 blacktip sharks, 20 blacknose sharks, 3 bonnethead sharks and 1 great hammerhead shark were observed on trips that targeted king mackerel in 2013. A total of 50 trips making 213 sink net sets on 20 vessels were observed in 2013. Table 4.35 through Table 4.37 of this section outline shark species composition, disposition, and summary information for sharks caught during observed sink gillnet trips with observers onboard in 2013 (Mathers et al., 2013).

Table 4.35 Shark Species Caught on Observed Southeast Sink Gillnet Trips Targeting Spanish Mackerel (2013)

Species	Total Caught (#)	Kept (%)	Discarded Alive (%)	Discarded Dead (%)
Atlantic sharpnose shark	123	31.4	57.1	11.4
Spinner shark	49	0.0	76.5	23.5
Bonnethead shark	41	9.1	45.5	45.5
Finetooth shark	34	0.0	81.8	18.2
Blacktip shark	20	35.7	42.9	21.4
Scalloped hammerhead shark	12	22.2	55.6	22.2
Blacknose shark	4	66.7	33.3	0.0
Total	283			

Source: Mathers et al., 2013.

Table 4.36 Shark Species Caught on Observed Southeast Sink Gillnet Trips Targeting Mixed Sharks (2013)

Species	Total Caught (#)	Kept (%)	Discarded Alive (%)	Discarded Dead (%)
Atlantic sharpnose shark	162	100.0	0.0	0.0
Spinner shark	155	36.8	63.2	0.0
Smooth dogfish	114	60.0	40.0	0.0
Scalloped hammerhead shark	80	28.6	42.9	28.6
Blacktip shark	27	40.7	59.3	0.0
Finetooth shark	21	66.7	33.3	0.0
Bonnethead shark	9	100.0	0.0	0.0
Blacknose shark	8	100.0	0.0	0.0
Total	576			

Source: Mathers et al., 2013.

Table 4.37 Shark Species Caught on Observed Southeast Sink Gillnet Trips Targeting Mixed Teleost (2013)

Species	Total Caught (#)	Kept (%)	Discarded Alive (%)	Discarded Dead (%)
Smooth dogfish	15	75.0	25.0	0.0
Atlantic sharpnose shark	5	0.0	100.0	0.0
Total	20			

Source: Mathers et al., 2013.

4.6.3 Gillnet Bycatch

This section describes the non-shark bycatch observed in the southeast sink gillnet fishery during trips targeting mixed sharks (Mathers et al., 2013).

There was a wider range of fish species caught in the sink gillnet fisheries due to the number of sets observed, gear deployment methods, and targeted species. Predominant species caught in sink gillnets included Atlantic croaker, Spanish mackerel, King mackerel, and little tunny. All of the observed interactions with protected species between 2000 and 2013 in the observed gillnet fisheries are on Table 4.38.

Sea Turtles and Sea Birds There were no sea turtles or sea birds observed caught in sink gillnet gear in 2013 (Mathers et al., 2013).

Marine Mammals

The MMPA Category II classification refers to occasional serious injuries and mortalities. In 2013, there were no marine mammals observed caught in gillnet gear in the shark fisheries (Mathers et al. 2013).

Smalltooth Sawfish and Atlantic Sturgeon

In 2013, there were no observed interactions with smalltooth sawfish or Atlantic sturgeon in gillnet gear. For sawfish, the last observed interaction occurred in 2003 and the sawfish was

released with no visible injuries. There have been no interactions observed to date for Atlantic sturgeon. Given the high rate of observer coverage in these gillnet fisheries consistent with Atlantic Large Whale Take Reduction Plan, NMFS believes that smalltooth sawfish and Atlantic sturgeon interactions in this fishery are rare.

Table 4.38 Protected Species Interactions in the Shark Gillnet Fishery Targeting Mixed Sharks Other than Smoothhounds (2007-2013)

Year	Sea Turtles	Sea Birds	Marine Mammals	Smalltooth Sawfish	Atlantic Sturgeon	Total
2007	4 (3A, 1D)	-	-	-	-	4
2008	-	-	-	-	-	0
2009	2 (A)	1 (A)	1 (D)	-	-	4
2010	-	1 (D)	-	-	-	1
2011	1 (A)	-	-	-	-	1
2012	2 (A)	-	-	-	-	2
2013	-	-	-	-	-	0
Total	9	2	1	0	0	12

Letters in parentheses indicate whether the animal was released alive (A), dead (D), or unknown (U).

4.7 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.

4.7.1 Recent Catch, Landings, and Discards

Buoy gear effort and catch data are available for 2008 through 2013 (Table 4.39, Table 4.40, and Table 4.41). Buoy gear effort and catch data prior to 2008 may be found in earlier SAFE Reports. Prior to 2007, buoy gear catch data were included in handline catch data.

Table 4.39 Buoy Gear Effort (2008-2013)

Specifications	2008	2009	2010	2011	2012	2013
Number of vessels	44	53	57	50	55	46
Number of trips	598	708	632	603	688	629
Average buoy gears deployed per trip	11.2	11.9	11.9	12.2	14.1	17.95
Total number of set hooks	8,922	11,595	8,855	8,858	11,639	12,557
Average number hooks per gear	1.3	1.4	1.2	1.2	1.2	1.1

Source: Fisheries Logbook System.

Table 4.40 Buoy Gear Landings (lb dw, 2008-2013)

Species	2008	2009	2010	2011	2012	2013
Swordfish	122,700	154,674	153,520	138,041	178,088	140,038
Dolphin	1,031	1,427	419	1,269	1,324	486
Oilfish	414	245	270	338	719	693
Shortfin mako shark	797	932	466	812	2,295	1,194
Wahoo	227	623	75	198	163	70
Bigeye tuna	0	0	0	350	0	0
Blacktip shark	0	0	0	0	38	0
King mackerel	194	67	576	142	56	134
Yellowfin tuna	0	350	0	400	0	0
Hammerhead shark	0	350	1,190	575	400	0
Silky shark	0	20	48	0	120	0
Greater amberjack	0	10	201	0	0	0
Bonito	0	86	120	0	54	0
Blackfin tuna	0	0	115	70	97	32

Source: Fisheries Logbook System.

Table 4.41 Buoy Gear Catches and Discards, in Numbers of Fish per Species (2008-2013)

Species	2008	2009	2010	2011	2012	2013
Kept						
Swordfish	1,843	2,085	1,950	1,893	2,699	2,155
Dolphinfish	103	113	29	121	196	51
Oilfish	10	5	10	76	13	18
Bigeye tuna	0	0	0	4	0	0
Blackfin tuna	7	2	7	3	10	3
Wahoo	6	44	2	40	12	2
Bonito	7	11	6	0	1	0
King mackerel	53	4	7	130	2	14
Shortfin mako	4	8	4	7	14	13
Hammerhead shark	0	1	6	3	3	0
Blacktip shark	0	0	0	0	1	0
Silky shark	1	1	1	0	4	0
Yellowfin tuna	0	9	0	8	0	0
Greater amberjack	0	1	7	0	0	0
Thresher shark	0	0	0	0	1	0
Released Alive						
Swordfish	1,018	763	1,031	1,659	1,221	478
Dolphinfish	0	0	0	11	14	4
Blue marlin	0	1	1	2	2	1
White marlin	3	0	0	0	0	0
Sailfish	1	0	1	1	0	0
Hammerhead shark	7	35	52	81	93	68
Blue shark	2	1	0	30	5	0
Thresher shark	1	1	2	7	6	1
Dusky shark	0	0	12	2	9	97
Night shark	1	34	39	87	238	129
Oceanic whitetip shark	1	0	0	0	0	1
Bigeye thresher shark	0	0	0	2	2	1
Tiger shark	2	1	1	2	2	3
Sandbar shark	0	1	2	0	0	0
Longfin mako shark	3	2	7	5	6	4
Shortfin mako shark	1	2	6	4	5	6
Blacktip shark	0	8	4	19	39	11
Silky shark	0	13	12	14	12	33
Oilfish	0	1	0	1	0	0
Greater amberjack	0	1	0	0	0	0
Blackfin Tuna	0	0	0	3	0	0
Skipjack Tuna	0	0	0	1	0	0
Discarded Dead						
Swordfish	80	51	87	155	139	75
Silky shark	0	0	0	0	0	0
Hammerhead shark	0	0	1	1	0	0
Blackfin tuna	0	1	0	1	0	0
Blue marlin	0	1	0	0	0	0
Night shark	0	0	1	0	1	2
Longfin mako shark	0	0	0	0	1	0
Shortfin Mako	0	0	0	1	0	0

Source: Fisheries Logbook System.

4.8 Green-Stick Gear

Green-stick gear is defined at 50 CFR § 635.2 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 category, HMS Charter/Headboat, and Atlantic tunas Longline permitted vessels.

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.

4.8.1 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, with some success, also encouraged states to utilize the green-stick gear code in their trip ticket programs. 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. Beginning in 2013, the HMS e-Dealer electronic reporting system was required to be used by Atlantic HMS dealers and Table 4.42 shows greenstick landings data from this system.

Table 4.42 Select Landings with Greenstick Gear (2013)

Species	Region	Pounds (whole weight)
Yellowfin tuna	Atlantic	43,175
	Gulf of Mexico	19,212

Additional landings of other species occurred in 2013, but cannot be displayed due to confidentiality requirements. Source: Atlantic HMS Electronic Dealer Reporting System

NMFS and the Louisiana Department of Wildlife and Fisheries continue to investigate the catch and bycatch of green-stick gear with a study in the northern Gulf of Mexico that is funded by the NOAA Bycatch Reduction Engineering Program. Sampling began in summer 2012 and is scheduled to continue through 2015 with a final report expected in late 2015.

4.9 Safety Issues

The following section highlights safety issues in fisheries. The USCG maintains websites for each of its regions (<http://www.uscg.mil/top/units/>), many of which provide regulatory and safety information, and region-specific statistics. Specific statistical data on vessel safety may also be obtained from the following U.S. Coast Guard (USCG) websites/documents: (1) “Analysis of Fishing Vessel Casualties – A Review of Lost Fishing Vessels and Crew Fatalities 1992-2010”: http://www.fishsafe.info/FVStudy_92_10.pdf; and, (2) USCG Safety Program website: <http://www.uscgboating.org/default.aspx>. A summary of previous findings can be found in the 2011 HMS SAFE Report.

Effective July 1, 2013, all newly constructed commercial fishing vessels must meet the following standards, as required by the Coast Guard Authorization Act of 2010 and the subsequent Coast Guard and Marine Transportation Act of 2012.

- **Vessels less than 50 feet** must be constructed in a manner that provides a level of safety equivalent to the minimum standards for recreational vessels;
- **Vessels that are 50 feet or longer** must meet a class society’s construction standards, be issued class documents and remain in class if the vessel operates beyond 3 nm from the territorial sea baseline, or has more than 16 individuals on board;
- **Vessels that are 79 feet or longer** must be assigned a load line if operated outside the Boundary line.

Beginning October 15, 2015, the USCG requires that all commercial fishing vessels that operate or transit more than 3 nautical miles off shore must be fully compliant with existing fishing vessel safety regulations (46 CFR Subchapter E, "Load Lines" Parts 41 - 47). To meet this requirement, all commercial fishing vessels will be required to complete biennial dockside safety examinations. More information on the new requirement can be found at the USCG Commercial Fishing Safety website: <http://www.uscg.mil/d13/cfvs/>.

4.10 Fishery Data: Landings by Species

The following tables (

Table 4.43 - Table 4.48) of Atlantic HMS landings are taken from the 2014 National Report of the United States to ICCAT (NMFS, 2014). 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 (Table 4.49 - Table 4.53) were updated based on 2013 landings from eDealer.

Table 4.43 U.S. Landings (mt) of Atlantic Bluefin Tuna, by Area and Gear (2006-2013)

Area	Gear	2006	2007	2008	2009	2010	2011	2012	2013
NW Atlantic	Longline**	104.4	70.7	107.4	166.7	164.7	216.3	189.4	153.0
	Handline	0.3	0.0	0.6	0.1	2.7	0.9	1.3	0.5
	Purse seine	3.6	27.9	0.0	11.4	0.0	0.0	1.7	42.5
	Harpoon	30.3	22.5	30.2	65.6	29.0	70.1	52.3	45.0
	Rod and reel (>145 cm LJFL)*	217.2	235.4	305.7	717.1	570.8	-	-	-
	Rod and reel (<145 cm LJFL)*	158.2	398.6	352.2	143.3	111.4	-	-	-
	Unclassified	0.0	0.0	0.3	0.0	0.0	0.0	0.0	-
	Commercial rod and reel	-	-	-	-	-	419.5	419.5	249.5
	Recreational rod and reel	-	-	-	-	-	148.6	148.7	131.4
	Trawl	-	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Gulf of Mexico	Longline	88.1	81.2	111.7	111.6	56.2	13.2	101.2	33.5
	Rod and reel*	0.6	0.0	0.0	0.0	0.0	-	-	-
NC Area 94a	Longline	12.1	12.4	13.5	56.7	17.8	11.3	3.9	3.5
Caribbean	Longline	-	0.0	0.0	0.0	0.0	0.6	0.9	0.4
All areas	All gears	614.8	848.7	919.9	1,272.6	952.6	904.7	919.0	658.9

* Rod and reel catches and landings represent estimates of landings and dead discards when available based on statistical surveys of the U.S. recreational harvesting sector. ** Includes landings and estimated discards from scientific observer and logbook sampling programs. Source: NMFS, 2014.

Table 4.44 U.S. Landings (mt) of Atlantic Yellowfin Tuna, by Area and Gear (2006-2013)

Area	Gear	2006	2007	2008	2009	2010	2011	2012	2013
NW Atlantic	Longline	701.7	757.8	460.5	416.4	673.4	684.1	873.7	540.6
	Rod and reel*	4,649.2	2,726.0	657.1	742.6	1,209.0	1,133.8	1,433	495.4
	Troll	0.0	6.9	2.4	5.4	1.2	0.5	0.3	23.5
	Gillnet	4.7	4.2	0.6	0.0	0.5	0.06	1.5	0.9
	Trawl	0.7	2.4	0.0	0.0	1.4	1.3	0.2	0.0
	Handline	105.1	113.2	30.1	58.7	43.5	34	66.0	67.4
	Trap	0.0	0.0	0.05	0.1	0.5	0.0	0.0	0
	Unclassified	3.9	7.0	1.4	2.2	9.5	4.2	4.5	2.1
Gulf of Mexico	Longline	1,128.5	1,379.5	756.5	1,147.0	303.2	642.1	1,251.0	833.1
	Rod and reel*	258.4	227.6	366.3	264.7	18.0	362.8	294.1	191.8
	Handline	49.9	26.2	11.2	21.6	2.9	8.7	175	6.8
	Gillnet	0.0	0.0	0.0	0.0	0.0	-	-	-
	Unclassified	0.0	0.0	0.0	0.0	0.0	0.1	8.7	0.0
Caribbean	Longline	179.7	255.6	107.1	136.7	212.2	132.1	141.9	169.8
	Handline	7.8	9.1	3.7	3.3	1.9	1.5	3.2	0.0
	Gillnet	0.0	0.0	0.04	0.04	0.0	0.0	0.0	0.0
	Trap	0.4	0.0	0.0	0.0	0.0	-	-	-
	Rod and reel*	0.0	12.4	9.7	3.5	4.5	0.9	0.0	0.0
NC Area 94a	Longline	0.0	1.8	0.4	0.0	0.0	0.0	3	0.0
SW Atlantic	Longline	0.0	0.0	0.0	0.0	28.7	-	-	-
All areas	All gears	7,090.0	5,529.5	2,407.2	2,802.3	2,481.7	3,010.4	4,099.5	2,331.6

* Rod and reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector. ** ≤ 0.05 mt. Source: NMFS, 2014.

Table 4.45 U.S. Landings (mt) of Atlantic Skipjack Tuna, by Area and Gear (2006-2013)

Area	Gear	2006	2007	2008	2009	2010	2011	2012	2013
NW Atlantic	Longline	0.04	0.0	0.1	0.4	1.4	0.4	0.3	0.4
	Rod and reel*	34.6	27.4	21.0	75.7	29.1	50.3	98.0	37.7
	Gillnet	0.2	0.05	0.04	3.3	0.2	0.04	1.6	0.27
	Trawl	0.7	0.005	0.003	0.0	0.0	0.0	0.006	0.0
	Handline	0.2	0.3	0.4	2.8	1.2	1.5	2.0	1.2
	Trap	0.3	0.0	0.0	0.0	0.0	-	-	-
	Pound net	0.5	0.0	0.0	0.0	0.0	-	-	-
	Unclassified	0.06	0.6	0.5	1.2	0.1	0.8	0.6	0.7
Gulf of Mexico	Longline	0.0	0.0	0.05	0.05	0.0	0.2	0.0	0.0
	Rod and reel*	6.4	23.9	16.3	22.0	15.5	23.7	0.06	77.1
	Handline	0.0	0.2	0.06	0.2	0.02	0.2	2.5	0.02
Caribbean	Longline	0.2	0.02	1.3	0.05	0.0	0.0	0.1	0.0
	Gillnet	0.02	0.0	0.01	0.6	0.0	0.0	-	0.0
	Rod and reel*	7.7	0.2	11.3	4.3	0.4	3.0	3.0	0.0
	Handline	10.0	13.7	16.0	8.8	6.2	4.5	4.0	0.0
	Trap	0.05	0.0	0.0	0.0	0.0	-	1	-
All areas	All gears	61.0	66.5	67.1	119.4	54.2	86.7	111.5	117.4

* Rod and reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector. Source: NMFS, 2014.

Table 4.46 U.S. Landings (mt) of Atlantic Bigeye Tuna, by Area and Gear (2006-2013)

Area	Gear	2006	2007	2008	2009	2010	2011	2012	2013
NW Atlantic	Longline	469.4	331.9	380.2	384.7	431.1	397.2	567	490.4
	Gillnet	0.2	1.0	0.04	0.0	0.0	0.0	0.2	0.06
	Trap	-	-	-	0.3	1.2	0.0	0.0	0.0
	Rod and reel*	422.3	126.8	70.9	77.6	116.8	72.4	269.6	337.5
	Troll	0.0	0.9	0.8	0.6	0.0	0.9	0.2	5.0
	Handline	21.5	16.8	6.9	4.6	1.8	3.4	7.8	16.1
	Trawl	0.0	0.4	0.0	0.0	0.7	1.2	0.2	0.0
	Unclassified	0.8	0.9	2.1	1.9	6.7	4.7	7.1	6.1
Gulf of Mexico	Longline	37.7	37.0	14.0	19.5	6.9	2.2	13.1	9.2
	Rod and reel*	24.3	0.0	0.0	0.0	0.8	34.9	0.1	7.0
	Handline	1.5	0.01	0.0	0.07	0.09	0.0	0.0	0.0
	Unclassified	-	-	-	0.0	0.0	0.0	0.4	0.0
Caribbean	Longline	10.5	3.4	8.9	22.2	5.0	0.0	0.002	8.6
	Rod and reel*	-	0.0	0.0	0.0	0.0	2.3	0.0	0.0
	Handline	0.0	0.0	0.0	0.0	0.0	0.05	0.0	0.0
NC Area 94a	Longline	3.0	8.4	4.6	3.7	3.7	-	-	-
SW Atlantic	Longline	0.0	0.0	0.0	0.0	0.2	200.8	3.1	0.2
All areas	All gears	991.4	527.3	488.5	515.2	571.3	718.7	868.8	880.4

* Rod and reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector. Source: NMFS, 2014.

Table 4.47 U.S. Landings (mt) of Atlantic Albacore Tuna, by Area and Gear (2006-2013)

Area	Gear	2006	2007	2008	2009	2010	2011	2012	2013
NW Atlantic	Longline	84.8	109.9	115.9	141.3	87.8	138.2	157.7	0.0
	Gillnet	2.1	1.0	2.1	5.6	0.5	0.2	5.7	0.0
	Handline	2.6	5.4	0.2	0.5	1.9	1.7	0.6	0.0
	Trawl	1.1	0.3	0.01	0.08	0.2	2.0	0.3	0.0
	Trap	0.5	0.4	0.005	0.01	0.01	0.0	0.0	0.0
	Troll	0.0	0.2	0.2	0.07	0.04	0.0	0.0	0.2
	Rod and reel*	284.2	393.6	125.2	22.8	46.2	170.6	144.3	340.3
	Unclassified	5.6	4.2	1.9	1.3	2.2	7.8	4.4	0.6
Gulf of Mexico	Longline	7.6	15.4	10.2	16.7	7.1	101.8	103.5	255.8
	Rod and reel*	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
	Handline	0.07	0.0	0.0	0.01	0.01	0.1	0.5	2.3
Caribbean	Longline	10.5	1.2	0.4	0.3	0.7	**	**	**
	Gillnet	0.0	0.0	0.0	0.0	0.0	-	-	-
	Rod and reel*	0.0	0.0	0.0	0.0	103.6	**	**	**
	Trap	0.0	0.0	0.0	0.0	0.0	-	-	-
	Handline	0.4	0.2	0.4	0.003	0.05	**	**	**
NC Area 94a	Longline	0.03	0.3	0.8	0.3	0.6	-	-	-
SW Atlantic	Longline	0.0	0.0	0.0	0.0	0.0	-	-	-
All areas	All gears	399.5	532.1	256.7	188.8	314.5	422.4	417.7	599.3

* Rod and reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector. ** Caribbean landings included in Gulf of Mexico total. Source: NMFS, 2014.

Table 4.48 U.S. Catches and Landings (mt) of Atlantic Swordfish, by Area and Gear (2005-2012)

Area	Gear	2009	2010	2011	2012	2013
NW Atlantic	Longline*	1,696.0	1,647.7	1,741.8	1,987.0	1,730.5
	Gillnet	0.05	0.0	0.0	0.0	0.0
	Handline	123.0	126.9	120.4	151.3	104.6
	Trawl	23.7	21.2	17.9	26.8	2.9
	Harpoon	0.05	0.6	0.6	0.3	0.5
	Rod and reel**	19.0	47.6	48.7	64.3	21.7
	Trap	0.0	1.8	-	-	-
	Unclassified	0.0	2.1	0.0	0.5	1.5
	Unclassified discards	3.0	3.6	5.8	3.6	0.0
Gulf of Mexico	Longline*	476.1	212.3	363.6	673.3	530.5
	Handline	1.9	2.6	0.5	3.3	0.5
	Rod and reel**	12.6	1.7	4.9	6.3	0.3
	Unclassified	2.9	-	-	-	-
	Unclassified discards	3.5	1.3	2.5	6.8	0.0
Caribbean	Longline	22.6	41.4	14.2	3.7	22.6
	Trap*	-	-	-	-	-
	Rod and reel**	0.0	-	-	0.2	0.0
	Handline	0.003	0.0	0.0	0.0	0.0
	Unclassified discards	0.2	0.04	0.9	0.0	0.0
NC Atlantic	Longline*	496.4	304.8	451.3	682.6	539.5
SW Atlantic	Longline*	0.0	0.3	0.0	0.0	0.06
All areas	All gears	2,878.0	2,412.1	2,773.7	3,609.6	2,955.0

* Includes landings and estimated dead discards from scientific observer and logbook sampling programs. ** Rod and reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector. Source: NMFS, 2014.

Table 4.49 Commercial Landings of Large Coastal Sharks in the Atlantic Region (lb dw, 2008-2013)

Large Coastal Sharks	2008	2009	2010	2011	2012	2013
Aggregated Large Coastal Sharks						
Blacktip	258,035	229,267	246,617	176,136	215,403	256,277
Bull	43,200	61,396	56,901	49,927	24,504	33,980
Lemon	22,530	30,909	25,316	45,448	21,563	16,791
Nurse	10	0	71	0	81	0
Sandbar	63,035	54,141	84,339	94,295	46,446	46,868
Silky	306	1,386	1,049	992	29	186
Spinner	1,265	20,022	13,544	4,113	10,643	26,892
Tiger	14,119	15,172	43,145	36,425	23,245	16,561
Total Aggregated LCS carcass weight	339,465 (154 mt dw)	358,152 (162 mt dw)	386,643 (175 mt dw)	313,041 (142 mt dw)	295,468 (134 mt dw)	350,687 (159 mt dw)
Hammerhead Sharks						
Hammerhead, great	0	0	0	0	371	7,406
Hammerhead, scalloped	0	0	0	0	15,800	27,229
Hammerhead, smooth	0	4,025	7,802	110	3,967	1,521
Hammerhead, unclassified	21,631	62,825	43,345	35,618	9,617	0
Total Hammerhead carcass weight	21,631 (10 mt dw)	66,850 (30 mt dw)	51,147 (23 mt dw)	35,728 (16 mt dw)	29,755 (13 mt dw)	36,156 (16 mt dw)
Shark Research Fishery						
Sandbar	63,035 (29 mt dw)	54,141 (25 mt dw)	84,339 (38 mt dw)	94,295 (43 mt dw)	46,446 (21 mt dw)	46,868 (21 mt dw)
Unclassified Sharks						
Unclassified, assigned to large coastal	187,670 (85 mt dw)	70,894 (32 mt dw)	2,229 (1 mt dw)	50,711 (23 mt dw)	53,705 (24 mt dw)	0 (0 mt dw)
Total LCS carcass weight	611,918 (278 mt dw)	550,037 (249 mt dw)	524,376 (238 mt dw)	493,809 (224 mt dw)	425,612 (193 mt dw)	433,710 (197 mt dw)

Sources: 2008-2012 Cortés pers. comm.; 2013 eDealer reports.

Table 4.50 Commercial Landings of Large Coastal Sharks in the Gulf of Mexico Region (lb dw, 2008-2013)

Large Coastal Sharks	2008	2009	2010	2011	2012	2013
Blacktip sharks						
Blacktip	326,280 (148 mt dw)	374,573 (170 mt dw)	654,942 (297 mt dw)	384,662 (174 mt dw)	405,015 (184 mt dw)	531,440 (241 mt dw)
Aggregated Large Coastal Sharks						
Bull	144,356	150,094	165,894	178,595	255,892	279,379
Lemon	30,897	54,984	21,081	38,132	29,362	12,869
Nurse	48	147	0	27	11	0
Silky	4,488	4,087	270	643	0	1,714
Spinner	122,395	17,028	78,951	66,996	49,647	68,576
Tiger	17,089	7,874	8,825	21,594	26,209	14,062
Total Aggregated LCS carcass weight	319,273 (145 mt dw)	234,214 (106 mt dw)	275,021 (125 mt dw)	305,987 (139 mt dw)	361,121 (164 mt dw)	376,600 (171 mt dw)
Hammerhead Sharks						
Hammerhead, great	156	1,430	6,339	49	99	28,591
Hammerhead, scalloped	0	0	0	0	33,216	1,101
Hammerhead, smooth	0	0	0	0	0	0
Hammerhead, unclassified	35,332	95,678	51,149	68,709	8,005	0
Total Hammerhead carcass weight	35,488 (16 mt dw)	97,108 (44 mt dw)	57,488 (26 mt dw)	68,758 (31 mt dw)	41,320 (19 mt dw)	29,692 (13 mt dw)
Shark Research Fishery						
Sandbar	26,740 (12 mt dw)	113,717 (52 mt dw)	54,914 (25 mt dw)	46,040 (21 mt dw)	23,854 (19 mt dw)	37,582 (13 mt dw)
Unclassified Shark						
Unclassified, assigned to large coastal	131,724	163,320	0	169,651	188,566	0
Total LCS carcass weight	839,505 (381 mt dw)	982,932 (446 mt dw)	1,042,365 (473 mt dw)	975,098 (442 mt dw)	1,019,876 (463 mt dw)	975,315 (442 mt dw)

Sources: 2008-2012 Cortés pers. comm.; 2013 eDealer reports.

Table 4.51 Commercial Landings of Small Coastal Sharks in the Atlantic Region (lb dw, 2008-2013)

Small Coastal Sharks	2008	2009	2010	2011	2012	2013
Blacknose Sharks						
Blacknose	117,197 (53 mt dw)	90,023 (41 mt dw)	30,287 (14 mt dw)	28,373 (13 mt dw)	37,873 (17 mt dw)	33,382 (15 mt dw)
Non-Blacknose Small Coastal Sharks						
Bonnethead	61,549	53,912	9,069	28,284	19,907	22,845
Finetooth	26,872	63,359	76,438	52,318	15,922	19,452
Sharpnose, Atlantic	261,788	262,508	211,190	214,382	345,625	183,524
Total Non-Blacknose	350,209	379,779	296,697	294,984	381,454	225,821
SCS carcass weight	(159 mt dw)	(172 mt dw)	(135 mt dw)	(134 mt dw)	(173 mt dw)	(102 mt dw)
Unclassified Shark						
Unclassified, assigned to small coastal	23,077 (10 mt dw)	34,429 (16 mt dw)	851 (1 mt dw)	36,639 (17 mt dw)	492 (1 mt dw)	0 (0 mt dw)
Total SCS carcass weight	490,483 (222 mt dw)	504,231 (229 mt dw)	327,835 (149 mt dw)	359,996 (163 mt dw)	419,819 (190 mt dw)	259,203 (118 mt dw)

Sources: 2008-2012 Cortés pers. comm.; 2013 eDealer reports.

Table 4.52 Commercial Landings of Small Coastal Sharks in the Gulf of Mexico Region (lb dw, 2008-2013)

Small Coastal Sharks	2008	2009	2010	2011	2012	2013
Blacknose Sharks						
Blacknose	17,058 (8 mt dw)	61,682 (28 mt dw)	4,204 (2 mt dw)	3,900 (2 mt dw)	14,379 (7 mt dw)	2,009 (1 mt dw)
Non-Blacknose Small Coastal Sharks						
Bonnethead	388	3,444	2,672	12,986	2,601	4,436
Finetooth	53,961	95,705	45,001	159,558	130,278	60,118
Sharpnose, Atlantic	77,861	43,217	17,958	53,723	100,253	116,133
Total Non-Blacknose	132,210	142,366	65,631	226,267	233,132	180,687
SCS carcass weight	(60 mt dw)	(65 mt dw)	(30 mt dw)	(103 mt dw)	(106 mt dw)	(82 mt dw)
Unclassified Shark						
Unclassified, assigned to small coastal	0 (0 mt dw)	0 (0 mt dw)	0 (0 mt dw)	0 (0 mt dw)	0 (0 mt dw)	0 (0 mt dw)
Total SCS carcass weight	149,268 (68 mt dw)	204,048 (93 mt dw)	69,835 (32 mt dw)	230,167 (104 mt dw)	247,511 (112 mt dw)	182,695 (83 mt dw)

Sources: 2008-2012 Cortés pers. comm.; 2013 eDealer reports.

Table 4.53 Commercial Landings of Atlantic Pelagic Sharks (lb dw, 2008-2013)

Pelagic Sharks	2008	2009	2010	2011	2012	2013
Blue Sharks						
Blue	3,229 (1.5 mt dw)	4,793 (2.2 mt dw)	9,135 (4.1 mt dw)	13,370 (6.1 mt dw)	17,200 (7.8 mt dw)	9,767 (4.4 mt dw)
Porbeagle Sharks						
Porbeagle	5,259 (2.4 mt dw)	3,609 (1.6 mt dw)	4,097 (1.9 mt dw)	5,933 (2.7 mt dw)	4,250 (1.9 mt dw)	54 (1 mt dw)
Pelagic Sharks Other Than Blue or Porbeagle						
Mako, shortfin	120,255	141,456	220,400	207,630	198,841	199,177
Mako, unclassified	39,661	9,383	0	0	0	0
Oceanic whitetip	1,899	933	796	2,435	258	62
Thresher	47,528	33,333	61,290	47,462	63,965	48,768
Total Other Pelagic carcass weight	209,343 (95 mt dw)	185,105 (84 mt dw)	282,486 (128 mt dw)	257,527 (117 mt dw)	263,064 (119 mt dw)	248,007 (112 mt dw)
Unclassified Shark						
Unclassified, assigned to pelagic	14,819 (7 mt dw)	6,650 (3 mt dw)	16,160 (7 mt dw)	33,884 (15 mt dw)	28,932 (13 mt dw)	0 (0 mt dw)
Total Pelagic carcass weight	234,650 (106 mt dw)	200,157 (91 mt dw)	311,878 (141 mt dw)	310,714 (141 mt dw)	313,446 (142 mt dw)	257,828 (117 mt dw)

Sources: 2008-2012 Cortés pers. comm.; 2013 eDealer reports

Table 4.54 Commercial Landings of Shark Fins (lb dw, 2008-2013)

Fins	2008	2009	2010	2011	2012	2013
Atlantic Large Costal Shark and Small Coastal Shark Fins						
Blacktip	0	0	0	0	0	2,047
Bull	0	0	0	0	0	23
Hammerhead, great	0	0	0	0	0	82
Hammerhead, scalloped	0	0	0	0	0	7
Lemon	0	0	0	0	0	1,457
Spinner	0	0	0	0	0	3
Tiger	0	0	0	0	0	134
Unclassified LCS	26,707	33,173	20,545	21,535	15,370	0
Blacknose	0	0	0	0	0	3
Bonnethead	0	0	0	0	0	315
Finetooth	0	0	0	0	0	91
Sharpnose, Atlantic	0	0	0	0	0	202
Unclassified SCS	0	0	0	0	0	0
Total Atlantic Fin weight	26,707 (12 mt dw)	33,173 (15 mt dw)	20,545 (9 mt dw)	21,535 (10 mt dw)	15,370 (7 mt dw)	4,364 (2 mt dw)
Gulf of Mexico Large Costal Shark and Small Coastal Shark Fins						
Blacktip	0	0	0	0	0	20,939
Bull	0	0	0	0	0	12,019
Hammerhead, great	0	0	0	0	0	220
Hammerhead, scalloped	0	0	0	0	0	3
Lemon	0	0	0	0	0	61
Silky	0	0	0	0	0	58
Spinner	0	0	0	0	0	2,463
Tiger	0	0	0	0	0	76
Unclassified LCS	23,938	35,152	45,425	40,768	40,693	0
Bonnethead	0	0	0	0	0	14
Finetooth	0	0	0	0	0	2,866
Sharpnose, Atlantic	0	0	0	0	0	277
Unclassified SCS	0	0	0	0	0	0
Total Gulf of Mexico Fin weight	23,938 (11 mt dw)	35,152 (16 mt dw)	45,425 (21 mt dw)	40,768 (18 mt dw)	40,693 (18 mt dw)	38,996 (18 mt dw)
Pelagic Shark Fins						
Mako, shortfin	0	0	0	0	0	1,095
Porbeagle	0	0	0	0	0	210*
Thresher	0	0	0	0	0	1,638
Unclassified Pelagic	0	0	0	0	0	0
Total Pelagic Fin weight	0 (0 mt dw)	3,151 (1 mt dw)				
Unclassified Shark Fins						
Unclassified	0 (0 mt dw)	22,712 (10 mt dw)				
Total Fin weight	50,645 (23 mt dw)	68,325 (31 mt dw)	65,970 (30 mt dw)	62,303 (28 mt dw)	56,063 (25 mt dw)	69,223 (31 mt dw)

* NMFS is examining the amount of porbeagle shark fins based on the small amount of carcass weight. Sources: 2008-2012 Cortés pers. comm.; 2013 eDealer reports

Table 4.55 Commercial Landings of Prohibited Shark Species (lb dw, 2008-2013)

Prohibited Sharks	2008	2009	2010	2011	2012	2013
Previously Large Coastal Shark and Small Coastal Sharks Landed in Atlantic						
Basking ²	0	0	0	0	0	0
Bignose ¹	0	0	0	0	0	0
Bigeye sand tiger ²	0	0	0	0	0	0
Caribbean reef ¹	0	0	0	0	0	0
Dusky ¹	0	0	0	14	172	0
Galapagos ¹	0	0	0	0	0	0
Narrowtooth ¹	0	0	0	0	0	0
Night ¹	0	0	0	0	0	0
Sand tiger ²	0	0	18	20	66	0
Whale ²	0	0	0	0	0	0
White ²	117	0	0	0	0	0
Atlantic angel ¹	91	0	96	11	171	0
Sharpnose, Caribbean ¹	0	0	0	0	0	38
Total Atlantic carcass weight	208 (1 mt dw)	0 (0 mt dw)	114 (1 mt dw)	45 (1 mt dw)	409 (1 mt dw)	38 (1 mt dw)
Previously Large Coastal Shark and Small Coastal Sharks Landed in Gulf of Mexico						
Basking ²	0	0	0	0	0	0
Bignose ¹	0	0	0	0	109	0
Bigeye sand tiger ²	0	0	0	0	0	0
Caribbean reef ¹	0	0	0	0	0	0
Dusky ¹	0	0	0	0	0	0
Galapagos ¹	0	0	0	0	0	0
Narrowtooth ¹	0	0	0	0	0	0
Night ¹	0	0	0	208	0	0
Sand tiger ²	0	0	0	0	0	0
Whale ²	0	0	0	0	0	0
White ²	0	0	0	27	0	0
Atlantic angel ¹	0	0	0	0	0	0
Sharpnose, Caribbean ¹	0	0	0	0	0	0
Total Gulf of Mexico carcass weight	0 (0 mt dw)	0 (0 mt dw)	0 (0 mt dw)	235 (1 mt dw)	109 (1 mt dw)	0 (0 mt dw)
Previously Pelagic Sharks						
Bigeye thresher ¹	0	0	28	135	276	0
Bigeye sixgill ¹	0	0	0	0	0	0
Mako, longfin ¹	1,896	25,264	289	3,465	362	112
Sevengill ¹	0	0	0	0	0	0
Sixgill ¹	0	0	0	0	0	0
Total Pelagic carcass weight	1,896 (1 mt dw)	25,264 (11 mt dw)	317 (1 mt dw)	3,600 (2 mt dw)	638 (1 mt dw)	112 (1 mt dw)
Total Prohibited carcass weight	2,104 (1 mt dw)	25,264 (11 mt dw)	431 (1 mt dw)	3,880 (2 mt dw)	1,156 (1 mt dw)	150 (1 mt dw)

¹ Prohibited in the commercial fishery as of June 21, 2000. ² Prohibited as of April 1997. Sources: 2008-2012 Cortés pers. comm.; 2013 eDealer reports

Chapter 4 References

- Arocha, F. 1997. The reproductive dynamics of swordfish *Xiphias gladius* L. and management implications in the northwestern Atlantic. University of Miami, Ph.D. Dissertation. Coral Gables, FL. 383 pp.
- Cramer, J. and H. Adams. 2000. Large pelagic logbook newsletter: 1998. NOAA Technical Memorandum. NMFS-SEFSC-433. 25 pp.
- Garrison, L.P and L. Stokes. 2014. Estimated bycatch of marine mammals and sea turtles in the U.S. Atlantic pelagic longline fleet during 2013. NOAA Technical Memorandum NMFS-SEFSC-667: 61 p.
- Garrison, L.P and Stokes, L. 2013. Estimated bycatch of marine mammals and sea turtles in the U.S. Atlantic pelagic longline fleet during 2012. NOAA Technical Memorandum NOAA NMFS-SEFSC-655: 62 p.
- Garrison, L.P. and L. Stokes. 2012. Estimated bycatch of marine mammals and sea turtles in the U.S. Atlantic pelagic longline fleet during 2011. NOAA Technical Memorandum NMFS-SEFSC-632, 61 p.
- Gulak, S.J.B., M.P. Enzenauer, and J.K. Carlson. 2014. Characterization of the shark bottom longline fishery, 2013. NOAA Technical Memorandum NMFS-SEFSC-658, 22 p.
- Gulak, S.J.B, M.S. Passerotti, and J.K. Carlson. 2012. Catch and bycatch in U.S. southeast gillnet fisheries, 2011. NOAA Technical Memorandum NMFS-SEFSC-629, 28 p.
- Hale, L.F., S.J.B. Gulak, and J.K. Carlson. 2010. Characterization of the shark bottom longline fishery, 2009. NOAA Technical Memorandum NMFS-SEFSC-596, 25 p.
- Hale, L.F., S.J.B. Gulak, A.M. Napier, and J.K. Carlson. 2011. Characterization of the shark bottom longline fishery, 2010. NOAA Technical Memorandum NMFS-SEFSC-611, 32 p.
- Hale, L.F., S.J.B. Gulak, A.N. Mathers, and J.K. Carlson. 2012. Characterization of the shark and reef fish bottom longline fishery: 2011. NOAA Technical Memorandum NMFS-SEFSC-634, 24 p.
- Lewison, R.L. and L.B. Crowder. 2007. Putting longline bycatch of sea turtles into perspective. *Conservation Biology* Volume 21, No. 1, 79-86. 2007 Society for Conservation Biology.
- Li, Y. and Y. Jiao. 2014. Term 2 Progress Report on the Project: Spatial and Temporal Analysis and Prediction of Seabird Bycatch of US Atlantic Pelagic Longline Fleet. Report submitted by Virginia Polytechnic Institute and State University, Blacksburg, Virginia, to the Southeast Fisheries Science Center, NOAA National Marine Fisheries Service, Miami, Florida.
- Mathers, A.N., M.S. Passerotti, and J.K. Carlson. 2013. Catch and bycatch in U.S. Southeast gillnet fisheries, 2012. NOAA Technical Memorandum NMFS-SEFSC-648

- MD DNR. 2014. Survey of Atlantic bluefin tuna (ABT), billfish (while marlin, roundscale spearfish, blue marlin, swordfish, and sailfish), and shark recreational landings in Maryland. Final Report to the National Marine Fisheries Service, Contract DG133F07CN0229
- NMFS. 2014. Annual report of the United States to ICCAT. USDOC, NMFS. ANN-048/2014.
- NMFS. 2013. Annual report of the United States to ICCAT. USDOC, NMFS. ANN/045/2013.
- NMFS. 2012. Annual report of the United States to ICCAT. USDOC, NMFS. ANN/045/2012.
- NMFS. 2011. Stock assessment and fishery evaluation (SAFE) report for Atlantic highly migratory species. Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD 20910. 294 pp.
- NMFS. 2008. U.S national report to ICCAT, 2008. NMFS Office of Sustainable Fisheries, Silver Spring, MD. ANN/045/2008.
- NMFS. 2008. Stock assessment and fishery evaluation (SAFE) report for Atlantic highly migratory species. Highly Migratory Species Management Division, 1315 East West Highway, Silver Spring, MD 20910. 446 pp.
- NMFS. 2004. Biological opinion on the pelagic longline fishery in the U.S. Atlantic and Gulf of Mexico.
- Passerotti, M.S., J.K. Carlson, and S.J.B. Gulak. 2011. Catch and bycatch in U.S. southeast gillnet fisheries, 2010. NOAA Technical Memorandum NMFS-SEFSC-612. 16 p.
- Richards, W.J. 1999. Problems with unofficial and inaccurate geographical names in the fisheries literature. *Marine Fisheries Review* 61(3): 56-57.
- SCRS. 2014. Report of the Standing Committee on Research and Statistics. ICCAT SCRS. Madrid, Spain, September 29 - October 3, 2014. 344 pp.
- SCRS. 2012. Report of the standing committee on research and statistics. ICCAT SCRS. Madrid, Spain, October 1-5, 2012. 296 pp.