

## 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 5 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 fisheries. 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
Tuna green-stick	Green stick
Atlantic billfish recreational	Rod and reel only
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 2015 ICCAT Standing Report of the SCRS (SCRS, 2015). 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 2014)**

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	20,686	North Atlantic	10,801	1,812	16.7	8.75
		South Atlantic	9,885	0	0.0	
Atlantic bluefin tuna	14,870	West Atlantic	1,626	667	41.0	4.48
		East Atlantic/Med.	13,243	0	0.0	
Atlantic bigeye tuna	72,585	Atlantic/Med.	72,585	866	1.2	1.2
Atlantic yellowfin tuna	103,443	West Atlantic	14,287	2,666	18.6	2.57
		East Atlantic/Med.	89,156	0	0.0	
Atlantic albacore tuna	42,593	North Atlantic	26,539	459	2.8	1.72
		South Atlantic/Med.	16,054	0	0.0	
Atlantic skipjack tuna	232,551	West Atlantic	26,317	77	0.29	0.03
		East Atlantic/Med.	206,234	0	0.0	
Atlantic blue marlin	1,981	North Atlantic	1,080	9	0.83	0.45
		South Atlantic	901	0	0.0	
Atlantic white marlin	361	North Atlantic	228	2	0.87	0.55
		South Atlantic	132	0	0.0	
Atlantic sailfish	1,452	West Atlantic	666	2	0.30	0.13
		East Atlantic	786	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	64	North Atlantic	26	7	27.0	11.0
		South Atlantic/Med.	38	0	0.0	
Shortfin mako sharks	6,058	North Atlantic	2,899	396	13.6	6.53
		South Atlantic/Med.	3,160	0	0.0	

Source: SCRS, 2015.

## 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.

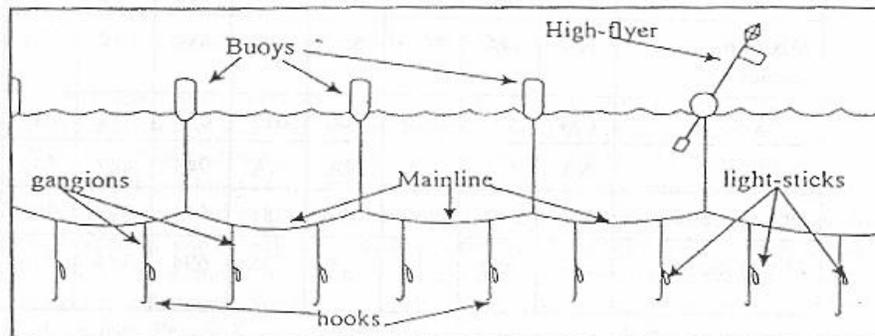


Figure 4.1 Typical U.S. Pelagic Longline Gear

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).

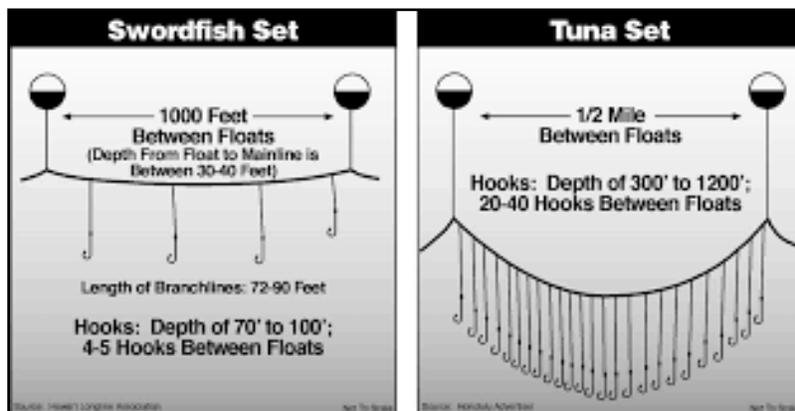
When targeting swordfish, PLL gear is generally deployed at sunset and hauled at sunrise to take advantage of swordfish nocturnal near-surface feeding habits (NMFS, 1999). In general, longlines targeting tunas are set in the morning, fished deeper in the water column, and hauled back in the evening. 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 (2005-2014)

Target Species	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Swordfish	747	742	672	708	687	759	728	683	735	780
Bigeye tuna	634	754	773	751	755	653	802	865	620	811
Yellowfin tuna	691	704	672	678	689	687	645	628	638	608
Mix of tuna species	692	676	640	747	744	837	786	728	694	670
Shark	542	509	494	377	354	455	348	525	NA	293
Dolphin	734	988	789	989	1,033	1,131	1,082	1,129	933	1,093
Other species	889	236	NA	NA	NA	467	400	300	NA	NA
Mix of species	786	777	757	749	781	761	749	758	717	722

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 tunas 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 2015, approximately 280 tunas longline LAPs had been issued. In addition, approximately 188 directed swordfish LAPs, 72 incidental swordfish LAPs, 224 directed shark LAPs, and 275 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 (other than handgear) that allow for the use of PLL gear in HMS fisheries.

*Amendment 7 to the Consolidated Atlantic HMS FMP - Overview of Requirements for Pelagic Longline Vessels:*

Amendment 7 to the 2006 Consolidated HMS FMP was developed to reduce and account for bluefin tuna 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. Four components of Amendment 7 affect the U.S. PLL fishery: (1) Two new or

modified 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 conservation and management measures in Amendment 7 became effective January 1, 2015, with two exceptions: electronic monitoring requirements in the PLL fishery became effective on June 1, 2015, and trip level accountability requirements in the IBQ Program will become effective on January 1, 2016.

An important aspect of Amendment 7 is the IBQ Program, which requires vessels fishing with pelagic longline gear to account for all bluefin tuna either retained or discarded dead using quota available to the individual vessel, either through quota shares or leased quota through the IBQ system. This program is intended to reduce bluefin tuna dead discards by capping the amount of catch (landings and dead discards) by individual vessels; provide strong incentives to reduce interactions with bluefin and to increase 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).

Eligible Atlantic Tunas Longline permit holders have been issued an IBQ share, which is a percentage of the overall Longline quota (“quota share”), and are eligible to receive annual associated quota allocations. Shareholders as well as other permit holders that did not receive a quota share may lease additional quota from other participants to account for landings of bluefin and dead discards and to resolve quota debt that accumulates when incidental catch occurs without quota available to the vessel.

Amendment 7 also implemented mandatory electronic monitoring of PLL gear at haulback. To effect this requirement, NMFS paid for the installation and equipment costs for electronic monitoring systems on the vessels that received quota shares and for other vessels to the extent funding was available. 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 is in the HMS Commercial Fishing Compliance Guide (<http://www.nmfs.noaa.gov/sfa/hms/compliance/guides>), and in the Amendment 7 Compliance Guide and IBQ Program FAQ documents (<http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am7/index.html>).

### *PLL Observer Program*

During 2014, NMFS observers recorded 1,230 PLL sets for overall non-experimental fishery coverage of 12.3 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 2014, total observer coverage, including experimental sets, was 12.5 percent (Table 4.3).

**Table 4.3 Observer Coverage of the Atlantic Pelagic Longline Fishery (1999-2014)**

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 <sup>1</sup>	584	398	186	5.4	3.7	100
2002 <sup>1</sup>	856	353	503	8.9	3.9	100
2003 <sup>1</sup>	1,088	552	536	11.5	6.2	100
	Total	Non-EXP	EXP	Total	Non-EXP	EXP
2004 <sup>2</sup>	702	642	60	7.3	6.7	100
2005 <sup>2</sup>	796	549	247	10.1	7.2	100
2006	568	-	-	7.5	-	-
2007	944	-	-	10.8	-	-
2008 <sup>3</sup>	1,190	-	101	13.6	-	100
2009 <sup>3</sup>	1,588	1,376	212	17.3	15	100
2010 <sup>3</sup>	884	725	159	11	9.7	100
2011 <sup>3</sup>	879	864	15	10.9	10.1	100
2012 <sup>4</sup>	1,060	945	115	9.5	8.6	100
2013	1,528	1,474	54	14.4	14.1	100
2014	1,247	1,230	17	12.5	12.3	100

NED – Northeast Distant Area; EXP – experimental. <sup>1</sup>100 percent observer coverage was required in the NED research experiment. <sup>2</sup>100 percent observer coverage in EXP. <sup>3</sup>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. <sup>4</sup>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. 2015.

#### 4.1.2 Recent Catch, Landings, Bycatch, and the Individual Bluefin Quota Program

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** Reported Numbers of Catch in the U.S. Atlantic Pelagic Longline Fishery (2006-2014)

Species	2006	2007	2008	2009	2010	2011	2012	2013	2014
Swordfish kept	38,241	45,933	42,800	45,378	33,831	38,721	51,544	44,556	32,908
Swordfish discarded	8,900	11,823	11,194	7,484	6,107	8,736	7,996	4,756	4,655
Blue marlin discarded	439	611	687	1,013	504	544	896	844	718
White marlin discarded	557	744	670	1,064	605	943	1,432	1,239	1,580
Sailfish discarded	277	321	506	774	312	581	795	456	445
Spearfish discarded	142	147	197	335	212	281	270	342	306
Bluefin tuna kept	261	337	343	629	392	347	392	273	379
Bluefin tuna discarded	833	1,345	1,417	1,290	1,488	765	563	266	390
Bigeye, albacore, yellowfin, and skipjack tunas kept	73,058	70,390	50,108	57,461	51,786	69,504	84,707	67,083	73,339
Pelagic sharks kept	2,098	3,504	3,500	3,060	3,872	3,732	2,794	3,384	3,804
Pelagic sharks discarded	24,113	27,478	28,786	33,721	45,511	43,806	23,038	28,151	38,496
Large coastal sharks kept	1,768	546	115	403	434	131	86	49	47
Large coastal sharks discarded	5,326	7,133	6,732	6,672	6,726	6,351	7,716	7,997	5,905
Dolphin kept	25,658	68,124	43,511	62,701	30,454	30,054	42,445	34,250	63,217
Wahoo kept	3,608	3,073	2,571	2,648	749	1,922	3,121	2,721	3,325
Sea turtle interactions	128	300	476	137	94	66	61	92	93
Number of Hooks(×1k)	5,662	6,291	6,498	6,979	5,729	6,035	7,679	7,306	7,125

Source: Fisheries Logbook System.

**Table 4.5** Reported Landings (mt ww) in the U.S. Atlantic Pelagic Longline Fishery (2006-2014)

Species	2006	2007	2008	2009	2010	2011	2012	2013	2014
Yellowfin tuna	2,009.9	2,394.5	1,324.5	1,700.1	1,188.8	1,458.3	2,269.6	1,544.4	1,456.2
Skipjack tuna	0.2	0.02	1.45	0.5	1.4	0.6	0.4	0.5	0.31
Bigeye tuna	520.6	380.7	407.7	430.1	443.2	600.2	581.4	508.9	586.7
Bluefin tuna*	204.6	164.3	232.6	335.0	238.7	241.4	295.4	190.4	221.9
Albacore tuna	102.9	126.8	126.5	158.3	159.9	240.0	261.2	255.3	309.6
Swordfish N.*	1,960.8	2,474.0	2,353.6	2,691.3	2,206.5	2,570.9	3,346.6	2,812.1	1,832.3
Swordfish S.*	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.06	0.0

\* Includes landings and estimated discards from scientific observer and logbook sampling programs. Source: NMFS, 2015.

#### *Individual Bluefin Quota (IBQ) Program and Bluefin Tuna Bycatch*

The IBQ Program implemented by Amendment 7 enhanced accountability for bluefin tuna at the individual vessel level and is supported by several reporting and monitoring requirements. The broad elements of Amendment 7 and the IBQ program were described above in the section

called “Bluefin Tuna - Amendment 7 to the 2006 Consolidated HMS FMP.” The following section provides 2015 data information on the program (for the first 3 quarters of 2015) as well as a summary narrative of the program operation.

On January 1, 2015, NMFS distributed 137.3 mt of Longline category bluefin tuna quota to IBQ shareholders associated with a vessel. For shareholders that were not associated with a vessel, IBQ was not distributed to the permit holder unless/until the permit was associated with a vessel. The total amounts of quota distributed to the shareholder accounts were based on the eligible permit’s share percentage as determined by the Amendment 7 criteria (either high (1.2%), medium (0.6%), or low (0.37%) tier permits).

NMFS made several inseason adjustments to the Longline category quota during 2015. On July 28, 2015, using the “inseason adjustments” regulatory authority under 50 CFR § 635.27(a)(9), NMFS transferred 34 mt of bluefin tuna quota from the Reserve category to the Longline category and divided the amount equally among the IBQ shareholders. The purpose of that quota transfer and distribution was to enhance the ability of vessel owners to account for bluefin tuna catch, reduce quota debt, facilitate quota leasing, and reduce uncertainty in the fishery. On September 28, 2015, a final rule which increased the baseline U.S. annual bluefin tuna quota, including the Longline category quota, became effective (80 FR 52198; August 28, 2015), and, NMFS distributed an additional 11 mt of quota among the vessel accounts of IBQ shareholders based on the eligible permit’s share percentage). The amounts of IBQ distributed to IBQ vessel accounts, as well as the total amounts of quota allocated to the Longline category, are summarized in Table 4.6.

**Table 4.6 IBQ Allocations (mt) to the Pelagic Longline Category by Share Tier (lb, 2015)**

Quota Distribution	IBQ (mt)	Date (2015)	IBQ (lb) to each Eligible Shareholder*		
			High Tier (~1.2%)	Medium Tier (~0.6%)	Low Tier (~0.37%)
Annual Allocation	137.3	January 1	3,616	1,808	1,124
Transfer from Reserve Category	34.0	July 28	551	551	551
ICCAT Baseline Quota Increase	11.0	August 28	292	146	90
<b>Total</b>	<b>182.3</b>		<b>4,459</b>	<b>2,505</b>	<b>1,765</b>

\* Only allocated to eligible shareholders, for which the valid permit was associated with a vessel.

Table 4.7 summarizes various IBQ Program metrics regarding allocation, catch, fishing effort, leasing of IBQ, and reporting and monitoring.

Table 4.7 IBQ Program Metrics (January - September 2015)

Overall Individual Bluefin Quota (IBQ) Allocation and Catch (not including NED) <sup>1</sup>			
IBQ Allocation Total <sup>2</sup> (mt)		182.3	
Bluefin Tuna landings (mt and # of fish)	Atlantic	27.1 mt	152 fish
	Gulf of Mexico	3.7 mt	15 fish
	Total	30.8 mt	167 fish
Bluefin Tuna dead discards (real – time data) (mt)	Atlantic	1.2	
	Gulf of Mexico	0.2	
	Total	1.4	
Remaining IBQ (mt)		150.1	
Fishing Effort, Bluefin Tuna Catch Details, and IBQ Leasing Between Shareholders <sup>1</sup>			
Permits eligible for IBQ shares (#)		136	
Vessels that landed target species <sup>3</sup> (#)		89	
Vessels that landed bluefin tuna (#)		54	
Trips with longline gear <sup>3</sup> (#)		562	
IBQ leases (#)		29	
Participants leasing (#)	Longline	27	
	Purse Seine	4	
Amount leased (mt)		47	
Average amount leased (lb)		1,395	
Average price (\$ per lb) leased	Longline	3.67	
	Purse Seine	3.25	
Real Time Electronic Reporting <sup>4</sup>			
Trips based on VMS data (#)		788	
Vessel Monitoring System (VMS) Reports (one per longline set) (#)		4,036	
Hooks fished (#)		3,184,817	
Reports indicating interactions with bluefin tuna (%)		5	
Bluefin tuna discarded dead (#)		25	
Bluefin tuna released alive (#)		157	
Electronic Monitoring (EM; Video Cameras and Associated Equipment)			
Vessels with installed EM systems <sup>5</sup> (#)		111	
Hard drives received (#, June to September) <sup>6</sup>		437	
Vessels submitting hard drives <sup>6</sup> (#)		80	

Sources: <sup>1</sup>IBQ System (<https://portal.southeast.fisheries.noaa.gov/cs/main.html#>); <sup>2</sup>80 FR 52198, August 28, 2015; <sup>3</sup>Edealer; <sup>4</sup>VMS data; <sup>5</sup>Saltwater, Inc. (NMFS contractor for installation and maintenance of electronic monitoring systems); <sup>6</sup>ERT Corp. (NMFS contractor for review and storage of electronic monitoring data)

#### *Compliance with the Amendment 7 Regulations*

The data indicate that, in general, compliance with the Amendment 7 regulations was strong. For example, one of the new reporting requirements is for dealers and vessel operators to input data on bluefin landings and dead discards in the online IBQ system at the point of sale. The amount of landings of bluefin tuna, as indicated by data entered into the IBQ online system, was very similar to the amount derived from the mandatory bluefin tuna dealer faxes to NMFS (a reporting system already in place, and continuing).

Compliance with the VMS catch reporting requirements increased over time during 2015, as shown in Figure 4.3.

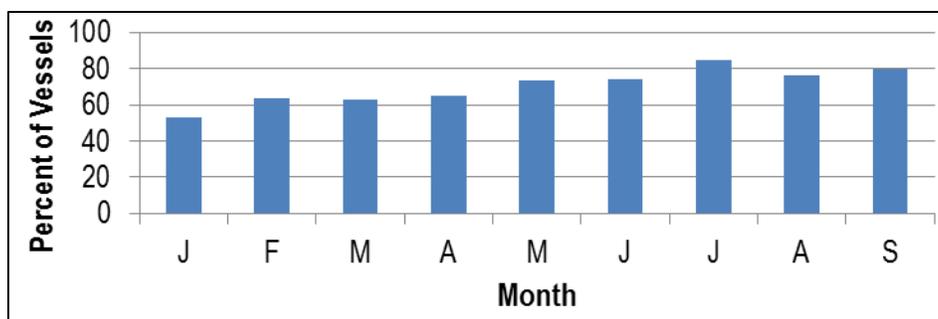


Figure 4.3 Percentage of Longline Vessels that Submitted Both Logbook Trip Summaries and VMS Bluefin Reports (Jan - Sep 2015)

*Other Pelagic Longline Bycatch*

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 2014 can be found in Table 4.8.

Table 4.8 ICCAT-Designated Prohibited Shark Interactions and Dispositions (2014)

Species	Kept	Released Dead	Released Alive	Released Unknown	Lost at Surface
Bigeye thresher	0	26	44	1	0
Silky	0	233	153	0	4
Great hammerhead	0	49	26	0	0
Oceanic whitetip	0	10	38	1	0
Smooth hammerhead	0	0	0	0	0
Scalloped hammerhead	0	53	47	0	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 4.4) and has banned the use of live bait and required the use of weak hooks by PLL vessels in the Gulf of Mexico.

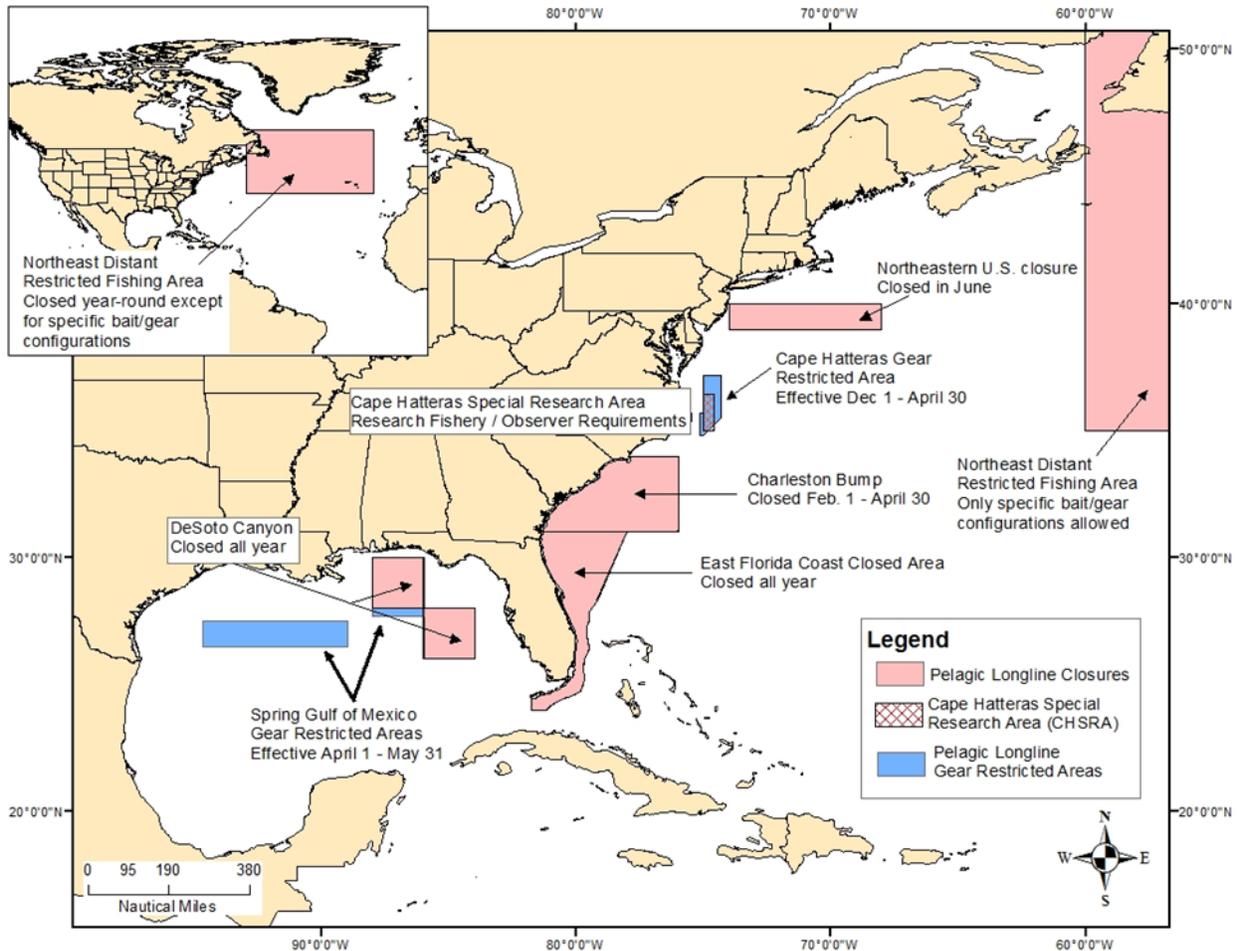


Figure 4.4 Areas Closed to Pelagic Longline Fishing by U.S. Flagged Vessels

Areas where the use of pelagic longline gear is restricted include “Pelagic Longline Closures” and “Gear Restricted Areas.” The locations of the Pelagic Longline Gear Restricted Areas (GRAs) implemented by Amendment 7 are provided in Figure 4.4 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. 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. Specifically, the criteria for access are: (1) ratio of bluefin interactions to designated species landings; (2) compliance with the Pelagic Observer Program requirements; and (3) compliance with HMS logbook reporting requirements.

In 2015, the first year of implementation, a total of 34 vessels were not qualified for access to the area. In 2016, a total of 16 vessels are not qualified for access to the area (a 47% reduction in vessels not qualified). In 2016, 10 vessels are not qualified due to either an inability to avoid bluefin tuna interactions (n=4) or lack of compliance with observer requirements (n=6), and six vessels are not qualified because there are insufficient data to assess performance due to permit transfers (there should be sufficient data after one year of fishing). Overall, there have been incremental improvements in bluefin tuna avoidance (10% reduction in the poorest performance), observer compliance (50% reduction in non-compliance), and logbook reporting compliance (10% reduction in late reporting). The initial assessment of performance metrics (i.e., effective date of the final rule through the end of 2015) was based on data from 2006 through 2012. Subsequent assessments (i.e., the 2016 fishing year) will be based on the most recent complete three-consecutive-year-period. Permit holders will be notified annually of the status of access for the relevant vessel. In order to access the Cape Hatteras GRA, permit holders must have the letter on board their vessel stating that the vessel is qualified to access the GRA.

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.

#### *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 2005 - 2014 are summarized in Table 4.9. 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 2014, the majority of observed interactions were with pilot whales (Garrison, unpublished data). NMFS monitors observed interactions with sea turtles and marine mammals on a quarterly basis and reviewed data for appropriate action, if any, as necessary.

Table 4.9 Marine Mammal Interactions in the Atlantic Pelagic Longline Fishery (2005–2014)

Year	Species	Total		Mortality		Serious Injury		Alive	
		Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.
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
	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

Year	Species	Total		Mortality		Serious Injury		Alive	
		Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.
	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	-	-
2014	Beaked Whale	1	10	-	-	0	0	1	10
	Minke whale	1	6	-	-	0	0	1	6
	Long-finned Pilot Whale	2	11	-	-	1	1	1	10
	Pantropical spotted Dolphin	1	10	-	-	0	0	1	10
	Risso's dolphin	1	8	-	-	1	8	0	0
	Rough-toothed dolphin	2	4	-	-	2	4	0	0
	Short-finned pilot whale	22	275	-	-	19	234	3	41
	Unidentified dolphin	1	14	-	-	1	14	0	0

Obs. – observed; Est. – estimated. \* Pantropical spotted dolphin was observed dead in an experimental set.  
Sources: 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. Garrison 2015, unpublished data.

## 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 2005- 2014 are summarized in Table 4.11 and Table 4.12. 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 2005, the fleet was estimated to have interacted with 275 loggerhead and 351 leatherback sea turtles outside of experimental fishing operations (Garrison, 2006). These numbers have been reduced and in 2014, the U.S Atlantic PLL fishery was estimated to have interacted with 259 loggerhead sea turtles and 268 leatherback sea turtles outside of experimental fishing operations (Garrison, unpublished data) (Table 4.12). In 2014, the majority of loggerhead sea turtle interactions occurred in the FEC, MAB, and SAR areas (Table 4.10). Interactions with leatherback sea turtles were highest in the GOM, SAB, and FEC areas (Table 4.11). **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.

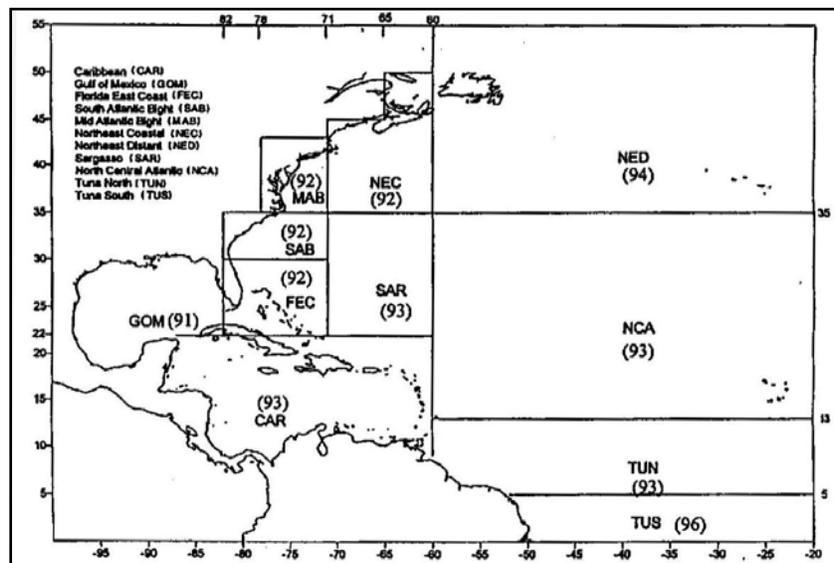


Figure 4.5 Geographic Areas Used in Summaries of Pelagic Logbook Data

Source: Cramer and Adams, 2000.

**Table 4.10 Estimated Number of Loggerhead Sea Turtle Interactions in the U.S. Atlantic Pelagic Longline Fishery, by Statistical Area (2005-2014)**

Area	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CAR	40	16	7	17	9	12	4	0	4	3
GOM	19	17	10	10	38	2	0	56	20	23
FEC	0	40	83	47	41	26	92	157	50	83
SAB	34	18	34	70	47	39	9	37	14	19
MAB	54	70	155	20	37	55	81	71	91	56
NEC	67	135	48	237	43	101	103	199	139	10
NED	20	235	200	352	22	97	105	161	49	27
SAR	38	19	4	16	7	13	44	0	11	28
NCA	3	10	2	1	0	0	0	0	0	0
TUN	0	0	0	0	9	0	0	0	0	0
TUS	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>275</b>	<b>559</b>	<b>543</b>	<b>770</b>	<b>243</b>	<b>344</b>	<b>438</b>	<b>681</b>	<b>376</b>	<b>259</b>
Experimental fishery (2005; 2008-14)	8	-	-	1	0	0	0	0	1	2
<b>Total</b>	<b>283</b>	<b>559</b>	<b>543</b>	<b>771</b>	<b>243</b>	<b>344</b>	<b>438</b>	<b>681</b>	<b>377</b>	<b>261</b>

Sources: 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. Garrison 2015, unpublished data.

**Table 4.11 Estimated Number of Leatherback Sea Turtle Interactions in the U.S. Atlantic Pelagic Longline Fishery, by Statistical Area (2005-2014)**

Area	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CAR	2	4	1	2	1	10	3	0	3	2
GOM	179	109	212	144	93	26	33	250	144	235
FEC	62	28	7	30	19	20	17	75	41	9
SAB	7	39	0	0	31	13	12	119	11	11
MAB	11	30	114	43	31	0	140	46	52	0
NEC	6	73	76	140	73	40	26	60	93	9
NED	63	116	84	0	37	55	8	41	11	0
SAR	20	14	5	14	3	2	0	3	6	2
NCA	0	1	0	0	0	0	0	0	0	0
TUN	0	0	0	8	1	0	1	2	2	0
TUS	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>351</b>	<b>415</b>	<b>499</b>	<b>381</b>	<b>286</b>	<b>166</b>	<b>239</b>	<b>596</b>	<b>363</b>	<b>268</b>
Experimental fishery (2005; 2008-14)	17	-	-	4	4	2	1	2	3	2
<b>Total</b>	<b>368</b>	<b>415</b>	<b>499</b>	<b>385</b>	<b>290</b>	<b>168</b>	<b>240</b>	<b>598</b>	<b>366</b>	<b>270</b>

Sources: 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. Garrison 2015, unpublished data.

**Table 4.12 Estimated Sea Turtle and Marine Mammal Interactions and Incidental Take Levels (ITS) in the US Atlantic Pelagic Longline Fishery (by Species, 2005-2014)**

Species	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total 3 year ITS (2010-12*)
Leatherback	368	415	499	385	290	168	240	598	366	270	1,764
Loggerhead	283	559	543	771	243	344	438	681	377	261	1,905
Other/unidentified sea turtles	0	11	1	0	0	3	4	15	0	6	105
Marine mammals	372	313	151	265	144	237	452	413	289	338	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 4.13 and Table 4.14). In 2014, there were 109 active U.S. PLL vessels fishing for swordfish in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea that reportedly set approximately 6.7 million hooks. Two seabirds were observed taken, a brown pelican and a Corey’s shearwater. These seabirds were released dead.

**Table 4.13 Status of Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery (1992-2014)**

Species	Release Status		Total	Percent Dead
	Dead	Alive		
Greater shearwater	29	3	32	90.6
Cory's shearwater	2	-	2	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	3	0	3	100.0
Parasitic jaeger	1	0	1	100.0
<b>Total</b>	<b>121</b>	<b>42</b>	<b>163</b>	<b>74.2</b>

Source: NMFS Pelagic Observer Program.

Table 4.14 Observed Seabird Bycatch in the U.S. Atlantic Pelagic Longline Fishery (2004-2014)

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	Brown pelican	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	Unidentified	1	dead
2010	4	MAB	Gull herring	1	dead
2011	3	NED	Northern gannet	1	dead
	3	NED	Unidentified	1	dead
	4	MAB	Herring gull	3	dead
	4	MAB	Unidentified 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
2014	2	GOM	Brown pelican	1	dead
	3	MAB	Corey's shearwater	1	dead

\* Experimental fishery takes. 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 4.6 provides extrapolated estimates of incidental seabird catch in U.S. Atlantic longline fisheries, which includes the Gulf of Mexico and Western North Atlantic fisheries.

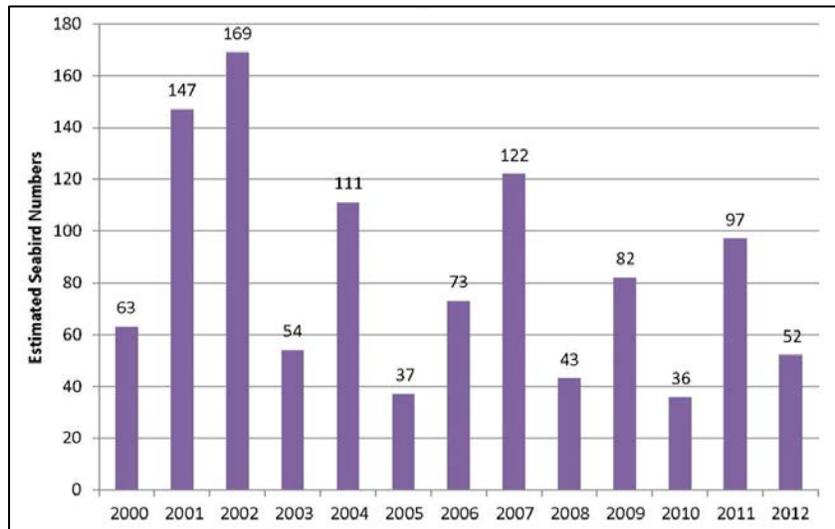


Figure 4.6 Incidental Seabird Catch in Atlantic Longline Fisheries

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

#### 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 (2005 – 2014), U.S. longline landings have averaged 5.3 percent of total Atlantic longline landings, ranging from a high of 7.0 percent in 2012 to a low of 4.3 percent in 2010. Table 4.15 contains aggregate longline landings of HMS, other than sharks, for all countries in the Atlantic for the period 2005 – 2014.

**Table 4.15 Estimated International Longline Landings (mt ww) of HMS (Excluding Sharks) for All Countries in the Atlantic (2005-2014)**

Species (Region)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Swordfish (N. Atl + S. Atl)	24,765	24,778	26,806	22,343	23,703	23,179	22,909	23,687	19,399	20,090
Yellowfin tuna (W. Atl.) <sup>2</sup>	14,449	14,249	13,557	13,192	12,782	13,038	10,677	12,558	12,405	7,765
Bigeye tuna	38,035	34,182	46,232	41,063	43,985	42,925	38,204	35,005	32,062	37,246
Bluefin tuna (W. Atl.) <sup>2</sup>	425	565	420	606	366	529	743	478	474	497
Albacore tuna (N. Atl + S. Atl)	19,888	22,963	18,324	15,865	14,732	17,390	20,111	21,605	20,377	11,867
Skipjack tuna (W. Atl.) <sup>2</sup>	207	286	52	49	20	30	41	107	1,112	52
Blue marlin (N. Atl. + S. Atl.) <sup>3</sup>	2,065	1,825	2,503	2,584	2,336	2,053	1,611	1,503	931	1,385
White marlin (N. Atl. + S. Atl.) <sup>3</sup>	594	372	535	531	558	361	334	348	236	335
Sailfish (W. Atl.) <sup>4</sup>	1,065	651	838	1,038	975	662	704	731	523	551
Total International longline landings <sup>6</sup>	101,493	99,871	109,267	97,271	99,457	100,167	95,334	96,022	87,519	79,788
Total U.S. longline landings <sup>5</sup>	4,652	4,799	5,540	4,446	5,315	4,268	5,192	6,767	5,391	4,479
U.S. landings as a percent of total International landings	4.6%	4.8%	5.1%	4.6%	5.3%	4.3%	5.4%	7.0%	6.2%	5.6%

<sup>1</sup> Landings include those classified by the SCRS as longline landings. <sup>2</sup> 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. <sup>3</sup> Includes U.S. dead discards and Brazilian live discards. <sup>4</sup> Includes U.S. dead discards. <sup>5</sup> From U.S. National Reports to ICCAT, 2005-2014. Includes swordfish, blue marlin, white marlin, and sailfish longline discards. <sup>6</sup> From SCRS, 2015. Sources: U.S. ICCAT National Reports 2006 – 2015; SCRS, 2015.

### *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 4.16 provides the most recent catch totals for blue, shortfin mako, and porbeagle sharks.

**Table 4.16 Estimated International Longline Landings (mt ww)<sup>1</sup> of Pelagic Sharks for All Countries in the Atlantic (2005 - 2014)**

Species (Region)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Blue shark (N. Atl + S. Atl + Med)	42,942	43,629	50,388	53,446	58,604	64,954	72,557	62,719	56,566	60,762
Shortfin mako (N. Atl + S. Atl + Med)	6,305	6,022	6,714	5,195	5,967	6,487	6,749	7,037	5,247	5,762
Porbeagle (N. Atl + S. Atl + Med)	572	508	525	611	484	137	89	149	184	64
Total International longline catches	49,819	50,159	57,627	59,252	65,055	71,578	79,395	69,905	61,997	66,588
U.S. blue shark catches <sup>1</sup>	68	47	55	138	107	176	271	162	131	105
U.S. shortfin mako catches <sup>1</sup>	469	386	382	354	385	394	392	430	411	406
U.S. porbeagle catches <sup>1</sup>	0	0	0	1	1	4	12	4	29	11
Total U.S. catches <sup>1</sup>	537	433	437	493	493	574	675	596	571	522
U.S. catches <sup>1</sup> as a percent of total International catch	1.1	0.9	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.8

<sup>1</sup>Includes catches and discards. Source: SCRS, 2015.

## 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.

Starting January 1, 2015, purse seine vessel owners are required to use VMS and must submit through a set report within 12 hours of completion of each purse seine set. Specifically, the report must include: date the set was made; area in which the set was made; and the approximate length of all bluefin tuna retained, discarded dead, or released alive (by standardized size ranges), including reporting of zero bluefin on a set. Purse seine vessel owners may be eligible to receive reimbursement funds (up to \$3,100/unit) for procuring the Enhanced Mobile Transmitting Unit (E-MTU) VMS units. The reimbursement does not cover installation or communication costs.

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. According to criteria established in Amendment 7, NMFS annually will make allocations of quota to Purse Seine category participants through a two-step process: (1) NMFS will calculate equal amounts of quota for the participants (20% of the total quota for each participant) and (2) NMFS will make adjustments to the individual participant quotas based on the bluefin catch by such participants in the previous year. Thus, Purse Seine category participants will be allocated 100%, 75%, 50%, or 25% of their individual base allocation. Portions of the baseline Purse Seine quota not allocated to Purse Seine fishery participants will be reallocated to the Reserve category and may be made available for use by other fishing categories.

The quotas are transferable among the five purse seine fishery participants or, as authorized under Amendment 7, limited access pelagic longline permitted vessels through the IBQ program.

Vessels participating in the Atlantic tunas purse seine fishery may only target the larger size class bluefin tuna; more specifically, the giant size class ( $\geq 81$  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). During the 2014 and 2015 fishing years, NMFS issued an Exempted Fishing Permit to one of the Purse seine vessels to investigate and gather data regarding reducing discards of large medium bluefin tuna in this fishery. The EFP granted an exemption to the 15 percent tolerance. Under 50 CFR § 635.32, and consistent with 50 CFR § 600.745, NMFS may authorize activities otherwise prohibited by the regulations for “the investigation of bycatch, economic discards and regulatory discards” and the acquisition of information and data. The EFP was only valid if a NMFS-approved observer was onboard the vessel. Therefore, in order to depart on a trip under this EFP, the owner/operator or another crew member had to notify the Northeast Fisheries Observer Program at least 48 hours before departing the dock. If an observer was not available, the vessel could have fished under current regulations (i.e., without any exemptions). Also, under this EFP, all BFT dead at haulback were required to be brought on board and/or made available to the observer for enumeration and sampling, when feasible.

Consistent with Amendment 7, NMFS will annually make a determination when the Purse Seine category fishery will start (between June 1 and August 15), based on variations in seasonal distribution, abundance or migration patterns of bluefin tuna, cumulative and projected landings in other commercial fishing categories, the potential for gear conflicts on the fishing grounds, or market impacts due to oversupply. Based on these considerations, NMFS determined that the 2015 Purse Seine bluefin tuna fishery would start on July 6, 2015 and continue through December 31, provided the vessel has not fully attained its IVQ.

#### 4.2.2 Recent Catch and Landings

Table 4.17 shows purse seine landings of Atlantic tunas from 2006 through 2014. Purse seine landings historically 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 20 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 4.17 only includes bluefin tuna.

**Table 4.17 Domestic Atlantic Tuna Landings (mt ww) for the Purse Seine Fishery in the Northwest Atlantic Fishing Area (2006-2014)**

Species	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bluefin tuna	3.6	27.9	0.0	11.4	0.0	0.0	1.7	29.0	37.6

Source: NMFS, 2015.

### 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 4.18 shows that since 2006, 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 4.18 Estimated International Atlantic Tuna Landings (mt ww) for the Purse Seine Fishery in the Atlantic and Mediterranean (2006-2014)**

Tuna Species	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bluefin	20,028	22,990	12,647	11,408	5,080	4,312	6,199	8,024	8,235
Yellowfin	61,187	50,285	73,657	81,819	79,739	70,204	72,386	68,989	74,408
Skipjack	79,179	83,804	81,675	104,142	128,881	150,222	170,501	190,555	172,017
Bigeye	18,604	14,995	18,045	27,052	30,761	32,402	36,894	25,642	24,079
Albacore	402	1,244	94	110	74	34	235	93	48
Total	179,400	173,318	186,118	224,531	244,535	253,174	286,215	293,303	278,787
U.S. total	4	28	0	11	0	0	2	29	38
U.S. percentage	<0.01	0.02	0	<0.01	0	0	<0.01	<0.01	0.01

Source: SCRS, 2015.

## 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 4.5.

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 4.7 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, declined in 2013, and increased in 2014. 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.

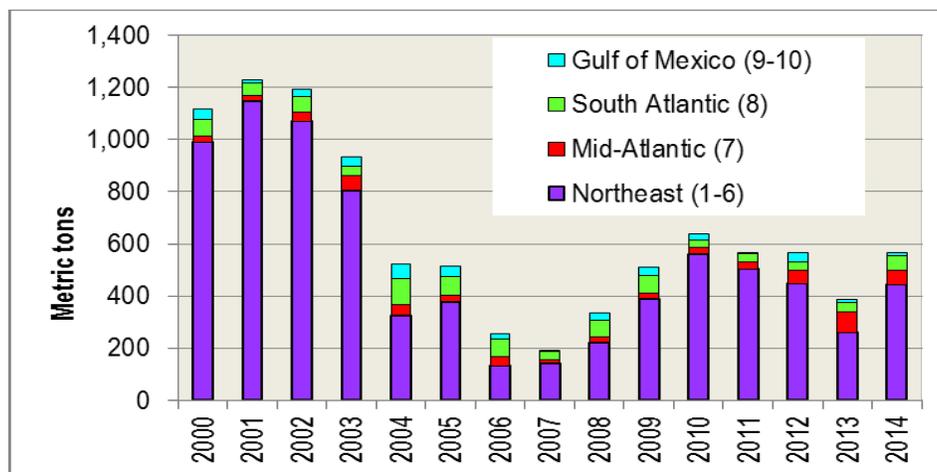


Figure 4.7 U.S. Atlantic and Gulf of Mexico Commercial Bluefin Tuna Landings by Geographic Area (2000 – 2014)

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 Atlantic tunas. 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 bluefin tuna quota for the General category is divided into multiple subquotas associated with specific periods of the year. NMFS has the authority to transfer quota from one subquota period to another, including earlier in the calendar year. 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 line (978-281-9260) 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 a range of between two and 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. The default retention limit is two bluefin tuna, and NMFS has the authority to set the limit in the range of two to four fish. 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.

Atlantic Tunas General, Harpoon, and HMS Charter/Headboat categories are required to report the length of all bluefin tuna retained or dead discards through an online catch reporting system (either through a website designated by NMFS or calling a phone number) within 24 hours of the landings or end of each trip. Specifically, vessels must report the number of bluefin tuna retained, and the number of bluefin tuna discarded dead, according to “Instructions for reporting bluefin tuna,” available at: <https://hmspermits.noaa.gov/library>. The address of the website for reporting is: <https://hmspermits.noaa.gov/catchReports>.

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 4.5.

The Swordfish General Commercial permit 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 also allow for the commercial retention of swordfish on non-for-hire trips, and regional swordfish retention limits exist for these permits, along with gear authorizations and reporting requirements.

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 4.3 and 1.2. Economic and social aspects of all the domestic handgear fisheries are described in Chapter 4.

#### 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 4.19. In 2014, bluefin tuna commercial handgear landings accounted for approximately 61 percent of the total U.S. bluefin tuna landings and 73 percent of commercial bluefin tuna landings. Figure 4.8 shows the U.S. Atlantic bluefin tuna landings in metric tons by category since 1998. Note that the commercial handgear landings are comprised of bluefin tuna landed by both the general and harpoon categories.

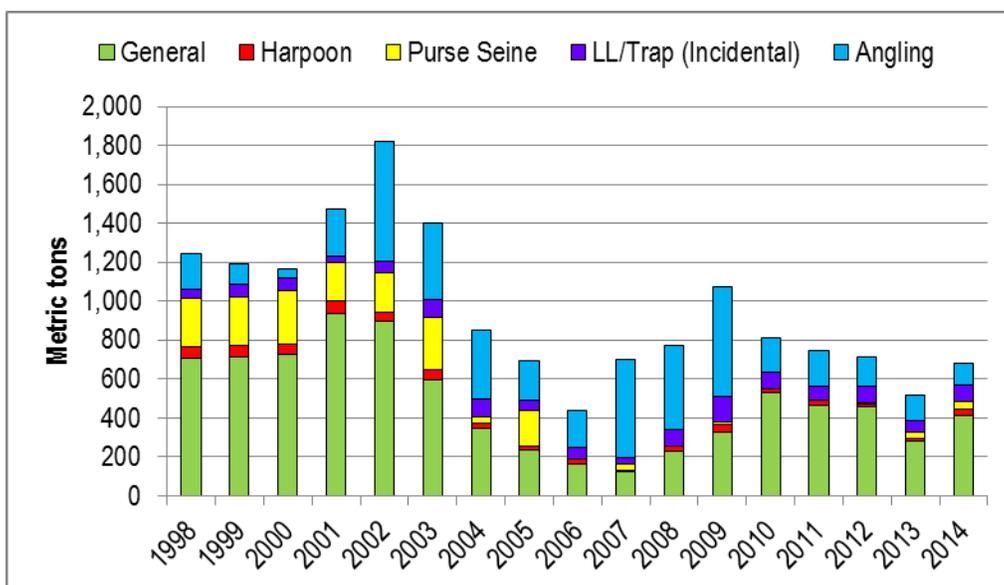


Figure 4.8 Landings of Bluefin Tuna by Category (1998 – 2014)

Source: NMFS Commercial BFT Landings Database.

Also in 2014, four percent of the total yellowfin catch, or seven percent of the commercial yellowfin catch, was attributable to commercial handgear. Commercial handgear landings of skipjack tuna accounted for approximately three percent of total skipjack landings, or about 17 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 two percent of total bigeye landings and three percent of total commercial bigeye landings. Updated landings for the commercial handgear fisheries by gear and by area for 2006 – 2014 are presented in the following tables.

**Table 4.19 U.S. Atlantic Commercial Handgear Landings of Tunas and Swordfish (mt ww) by Gear Type (2006-2014)**

Species	Gear	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bluefin tuna	Rod and Reel	164.1	120.8	226.6	301.7	515.1	418.6	419.5	249.5	378.9
	Handline	0.3	0.0	0.6	0.1	2.7	0.9	1.3	0.5	0.0
	Harpoon	30.3	22.5	30.2	65.6	29.0	70.1	52.3	45.0	67.5
	Total	194.7	143.3	257.4	367.4	546.8	489.6	473.1	295.0	446.4
Bigeye tuna	Troll	0.0	0.9	0.8	0.6	0.0	0.1	0.2	5.0	4.5
	Handline	21.5	16.8	6.6	4.6	1.8	3.4	7.9	16.1	16.4
	Total	21.5	17.7	7.4	5.2	1.8	3.5	8.0	21.1	20.9
Albacore tuna	Troll	0.0	0.2	0.2	0.07	0.04	0.0	0.0	0.2	0.2
	Handline	2.6	5.4	0.2	0.5	1.9	1.7	0.6	0.0	2.37
	Total	2.6	5.6	0.4	0.57	1.94	1.7	0.6	0.2	2.57
Yellowfin tuna	Troll	0.0	6.9	2.4	5.4	1.2	0.5	0.3	23.5	28.7
	Handline	105.1	113.2	30.1	58.7	43.5	34.0	66.0	67.4	82.7
	Total	105.1	120.1	32.5	64.1	44.7	34.5	66.3	90.9	111.4
Skipjack tuna	Troll	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Handline	0.2	0.3	0.4	2.8	1.2	1.5	2.0	1.2	2.01
	Total	0.2	0.3	0.4	2.8	1.2	1.5	2.0	1.2	2.01
Swordfish	Handline	32.5	125.2	83.2	123.0	126.9	120.4	151.3	104.6	87.5
	Harpoon	0.3	0.0	0.0	0.05	0.6	0.6	0.3	0.5	0.0
	Total	32.8	125.2	83.2	123.05	127.5	121.0	154.5	105.1	87.5

Source: NMFS, 2015.

**Table 4.20 U.S. Atlantic Commercial Handgear Landings of Tunas and Swordfish (mt ww) by Region (2006-2014)**

Species	Region	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bluefin tuna	NW Atl	194.7	143.3	257.3	366.3	546.8	489.6	473.1	295.0	446.4
Bigeye tuna	NW Atl	21.5	16.8	6.9	4.6	1.8	3.4	7.9	16.1	20.9
	GOM	1.5	1.01	0.0	0.07	1.8	0.0	0.0	0.0	0.0
	Caribbean	0.0	0.0	0.0	0.0	0.0	0.05	0.0	0.0	0.0
Albacore tuna	NW Atl	2.6	5.4	0.2	0.5	1.9	0.7	0.6	0.0	2.5
	GOM	0.07	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.07
	Caribbean	0.4	0.2	0.4	0.003	0.05	0.1	0.4	2.3	2.57
Yellowfin tuna	NW Atl	105.1	113.2	30.1	58.7	43.5	34.0	66.0	67.4	110.8
	GOM	49.9	26.2	11.2	21.6	2.9	8.7	17.5	6.8	0.0
	Caribbean	7.8	9.1	3.7	3.3	1.9	1.5	3.2	0.0	0.6
Skipjack tuna	NW Atl	0.2	0.3	0.4	2.8	1.2	1.5	2.0	1.2	1.3
	GOM	0.0	0.2	0.06	0.2	0.02	0.2	0.06	0.02	0.01
	Caribbean	10.0	13.7	16.0	8.8	6.2	6.6	4.0	0.0	0.7
Swordfish	NW Atl	32.8	125.2	83.2	123.05	126.9	120.4	151.6	105.1	86.9
	GOM	0.1	0.2	1.2	1.9	2.6	0.5	3.3	0.5	0.3

Source: NMFS, 2015.

*Handgear Trip Estimates*

Table 4.21 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 2004 through 2014. The trips include commercial and recreational trips, and are not specific to any particular species. It should be noted that the 2014 estimates are preliminary and subject to change.

**Table 4.21 Estimated Number of Rod and Reel and Handline Trips Targeting Atlantic Large Pelagic Species, by State (ME-VA, 2004-2014)**

Year	AREA							Total
	NH/ME	MA	CT/RI	NY	NJ (North)	NJ (South) and MD/DE	VA	
<b>Private Vessels</b>								
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
2014	4,289	12,758	3,639	6,777	4,589	11,575	1,972	45,559
<b>Charter Vessels</b>								
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
2014	836	3,294	592	1,220	1,199	2,172	345	9,658

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

Domestic recreational fishermen target various HMS species, as permitted and specified in the regulations, using a variety of handgear including rod and reel gear. Recreational fishing for any HMS-managed species requires an HMS Angling permit or, for for-hire vessels taking passengers recreational fishing, an HMS Charter/Headboat permit (note that for Atlantic tunas, the HMS Charter/Headboat permit also allows for sale of the tunas). Two otherwise commercial permits, the General Commercial Swordfish permit and the Atlantic Tunas General permit, also authorize vessel occupants to fish recreationally for all HMS, but only in registered Atlantic HMS tournaments. 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 recreational landings of Atlantic marlins, roundscale spearfish, sailfish, bluefin tuna (including dead discards), and swordfish must be reported to NMFS. All billfish and swordfish tournaments are selected for reporting, and anglers must self-report all recreational bluefin tuna landings and dead discards, as well as non-tournament recreational landings of swordfish and billfishes. Atlantic Tunas Angling and HMS Charter/Headboat categories are required to report the length of all bluefin tuna retained or dead discards through an online catch reporting system within 24 hours of the landings or end of each trip. Specifically, vessels must report the number of bluefin tuna retained, and the number of bluefin tuna discarded dead, according to “Instructions for reporting bluefin tuna,” available at: <https://hmspermits.noaa.gov/library>. The address of the website for reporting is: <https://hmspermits.noaa.gov/catchReports>. For more information on recreational HMS handgear fisheries, please see the 2006 Consolidated HMS FMP.

### 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 4.22 from 2005 through 2014.

Table 4.22 Domestic Landings (mt ww)\* for the Atlantic Tunas and Swordfish Recreational Rod and Reel Fishery (2005-2014)

Species	Region	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Bluefin tuna*	NW Atlantic	254.4	158.2	398.6	352.2	143.3	111.4	173.3	148.7	131.4	99.6
	GOM	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	Total	254.4	158.8	398.6	352.2	143.3	111.4	173.3	148.7	131.4	99.6
Bigeye tuna**	NW Atlantic	165.0	422.3	126.8	70.9	77.6	116.8	72.4	269.6	337.5	251.9
	GOM	0.0	24.3	0.0	0.0	0.0	0.8	34.9	0.1	7.0	0.1
	Caribbean	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.9
	Total	165.0	446.6	126.8	70.9	77.6	117.6	109.6	269.7	344.5	254.9
Albacore**	NW Atlantic	356.0	284.2	393.6	125.2	22.8	46.2	170.6	144.3	340.3	136.7
	GOM and Caribbean	0.0	0.0	0.0	0.0	0.0	103.4	0.0	0.7	0.0	0
	Total	356.0	284.2	393.6	125.2	22.8	149.6	170.6	145.0	340.3	136.7
Yellowfin tuna**	NW Atlantic	3,504.8	4,649.2	2,726.0	657.1	742.6	1,209.0	1,134	1,433	495.4	998.8
	GOM	146.9	258.4	227.6	366.3	264.7	18.0	362.8	294.1	191.8	73.2
	Caribbean	0.0	0.0	12.4	0.0	3.5	4.5	0.9	0.0	0.0	16.2
	Total	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	1,088.2
Skipjack tuna**	NW Atlantic	8.1	34.6	27.4	21.0	75.7	29.1	50.3	98.0	37.7	46.0
	GOM	3.1	6.4	23.9	16.3	22.0	15.5	23.7	2.5	77.1	9.8
	Caribbean	3.9	7.7	0.2	11.3	4.3	0.4	3.0	3.0	0.0	9.4
	Total	15.1	48.7	51.5	48.6	102.0	45.0	77.0	103.5	114.8	65.2
Swordfish	Total	61.2	52.7	68.2	75.7	31.6	49.3	53.6	70.8	22.0	37

\* 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, 2006; NMFS, 2007; NMFS, 2009; NMFS, 2010; NMFS, 2011; NMFS, 2012; NMFS, 2013; NMFS, 2014; NMFS, 2015.

*Atlantic Billfish Recreational Fishery*

Table 4.23 provides a summary of reported billfish and swordfish landings from 2009 through 2014. 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 4.23).

“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 4.23 Atlantic HMS Recreational Billfish Landings, in Numbers of Fish (2009-2014)**

Species	Reporting Category	2009	2010	2011	2012	2013	2014
Blue Marlin	Tournament*	35	18	27	45	44	49
	Non-Tournament**	5	3	3	18	11	5
	Total***	44	28	43	63	55	54
White Marlin	Tournament*	46	63	31	23	34	36
	Non-Tournament**	6	5	6	7	15	6
	Total***	53	72	56	30	49	42
Roundscale Spearfish (RSP)	Tournament*	5	10	3	4	1	2
	Non-Tournament**	-	0	0	0	0	0
	Total***	5	19	7	4	1	2
Total Landings of Marlin and RSP		97	119	106	97	100	98
Balance Remaining (from 250 Marlin Limit)		153	131	144	153	150	152
Sailfish	Tournament*	0	3	7	21	2	5
	Non-Tournament**	140	185	166	163	171	113
	Total***	140	192	173	184	173	118
Swordfish	Tournament*	85	46	29	29	16	23
	Non-Tournament**	389	285	318	386	263	281
	Total	474	331	347	415	279	304

– 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. 2012-2014 for all billfishes and 2014 for swordfish (excludes swordfish 2012-2013): \* 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 (both private and charter/headboat) non-tournament landings of billfish, including swordfish, must be reported to NMFS within 24 hours of landing by the permitted owner of the vessel landing the fish. 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 4.24 Tournament Landings of Billfishes and Swordfish by State or Area (2014)

State(s)	Tournaments	White Marlin	Blue Marlin	Sailfish	Roundscale Spearfish	Swordfish
MA	3	-	-	-	-	1
RI/NY	3	-	-	-	-	1
NJ	12	5	-	-	-	-
DE/MD	10	31	8	-	2	1
VA	3	-	-	-	-	-
NC	12	-	14	-	-	-
SC/GA	7	-	1	-	-	-
FL	78	-	7	-	-	17
AL/MS	14	-	11	-	-	-
LA	14	-	5	-	-	2
TX	17	-	1	5	-	1
PR	13	-	2	-	-	-
VI	9	-	-	-	-	-

Some states are aggregated to protect tournament reporting privacy if at least three tournaments were not held in one or more state(s). States without tournaments are not shown. 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 for vessel owners in Maryland, and 2014 for vessel owners in North Carolina, shark landings must be reported on catch cards at state-operated landings stations. Two shortfin mako sharks were landed and reported via North Carolina catch cards in 2014.

Table 4.25 Recreational Shark Landings Reported from the Maryland Catch Card Program (2013-2014)

Species	2013	2014
Atlantic sharpnose	13	13
Blue	0	7
Common thresher	8	12
Scalloped hammerhead	0	1
Shortfin mako	47	53
Spinner	1	0
Smoothhound	0	1
Total	69	87

Source: MD DNR.

The following tables provide estimated recreational landings for each of the three shark species groups: large coastal sharks (Table 4.26 and Table 4.27), pelagic sharks (Table 4.28), and small coastal sharks (Table 4.29 and Table 4.30).

**Table 4.26 Estimated Recreational Harvest of Large Coastal Sharks in the Atlantic Region, in Number of Fish per Species (2009-2014)**

Species	2009	2010	2011	2012	2013	2014
Basking <sup>2</sup>	0	0	0	0	0	0
Bignose <sup>1</sup>	0	0	0	0	0	0
Bigeye sand tiger <sup>2</sup>	0	0	0	0	0	0
Blacktip	1,902	1,656	754	1,164	962	1,729
Bull	2	1	698	68	77	3
Caribbean reef <sup>1</sup>	0	0	0	0	0	0
Dusky <sup>1</sup>	506	4	23	15	16	2
Galapagos <sup>1</sup>	0	0	0	0	0	0
Hammerhead, great	5	0	0	37	0	0
Hammerhead, scalloped	569	13	179	4	248	900
Hammerhead, smooth	0	0	0	0	352	0
Hammerhead, unclassified	0	0	0	0	0	0
Lemon	291	0	14	0	0	0
Night <sup>1</sup>	0	0	0	0	0	0
Nurse	156	209	301	706	13	418
Sandbar <sup>3</sup>	6,461	2,193	1,125	857	399	1,873
Sand tiger <sup>2</sup>	0	0	0	0	0	0
Silky <sup>3</sup>	208	13	0	232	0	176
Spinner	179	693	679	1,145	390	847
Tiger	4	2	1	2	8	324
Whale <sup>2</sup>	0	0	0	0	0	0
White <sup>2</sup>	0	0	0	0	0	0
Requiem shark, unclassified	8,794	2,966	4,949	6,069	97	4,513
<b>Total</b>	<b>19,077</b>	<b>7,750</b>	<b>8,723</b>	<b>10,299</b>	<b>2,562</b>	<b>10,785</b>

<sup>1</sup>Prohibited in the recreational fishery as of July 1, 1999. <sup>2</sup>Prohibited as of April 1997. <sup>3</sup>Prohibited as of July 2008.  
Source: TX PWD, SE Headboat Survey, MRIP

**Table 4.27 Estimated Recreational Harvest of Large Coastal Sharks in the Gulf of Mexico Region, in Number of Fish per Species (2009-2014)**

Species	2009	2010	2011	2012	2013	2014
Basking <sup>2</sup>	0	0	0	0	0	0
Bignose <sup>1</sup>	0	0	0	0	0	0
Bigeye sand tiger <sup>2</sup>	0	0	0	0	0	0
Blacktip	12,600	23,781	16,083	22,530	105,315	10,336
Bull	6,957	260	581	2,415	2,786	3,497
Caribbean reef <sup>1</sup>	1	0	0	0	0	0
Dusky <sup>1</sup>	40	87	125	42	20	598
Galapagos <sup>1</sup>	0	0	0	0	0	0
Hammerhead, great	123	3	126	5	7	2
Hammerhead, scalloped	105	140	22	24	517	14
Hammerhead, smooth	0	0	0	0	0	0
Hammerhead, unclassified	0	0	0	0	0	0
Lemon	3	781	1,274	0	0	0
Night <sup>1</sup>	22	0	0	0	55	0
Nurse	729	25	1,098	2	2	0
Sandbar <sup>3</sup>	701	883	200	46	1,404	62
Sand tiger <sup>2</sup>	0	0	0	0	0	0
Silky <sup>3</sup>	0	64	74	0	615	0
Spinner	2,461	6,040	1,694	4,975	6,022	568
Tiger	0	366	52	0	3	4
Whale <sup>2</sup>	0	0	0	0	0	0
White <sup>2</sup>	0	0	0	0	0	0
Requiem shark, unclassified	24,972	68,134	38,876	16,454	17,606	2,440
<b>Total</b>	<b>48,714</b>	<b>100,564</b>	<b>60,205</b>	<b>46,493</b>	<b>134,352</b>	<b>17,521</b>

<sup>1</sup>Prohibited in the recreational fishery as of July 1, 1999. <sup>2</sup>Prohibited as of April 1997. <sup>3</sup>Prohibited as of July 2008.  
Source: TX PWD, MRIP, Southeast Headboat Survey.

**Table 4.28 Estimated Recreational Harvest of Pelagic Sharks in the Atlantic and Gulf of Mexico, in Number of Fish per Species (2009-2014)**

Species	2009	2010	2011	2012	2013	2014
Bigeye thresher*	0	0	0	0	0	0
Bigeye sixgill*	0	0	0	0	0	0
Blue Shark	0	1,512	0	0	4,165	3,449
Mako, longfin*	0	0	0	0	0	0
Mako, shortfin	5,058	3,297	301	1,314	6,855	16,532
Mako, unclassified	213	161	396	14	12	5
Lamnidae (mackerel sharks)	1	345	3,090	5,706	24	19,898
Oceanic whitetip	0	0	0	0	0	0
Porbeagle	0	0	19	0	0	0
Sevengill*	0	0	0	0	0	0
Sixgill*	0	0	0	0	0	0
Thresher	3,422	214	0	0	0	3,165
Pelagic shark, unclassified	0	0	0	0	0	0
<b>Total</b>	<b>8,694</b>	<b>5,529</b>	<b>3,806</b>	<b>7,034</b>	<b>11,056</b>	<b>43,049</b>

\*Prohibited in the recreational fishery as of July 1, 1999. Source: TX PWD, Southeast Headboat Survey, MRIP.

**Table 4.29 Estimated Recreational Harvest of Small Coastal Sharks in the Atlantic Region, in Number of Fish per Species (2009-2014)**

Species	2009	2010	2011	2012	2013	2014
Atlantic angel*	0	0	0	0	0	0
Blacknose	947	0	573	0	70	4,146
Bonnethead	8,009	10,073	8,598	9,798	14,375	28,533
Finetooth	0	239	0	0	0	2,896
Atlantic sharpnose	33,568	41,217	28,252	23,207	44,832	56,052
Caribbean sharpnose*	0	0	0	0	0	0
Smalltail*	0	0	0	0	0	0
<b>Total</b>	<b>42,524</b>	<b>51,529</b>	<b>37,423</b>	<b>33,005</b>	<b>59,277</b>	<b>91,627</b>

\*Prohibited in the recreational fishery as of July 1, 1999. Source: TX PWD, MRIP, Southeast Headboat Survey.

**Table 4.30 Estimated Recreational Harvest of Small Coastal Sharks in the Gulf of Mexico Region, in Number of Fish per Species (2009-2014)**

Species	2009	2010	2011	2012	2013	2014
Atlantic angel*	0	0	0	0	0	0
Blacknose	5,276	1,463	1,533	2,638	232	4,380
Bonnethead	14,189	6,084	51,714	6,764	7,757	19,072
Finetooth	395	380	47	248	239	80
Atlantic sharpnose	31,237	29,494	19,072	40,302	45,616	25,409
Caribbean sharpnose*	0	0	0	0	0	0
Smalltail*	0	0	0	0	0	0
<b>Total</b>	<b>51,097</b>	<b>37,421</b>	<b>72,366</b>	<b>49,952</b>	<b>53,844</b>	<b>48,941</b>

\*Prohibited in the recreational fishery as of July 1, 1999. Source: TX PWD, MRIP, Southeast Headboat Survey.

Table 4.31 Estimated Recreational Harvest of Smoothhound (Smooth Dogfish) in the Gulf of Mexico and Atlantic Regions, in Number of Fish per Species (2009-2014)

Region	2009	2010	2011	2012	2013	2014
Atlantic	18,099	19,659	21,040	31,666	17,309	49,834
Gulf of Mexico	0	190	0	1,258	214	7
Total	18,099	19,849	21,040	32,924	17,523	49,841

### *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 2005 – 2014 is presented in Table 4.32 and Table 4.33.

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

**Table 4.32 Observed or Reported Number of HMS Kept in the Rod and Reel Fishery (ME-VA, 2005-2014)**

Species	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
White marlin <sup>2</sup>	5	8	4	13	8	9	17	5	14	8
Blue marlin <sup>2</sup>	3	2	2	3	3	3	1	3	6	1
Sailfish <sup>2</sup>	1	0	1	0	0	0	0	0	0	0
Swordfish	22	27	42	30	7	9	27	28	15	16
Giant bluefin tuna <sup>3</sup>	48	15	15	20	46	54	51	65	37	56
Large medium bluefin tuna <sup>3</sup>	12	1	5	11	0	36	28	23	14	7
Small medium bluefin tuna	22	48	69	48	205	11	14	21	29	26
Large school bluefin tuna	179	171	298	398	107	174	77	73	97	60
School bluefin	638	84	314	228	180	201	180	146	104	147
Young school bluefin	25	0	3	4	1	2	0	2	1	4
Bigeye tuna	32	35	59	55	58	36	66	97	250	215
Yellowfin tuna	3,700	3,572	2,988	1,029	1,886	1,906	3,474	3,296	2,719	2,072
Skipjack tuna	79	104	34	64	242	151	278	200	109	109
Albacore	835	542	934	168	67	154	550	358	1,040	444
Thresher shark	45	34	62	59	66	44	41	39	31	55
Mako shark	99	111	143	169	159	159	172	151	179	180
Sandbar shark	1	1	9	1	1	0	1	0	0	0
Dusky shark	0	3	6	1	0	1	0	0	0	0
Tiger shark	1	0	1	1	3	1	0	2	0	2
Porbeagle	1	1	0	0	0	2	2	2	6	3
Blacktip shark	1	1	0	-	-	0	0	0	0	0
Atlantic sharpnose shark	0	0	0	-	-	10	5	3	22	6
Blue shark	67	61	109	43	54	26	30	28	12	10
Hammerhead shark	0	0	0	1	0	0	0	0	0	0
Smooth hammerhead	0	0	0	1	0	0	0	0	0	0
Scalloped hammerhead	0	1	0	0	0	0	0	0	0	0
Unidentified hammerhead	0	0	0	0	0	0	0	0	0	0
Wahoo	112	85	190	172	69	111	63	206	92	59
Dolphin	6,366	3,921	2,536	5,739	3,317	6,063	4,935	3,055	3,902	5,904
King mackerel	376	170	82	67	14	14	3	3	7	2
Atlantic bonito	96	262	283	51	138	57	41	79	77	454
Little tunny	181	90	195	93	175	239	151	172	84	157
Amberjack	2	1	5	31	81	99	25	40	37	25
Spanish mackerel	4	1	2	67	9	8	24	146	66	44

<sup>1</sup>NMFS typically expands these “raw” data to report discards of bluefin tuna by the rod and reel fishery to ICCAT. If sample sizes are large enough to make reasonable estimates for other species, NMFS may produce estimates for other species in future SAFE reports. <sup>2</sup>Amendment 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. <sup>3</sup>Includes some commercial handgear landings. Source: Large Pelagics Survey.

**Table 4.33 Observed or Reported Number of HMS Released in the Rod and Reel Fishery (ME-VA, 2005-2014)**

Species	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
White marlin <sup>2</sup>	397	160	359	454	936	1,070	1,355	1,996	1,200	1,281
Blue marlin <sup>2</sup>	52	42	69	69	60	86	106	137	109	99
Sailfish <sup>2</sup>	6	3	1	6	69	11	11	61	15	16
Swordfish	23	52	40	45	13	15	27	12	18	15
Giant bluefin tuna <sup>3</sup>	0	3	0	0	0	1	0	0	2	0
Large medium bluefin tuna <sup>3</sup>	4	1	3	11	7	22	2	9	1	0
Small medium bluefin tuna	30	18	32	23	93	46	32	45	70	35
Large school bluefin tuna	141	85	99	286	77	172	53	64	87	40
School bluefin tuna <sup>4</sup>	1,917	290	347	358	173	392	345	184	135	84
Young school bluefin tuna <sup>4</sup>	282	117	83	55	52	68	44	21	14	6
Bigeye tuna	2	2	1	0	13	0	2	3	5	102
Yellowfin tuna <sup>4,5</sup>	502	351	171	411	2,038	374	1,479	195	999	480
Skipjack tuna <sup>4</sup>	105	129	17	217	610	188	479	325	464	137
Albacore tuna	67	41	40	14	5	10	84	25	112	29
Thresher shark <sup>5</sup>	9	15	24	35	23	21	9	16	10	23
Mako shark	142	177	190	242	250	276	224	238	206	237
Sandbar shark	37	158	168	222	219	37	45	14	44	62
Dusky shark	49	73	87	128	152	116	84	76	90	57
Tiger shark	6	7	11	20	11	13	25	26	19	32
Porbeagle	6	8	2	2	6	11	31	18	22	21
Blacktip shark	19	9	31	-	-	34	10	346	89	33
Atlantic sharpnose shark	11	0	0	-	-	5	3	4	22	3
Blue shark <sup>4,5</sup>	920	884	1,978	2,735	4,185	3,333	3,752	2,705	2,240	1,894
Hammerhead shark	5	0	0	0	0	0	1	2	0	1
Smooth hammerhead shark	0	1	2	0	1	1	3	3	0	6
Scalloped hammerhead shark	0	0	0	4	2	0	0	4	0	2
Unidentified hammerhead shark	0	11	14	27	31	32	10	30	20	23
Wahoo	7	6	9	4	4	6	2	5	2	0
Dolphin <sup>5</sup>	375	394	227	372	222	344	380	192	209	213
King mackerel	7	20	3	5	5	1	0	0	0	0
Atlantic bonito <sup>4</sup>	231	114	60	36	124	55	55	120	46	138
Little tunny	505	102	387	614	1,028	886	640	993	133	614
Amberjack	2	13	33	145	101	119	17	48	56	35
Spanish mackerel <sup>4</sup>	0	0	2	37	1	8	0	0	0	0

<sup>1</sup>NMFS typically expands these "raw" data to report discards of bluefin tuna by the rod and reel fishery to ICCAT. If sample sizes are large enough to make reasonable estimates for other species, NMFS may produce estimates for other species in future HMS SAFE Reports. <sup>2</sup>Amendment 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. <sup>3</sup>Includes some commercial handgear landings. <sup>4</sup>Includes dead releases in 2010. <sup>5</sup>Includes 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 2014, hauls targeting LCS used BLL consisting of a longline between 0.9 to 12.0 km (0.6 – 7.5 miles) long with 47-401 hooks attached and the average soak duration was 7.8 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 hooks (63.3 percent of the time). Hauls targeting sandbar sharks used BLL consisting of longline average of 7.0 km (4.3 miles) long with 112-300 hooks attached and the average soak duration was 5.6 hours. The most commonly used hook was the 18.0 circle hook (51.9 percent) with 12.0 J hooks used 37 percent of the hauls (Enzenauer et al., 2015).

The overall BLL effort targeting sharks by region is available from 2008 through 2014 (Table 4.34). The Atlantic region has more vessels and trips targeting sharks, but the number of trips targeting sharks in the Gulf of Mexico region has surpassed the Atlantic region in 2012-2014. The number of trips is defined as targeting sharks if 75 percent of the landings, by weight, were sharks.

**Table 4.34 Bottom Longline Effort Targeting Sharks (2008-2014)**

Specifications	Region	2008	2009	2010	2011	2012	2013	2014
Number of Vessels	Gulf of Mexico	16	11	7	11	20	16	20
	Atlantic	17	26	32	26	21	24	19
Number of Trips	Gulf of Mexico	136	80	54	194	379	457	604
	Atlantic	289	498	486	434	281	329	369
Average Sets per Trip	Gulf of Mexico	1.8	2.5	1.2	1.4	1.2	1.1	1.1
	Atlantic	1.2	1.3	1.4	1.3	1.5	1.5	1.7
Total Number of Set Hooks	Gulf of Mexico	160,520	65,225	15,380	48,112	99,675	105,559	139,709
	Atlantic	121,353	260,883	239,952	183,465	98,094	136,475	193,561
Average Number of Hooks per Set	Gulf of Mexico	454.5	451.6	215.6	213.8	229.0	212.1	206.1
	Atlantic	389.2	414.1	327.3	330.3	237.1	253.5	276.7
Total Soak Time (Hours)	Gulf of Mexico	1,745.0	918.0	396.0	1,361.0	2,912.0	2,589.5	3,011.0
	Atlantic	2,150.0	3,275.5	3,490.5	3,331.0	2,289.5	2,438.0	2,649.5
Average Mainline Length (Miles)	Gulf of Mexico	7.6	5.6	2.6	3.0	2.8	2.1	1.9
	Atlantic	6.0	6.2	4.7	5.1	3.9	3.4	3.4

Source: Fisheries Logbook System.

### 4.5.1 Current Management

For a description of the history of bottom longline fishery management, please see the Amendment 6 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 shark proposals, which could impact fishermen using BLL gear. Amendment 5b to the 2006 Consolidated HMS FMP could change certain shark regulations based on the latest stock assessment for dusky sharks. NMFS is also currently working on a rule that would consider a commercial retention limit for blacknose sharks in the Atlantic region in order to prevent quota exceedances.

#### 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 5-10% for shark directed (Enzenauer et al., 2015).

In 2014, the BLL observer program selected 8 vessels for the entire fishing season. These vessels were observed for a total of 126 BLL hauls (defined as setting gear, soaking gear for some duration of time, and retrieving gear) and a total of 94 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) (Enzenauer et al., 2015). In the non-research shark fishery, the BLL observer program observed trips from the southern U.S. Atlantic (the coastline from North Carolina to Florida) region. The observed non-research shark fishery hauls targeted coastal shark species in the southern U.S. Atlantic. Approximately 14 trips with 22 hauls were observed. These trips caught mostly Atlantic sharpnose sharks with blacknose, blacktip, and tiger sharks being the next most caught species (Table 4.35).

**Table 4.35 Shark Species Caught on Observed Bottom Longline Targeting Coastal Shark Species in the Southern U.S. Atlantic (2014)**

Species	Total Caught (#)	Kept (%)	Discarded Dead (%)	Discarded Alive (%)	Disposition Unknown (%)
Atlantic sharpnose shark	1,281	5.1	84.1	10.9	0.0
Blacknose shark	282	84.8	14.9	0.4	0.0
Blacktip shark	196	4.1	85.7	9.7	0.5
Tiger shark	21	81.0	0.0	14.3	4.8
Sandbar shark	18	11.1	0.0	88.9	0.0
Bonnethead shark	16	0.0	100.0	0.0	0.0
Bull shark	12	83.3	8.3	0.0	8.3
Lemon shark	8	75.0	0.0	0.0	25.0
Scalloped hammerhead shark	7	71.4	28.6	0.0	0.0
Spinner shark	4	0.0	100.0	0.0	0.0
Nurse shark	4	0.0	0.0	100.0	0.0
Sand tiger shark	3	0.0	0.0	100.0	0.0
Great hammerhead shark	2	100.0	0.0	0.0	0.0
Finetooth shark	1	0.0	0.0	100.0	0.0
<b>Total</b>	<b>1,855</b>				

Source: Enzenauer et al., 2015.

In 2014, the Shark Research Fishery commenced with 5 participants; however, a vessel withdrew from the fishery and NMFS divided its remaining quota between the four remaining participants. 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 2014 by allowing fishing in the closed area and modified the regional dusky bycatch cap (Table 4.36).

Table 4.36 Summary of Shark Research Fishery Management Measures (2012-2014)

Management Measure	2012	2013	2014
Number of Vessels	5	6	5
Number of Trips per Month	1	1	1
Captain's Meeting Held	Yes	Yes	Yes
Retention Limits	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.	None. All sharks, except for prohibited species, brought to vessel dead must be landed.
Gear Restrictions	<p>Set limit: one longline set per trip Hook restriction: <math>\leq 150</math> or fewer hooks on board</p> <p><i>Amendment 1</i> Set limit: two non-concurrent longline sets per trip: 1<sup>st</sup> set <math>\leq 75</math> hooks; soak time no more than 2 hours; 2<sup>nd</sup> set <math>\leq 150</math> hooks; no soak time limit Hook restriction: <math>\leq 250</math> hooks on board</p> <p><i>Amendment 2</i> Set limit: two non-concurrent longline sets per trip: 1<sup>st</sup> set <math>\leq 150</math> hooks; soak time no more than 2 hours; 2<sup>nd</sup> set <math>\leq 300</math> hooks; no soak time limit Hook restriction: <math>\leq 500</math> hooks on board</p>	<p>Set limit: two non-concurrent longline sets per trip: 1<sup>st</sup> set <math>\leq 150</math> hooks; soak time no more than 2 hours; 2<sup>nd</sup> set <math>\leq 300</math> hooks; no soak time limit Hook restriction: <math>\leq 500</math> hooks on board</p>	<p>Set limit: two non-concurrent longline sets per trip: 1<sup>st</sup> set <math>\leq 150</math> hooks; soak time no more than 2 hours; 2<sup>nd</sup> set <math>\leq 300</math> hooks; no soak time limit Hook restriction: <math>\leq 500</math> hooks on board</p>
Individual Vessel Quota	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	Sandbar quota and LCS research quota split equally among selected vessels Sandbar: 18.6 mt dw Non-sandbar LCS: 8.0 mt dw
Mid-Atlantic Closed Area	Vessels could fish in the closed area	Vessels could not fish in the closed area	Vessels could fish in the closed area only when the observer program intends to place a satellite archival tag(s) on a dusky shark(s)
Dusky Bycatch Cap	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	Once three dead dusky shark are observed, a three hour soak time restriction is implemented and no more than three dusky shark interactions were allowed in any of the designated regions (North Atlantic, North Carolina, South Atlantic, the Florida Keys, west coast of Florida, and the west coast of Florida) through the entire year (Figure 4.9)



**Figure 4.9** 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 80 trips with 104 hauls were observed. These trips caught mostly sandbar sharks with blacktip, Atlantic sharpnose, and tiger sharks being the next most caught species (Table 4.37). All of the dusky sharks were observed on trips targeting sandbar sharks.

**Table 4.37** Shark Species Caught on Observed Bottom Longline Trips in the Sandbar Shark Research Fishery in the Gulf of Mexico and Southern Atlantic (2014)

Species	Total Caught (#)	Kept (%)	Discarded Dead (%)	Discarded Alive (%)	Disposition Unknown (%)
Sandbar shark	2,842	98.9	0.0	0.1	1.0
Blacktip shark	741	98.9	0.4	0.1	0.5
Atlantic sharpnose shark	533	17.8	65.7	15.9	0.6
Tiger shark	396	42.7	0.8	55.3	1.3
Dusky shark	250	0.0	13.2	86.8	0.0
Scalloped hammerhead shark	155	90.9	2.6	6.5	0.0
Nurse shark	137	0.0	0.0	100.0	0.0
Blacknose shark	125	27.2	24.8	48.0	0.0
Bull shark	108	84.3	0.0	0.0	15.7
Great hammerhead shark	74	93.2	1.4	5.4	0.0
Sand tiger shark	48	0.0	0.0	100.0	0.0
Lemon shark	39	92.3	0.0	0.0	7.7
Spinner shark	30	96.7	3.3	0.0	0.0
Silky shark	15	73.3	6.7	13.3	6.7
Caribbean reef shark	2	0.0	50.0	50.0	0.0
Great white shark	1	0.0	0.0	0.0	100.0
Sharks	1	0.0	100.0	0.0	0.0
<b>Total</b>	<b>5,497</b>				

Source: Gulak et al., 2015.

### 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 Assessment prepared for Amendment 6 to the 2006 Consolidated HMS FMP. On July 3, 2014, NMFS issued the final determination to list the Central and Southwest Atlantic Distinct Population Segment (DPS) of scalloped hammerhead shark as a 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*, *O. faveolata*, *O. franksi*, and *Mycetophyllia ferox*). Two Caribbean species currently listed as threatened (*Acropora cervicornis* and *A. palmata*) still warranted listing as threatened.

Table 4.38 provides information on observed interactions with protected resources for BLL vessels targeting sharks in the Gulf of Mexico and Atlantic regions. In 2014, five smalltooth sawfish and seven loggerhead sea turtles were observed on sets targeting sandbar sharks. No sea bird or marine mammal interactions were observed. No interactions with protected resources (sea bird, sea turtle, sawfish, or marine mammal) were observed for non-research BLL vessels fishing in the Gulf of Mexico and South Atlantic regions targeting LCS (Enzenauer et al., 2015). Per the ITS in the 2012 biological opinion, the incidental take of listed sea turtles, smalltooth sawfish, or Atlantic sturgeon has not been exceeded over any 3-yr period.

**Table 4.38 Protected Species Interactions Observed Bottom Longline Trips Targeting Sharks in the Gulf of Mexico and Atlantic Ocean (2007-2014)**

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
2014	7 (5A, 2D)	-	-	5 (A)	9
Total	24	0	0	30	51

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.

The overall gillnet effort targeting sharks by region is available from 2008 through 2014 (Table 4.39). The majority of the vessels and trips targeting sharks occur in the south Atlantic region. Most of the data from the Gulf of Mexico region would be considered confidential since fewer than three vessels used gillnet gear targeting sharks in the region.

**Table 4.39 Gillnet Gear Effort in the U.S. South Atlantic and Gulf of Mexico Regions Targeting Sharks (2008-2014)**

Specifications	Region	2008	2009	2010	2011	2012	2013	2014
Number of Vessels	Gulf of Mexico	C	C	C	3	3	C	C
	Atlantic	38	37	37	35	33	22	23
Number of Trips	Gulf of Mexico	C	C	C	43	46	C	C
	Atlantic	342	357	241	291	366	305	348
Average Sets per Trip	Gulf of Mexico	C	C	C	2.9	2.0	C	C
	Atlantic	1.9	1.9	1.6	1.6	1.5	1.1	1.0
Total Soak Time (Hours)	Gulf of Mexico	C	C	C	743.0	945.0	C	C
	Atlantic	1,264.4	1,093.9	827.5	763.5	1,074.5	849.0	1,148.5
Average Gillnet Length (Yards)	Gulf of Mexico	C	C	C	1,830.2	1,443.5	C	C
	Atlantic	782.7	879.9	871.1	757.7	844.4	761.0	771.6
Average Mesh Size (Inches, Stretched Mesh)	Gulf of Mexico	C	C	C	7.3	7.9	C	C
	Atlantic	5.6	5.3	5.8	4.7	4.8	5.0	5.2

Note: Due to confidentiality requirements under the MSA (C), some of the data are not presented. Source: Fisheries Logbook System.

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. Federal management of smoothhound sharks was implemented through Amendment 9 to the 2006 Consolidated HMS FMP (November 24, 2015; 80 FR 46217). Amendment 9 included a variety of smoothhound shark-specific measures, such as permit and observer requirements, but also included measures that affect the larger shark gillnet fishery. Specifically, Amendment 9 requires Atlantic shark and smoothhound shark permit holders using gillnet gear to limit soak times to 24 hours when using sink gillnet gear and conduct a net check at least every 2 hours when using drift gillnet gear. Additionally, fishermen with a federal directed Atlantic shark limited access permit and gillnet gear on board are required to use a vessel monitoring system only in the vicinity of the Southeast U.S. Monitoring Area. The measures in Amendment 9 will become effective on March 15, 2016. Thus, the data presented in this chapter do not include 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 (CFR Title 50 Part 635.21(g)(2)).

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

In 2014, a total of 237 sets comprised of various southeast gillnet fisheries were observed by the Southeast Gillnet Observer Program. A total of 3 strike gillnet fishery vessels were observed making 11 strike sets on 7 trips in 2014. A total of 16 sink gillnet fishery vessels were observed making 220 sink net sets on 48 trips in 2014. A total of 19 trips making 57 sink net sets on 7 vessels were observed in 2014. Table 4.40 through Table 4.42 of this section outline shark species composition, disposition, and summary information for sharks caught during observed sink and strike gillnet trips with observers onboard in 2014 (Mathers et al., 2014).

**Table 4.40 Shark Species Caught on Observed Southeast Sink Gillnet Trips Targeting Spanish Mackerel (2014)**

Species	Total Caught (#)	Kept (%)	Discarded Alive (%)	Discarded Dead (%)
Atlantic sharpnose shark	209	2.9	66.2	30.9
Bonnethead shark	60	0.0	61.5	38.5
Blacktip shark	30	20.0	40.0	40.0
Blacknose shark	19	0.0	88.9	11.1
Sand tiger shark	5	0.0	100.0	0.0
Smooth dogfish	3	0.0	33.3	66.7
Scalloped hammerhead shark	2	0.0	100.0	0.0
Sandbar shark	1	0.0	100.0	0.0
Requiem shark family	1	0.0	100.0	0.0
<b>Total</b>	<b>330</b>			

Source: Mathers et al., 2014.

**Table 4.41 Shark Species Caught on Observed Southeast Sink Gillnet Trips Targeting Mixed Teleosts and Sharks (2014)**

Species	Total Caught (#)	Kept (%)	Discarded Alive (%)	Discarded Dead (%)
Atlantic sharpnose shark	217	73.7	26.3	0.0
Spinner shark	155	36.8	63.2	0.0
Smooth dogfish	114	60.0	40.0	0.0
Blacknose shark	49	100.0	0.0	0.0
Bonnethead shark	46	66.7	0.0	33.3
Scalloped hammerhead shark	38	75.0	25.0	28.6
Blacktip shark	20	50.0	50.0	0.0
Finetooth shark	2	100.0	0.0	0.0
Smooth dogfish	2	0.0	100.0	0.0
Sand tiger shark	1	0.0	100.0	0.0
<b>Total</b>	<b>644</b>			

Source: Mathers et al., 2014.

**Table 4.42 Shark Species Caught on Observed Southeast Sink and Strike Gillnet Trips by Target Species (2014)**

Shark Species Caught	Trip Type: Target Species			Total
	King Mackerel	Spanish Mackerel	Mixed Teleosts and Sharks	
Blacktip shark	4	30	20	54
Requiem shark family	1	1	-	2
Atlantic sharpnose shark	-	209	217	426
Bonnethead shark	-	60	46	106
Blacknose shark	-	19	49	68
Sand tiger shark	-	5	1	6
Spinner shark	-	3	-	3
Smooth dogfish	-	3	2	5
Scalloped hammerhead shark	-	2	38	40
Sandbar shark	-	1	-	1
Spiny dogfish	-	-	1,998	1,998
Finetooth shark	-	-	2	2
Common thresher shark	-	-	1	1
<b>Total</b>	<b>5</b>	<b>333</b>	<b>2,374</b>	<b>2,712</b>

Source: Mathers et al., 2014.

#### 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., 2014).

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, southern kingfish, and spot. All of the observed interactions with protected species between 2000 and 2014 in the observed gillnet fisheries are on Table 4.43.

#### *Sea Turtles and Sea Birds*

There were no sea turtles or sea birds observed caught in sink gillnet gear in 2014 (Mathers et al., 2014).

#### *Marine Mammals*

The MMPA Category II classification refers to occasional serious injuries and mortalities. In 2014, one bottlenose dolphin, *Tursiops truncatus*, was caught and released dead (Mathers et al., 2014).

#### *Smalltooth Sawfish and Atlantic Sturgeon*

In 2014, 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 4.43 Protected Species Interactions in the Shark Gillnet Fishery Targeting Mixed Sharks Other than Smoothhounds (2007-2014)**

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
2014	-	-	1 (D)	-	-	1
<b>Total</b>	<b>9</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>13</b>

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 2009 through 2014 (Table 4.44, Table 4.45, and Table 4.46). 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 4.44 Reported Buoy Gear Effort (2009-2014)**

Specifications	2009	2010	2011	2012	2013	2014
Number of vessels	53	57	50	55	46	39
Number of trips	708	632	603	688	629	467
Average buoy gears deployed per trip	11.9	11.9	12.2	14.1	17.95	20.9
Total number of set hooks	11,595	8,855	8,858	11,639	12,557	10,740
Average number hooks per gear	1.4	1.2	1.2	1.2	1.1	1.1

Source: Fisheries Logbook System.

**Table 4.45 Reported Buoy Gear Landings (lb dw, 2009-2014)**

Species	2009	2010	2011	2012	2013	2014
Swordfish	154,674	153,520	138,041	178,088	140,038	114,153
Dolphin	1,427	419	1,269	1,324	486	996
Oilfish	245	270	338	719	693	362
Shortfin mako shark	932	466	812	2,295	1,194	1,117
Wahoo	623	75	198	163	70	35
Bigeye tuna	0	0	350	0	0	0
Blacktip shark	0	0	0	38	0	13
King mackerel	67	576	142	56	134	143
Yellowfin tuna	350	0	400	0	0	0
Hammerhead shark	350	1,190	575	400	0	0
Silky shark	20	48	0	120	0	0
Greater amberjack	10	201	0	0	0	0
Bonito	86	120	0	54	0	0
Blackfin tuna	0	115	70	97	32	84

Source: Fisheries Logbook System.

**Table 4.46 Reported Buoy Gear Catches and Discards, in Numbers of Fish per Species (2009-2014)**

<b>Species</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Swordfish	2,085	1,950	1,893	2,699	2,155	1,856
Dolphinfish	113	29	121	196	51	182
Oilfish	5	10	76	13	18	8
Bigeye tuna	0	0	4	0	0	0
Blackfin tuna	2	7	3	10	3	10
Wahoo	44	2	40	12	2	1
Bonito	11	6	0	1	0	0
King mackerel	4	7	130	2	14	5
Shortfin mako	8	4	7	14	13	9
Hammerhead shark	1	6	3	3	0	0
Blacktip shark	0	0	0	1	0	1
Silky shark	1	1	0	4	0	0
Yellowfin tuna	9	0	8	0	0	0
Greater amberjack	1	7	0	0	0	0
Thresher shark	0	0	0	1	0	0
<b>Released Alive</b>						
Swordfish	763	1,031	1,659	1,221	478	447
Dolphinfish	0	0	11	14	4	15
Blue marlin	1	1	2	2	1	0
White marlin	0	0	0	0	0	0
Sailfish	0	1	1	0	0	0
Hammerhead shark	35	52	81	93	68	32
Blue shark	1	0	30	5	0	0
Thresher shark	1	2	7	6	1	0
Dusky shark	0	12	2	9	97	1
Night shark	34	39	87	238	129	79
Oceanic whitetip shark	0	0	0	0	1	3
Bigeye thresher shark	0	0	2	2	1	0
Tiger shark	1	1	2	2	3	3
Sandbar shark	1	2	0	0	0	0
Longfin mako shark	2	7	5	6	4	2
Shortfin mako shark	2	6	4	5	6	6
Blacktip shark	8	4	19	39	11	4
Silky shark	13	12	14	12	33	8
Oilfish	1	0	1	0	0	0
Greater amberjack	1	0	0	0	0	0
Blackfin Tuna	0	0	3	0	0	0
Skipjack Tuna	0	0	1	0	0	0
<b>Discarded Dead</b>						
Swordfish	51	87	155	139	75	76
Silky shark	0	0	0	0	0	0
Hammerhead shark	0	1	1	0	0	0
Blackfin tuna	1	0	1	0	0	0
Blue marlin	1	0	0	0	0	0
Night shark	0	1	0	1	2	1
Longfin mako shark	0	0	0	1	0	0
Shortfin Mako	0	0	1	0	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. Beginning in 2013, the HMS e-Dealer electronic reporting system was required to be used by Atlantic HMS dealers and Table 4.47 presents greenstick landings data from this system.

Table 4.47 Select Landings with Greenstick Gear (lb ww, 2013-2014)

Species	Region	2013	2014
Yellowfin tuna	Atlantic	43,175	57,064
	Gulf of Mexico	19,212	1,082

Additional landings of other species have occurred, 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 by the end of 2015.

## 4.9 Safety Issues

Commercial fishing is one of the most dangerous occupations in the United States (Lambert et al. 2015). The Bureau of Labor Statistics notes that the fishing industry has one of the highest mortality rates (104.4)<sup>1</sup> and indices of relative risk (21.3)<sup>2</sup> of the country professions (<http://www.bls.gov/iif/oshwc/cfar0020.pdf>). Preliminary Bureau of Labor Statistics data suggest that there were 24 fatalities in the fishing industry in 2014 (inclusive of finfish and shellfish fishing) (<http://www.bls.gov/iif/oshcfoi1.htm#2014>).

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](http://www.fishsafe.info/FVStudy_92_10.pdf)) and (2) USCG Safety Program (<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/>.

The National Institute for Occupational Safety and Health (NIOSH) Western States Division office in Alaska has completed studies of fishing safety to reduce the incidence of injury and fatality among U.S. fishermen. The NIOSH website presents research, evaluations and recommendations regarding the greatest dangers to fishermen: vessel disasters, falls overboard, and deck machinery (<http://www.cdc.gov/niosh/topics/fishing/>).

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<sup>1</sup> Fatality rate = ((Fatal work injuries/employment) x 100,000 workers) Employment based on 1995 CPS.

<sup>2</sup> Index of Relative Risk = Fatality Rate for a given group / Fatality rate for all workers

National Standard 10 of the Magnuson Stevens Act (MSA) mandates that measures enacted under the MSA promote the safety of human life at sea. In August 2015, NMFS finalized a Technical Memorandum titled “Guidance on Fishing Vessel Risk Assessments and Accounting for Safety at Sea in Fishery Management Design” which provides two tools, a safety checklist, and a risk assessment, which can be used by fishery managers to evaluate safety within fisheries, determine whether proposed management measures create a safety concern, and develop solutions for reducing risk and improving safety. NMFS will include these factors in future actions to ensure safety at sea is appropriately considered.

The safety checklist includes a set of 13 questions that can be used by fishery managers to assess risk. Will the proposed management measure:

1. Cause vessels to operate substantially further offshore?
2. Increase the distance between where vessels operate and search and rescue assets?
3. Shift fishing operations to occur when weather and ocean conditions are typically more hazardous?
4. Restrict transit through closed areas?
5. Create incentives for vessel operators or crew to work for prolonged periods of time?
6. Encourage unsafe stability practices such as deck loading of fish, extensive deck sorting of catch, or carrying excessive amounts of gear?
7. Increase the intensity of the fishing season (i.e., a derby)?
8. Prevent the adjustments of fishing seasons in the event of poor weather conditions?
9. Place restrictions on vessel size, vessel upgrades, or vessel replacement?
10. Require the delivery of fish products to ports or other strict measures without exceptions for safety concerns?
11. Deploy and observer where the facilities of the vessel for quartering the observer or carrying out observer functions would be inadequate or unsafe?
12. Cause the addition of an observer to a vessel which would impact the safe operation of the vessel?
13. Create other safety concerns?

The risk assessment includes the following steps:

1. Identification of the scale of the fishery to assess
2. Conduct a literature review
3. Describe the vessels and the work environment, including number of vessels, vessel size, crew size, water temperature, time and location of fishery, description of gear and known safety hazards, product storage and processing, loading, navigational challenges, and other operational characteristics of the fishery
4. Analyze marine and personnel casualties
5. Calculate casualty rates
6. Describe safety regulations
7. Summarize results

#### 4.10 Fishery Data: Landings by Species

The following tables (Table 4.48 - Table 4.53) of Atlantic HMS landings are taken from the 2015 National Report of the United States to ICCAT (NMFS, 2015). 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 4.54- Table 4.58) were updated based on 2014 landings from eDealer.

**Table 4.48 U.S. Landings (mt) of Atlantic Bluefin Tuna, by Area and Gear (2007-2014)**

Area	Gear	2007	2008	2009	2010	2011	2012	2013	2014
NW Atlantic	Longline**	70.7	107.4	166.7	164.7	216.3	189.4	153.0	171.7
	Handline	0.0	0.6	0.1	2.7	0.9	1.3	0.5	0.0
	Purse seine	27.9	0.0	11.4	0.0	0.0	1.7	42.5	41.8
	Harpoon	22.5	30.2	65.6	29.0	70.1	52.3	45.0	67.5
	Rod and reel (>145 cm LJFL)*	235.4	305.7	717.1	570.8	-	-	-	-
	Rod and reel (<145 cm LJFL)*	398.6	352.2	143.3	111.4	-	-	-	-
	Unclassified	0.0	0.3	0.0	0.0	0.0	0.0	-	-
	Commercial rod and reel	-	-	-	-	419.5	419.5	249.5	378.9
	Recreational rod and reel	-	-	-	-	148.6	148.7	131.4	99.6
	Trawl	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Gulf of Mexico	Longline	81.2	111.7	111.6	56.2	13.2	101.2	33.5	41.3
	Rod and reel*	0.0	0.0	0.0	0.0	-	-	-	-
NC Area 94a	Longline	12.4	13.5	56.7	17.8	11.3	3.9	3.5	8.9
Caribbean	Longline	0.0	0.0	0.0	0.0	0.6	0.9	0.4	0.0
All areas	All gears	848.7	919.9	1,272.6	952.6	904.7	919.0	658.9	810.0

\* 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, 2015.

**Table 4.49 U.S. Landings (mt) of Atlantic Yellowfin Tuna, by Area and Gear (2007-2014)**

Area	Gear	2007	2008	2009	2010	2011	2012	2013	2014
NW Atlantic	Longline	757.8	460.5	416.4	673.4	684.1	873.7	539.9	671.0
	Rod and reel*	2,726.0	657.1	742.6	1,209.0	1,133.8	1,433.0	495.4	999.8
	Troll	6.9	2.4	5.4	1.2	0.5	0.3	30.1	28.7
	Gillnet	4.2	0.6	0.0	0.5	0.06	1.5	0.8	1.3
	Trawl	2.4	0.0	0.0	1.4	1.3	0.2	0.0	0.3
	Handline	113.2	30.1	58.7	43.5	34	66.0	66.4	82.1
	Trap	0.0	0.05	0.1	0.5	0.0	0.0	0.0	0.0
	Unclassified	7.0	1.4	2.2	9.5	4.2	4.5	2.1	7.7
Gulf of Mexico	Longline	1,379.5	756.5	1,147.0	303.2	642.1	1,251.0	834.9	704.5
	Rod and reel*	227.6	366.3	264.7	18.0	362.8	294.1	191.8	73.2
	Handline	26.2	11.2	21.6	2.9	8.7	175	0.0	0.0
	Gillnet	0.0	0.0	0.0	0.0	-	-	-	-
	Unclassified	0.0	0.0	0.0	0.0	0.1	8.7	0.0	0.0
Caribbean	Longline	255.6	107.1	136.7	212.2	132.1	141.9	169.6	80.7
	Handline	9.1	3.7	3.3	1.9	1.5	3.2	0.6	0.6
	Gillnet	0.0	0.04	0.04	0.0	0.0	0.0	0.0	0.0
	Trap	0.0	0.0	0.0	0.0	-	-	-	-
	Rod and reel*	12.4	9.7	3.5	4.5	0.9	0.0	0.0	16.2
NC Area 94a	Longline	1.8	0.4	0.0	0.0	0.0	3	0.0	0.0
SW Atlantic	Longline	0.0	0.0	0.0	28.7	-	-	-	-
All areas	All gears	5,529.5	2,407.2	2,802.3	2,481.7	3,010.4	4,099.5	2,331.6	2,666.2

\* 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, 2015.

**Table 4.50 U.S. Landings (mt) of Atlantic Skipjack Tuna, by Area and Gear (2007-2014)**

Area	Gear	2007	2008	2009	2010	2011	2012	2013	2014
NW Atlantic	Longline	0.0	0.1	0.4	1.4	0.4	0.3	0.5	0.3
	Rod and reel*	27.4	21.0	75.7	29.1	50.3	98.0	37.7	46.0
	Gillnet	0.05	0.04	3.3	0.2	0.04	1.6	0.27	6.7
	Trawl	0.005	0.003	0.0	0.0	0.0	0.006	0.0	0.0
	Handline	0.3	0.4	2.8	1.2	1.5	2.0	0.8	1.3
	Trap	0.0	0.0	0.0	0.0	-	-	-	-
	Pound net	0.0	0.0	0.0	0.0	-	-	-	-
	Unclassified	0.6	0.5	1.2	0.1	0.8	0.6	0.7	2.7
Gulf of Mexico	Longline	0.0	0.05	0.05	0.0	0.2	0.0	0.0	0.01
	Rod and reel*	23.9	16.3	22.0	15.5	23.7	0.06	77.1	9.8
	Handline	0.2	0.06	0.2	0.02	0.2	2.5	0.02	0.01
Caribbean	Longline	0.02	1.3	0.05	0.0	0.0	0.1	0.0	0
	Gillnet	0.0	0.01	0.6	0.0	0.0	-	0.0	0
	Rod and reel*	0.2	11.3	4.3	0.4	3.0	3.0	0.0	9.4
	Handline	13.7	16.0	8.8	6.2	4.5	4.0	0.0	0.7
	Trap	0.0	0.0	0.0	0.0	-	1	-	-
All areas	All gears	66.5	67.1	119.4	54.2	86.7	112.2	117.4	77.0

\* 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, 2015.

**Table 4.51 U.S. Landings (mt) of Atlantic Bigeye Tuna, by Area and Gear (2007-2014)**

Area	Gear	2007	2008	2009	2010	2011	2012	2013	2014
NW Atlantic	Longline	331.9	380.2	384.7	431.1	397.2	564.9	490.9	574.5
	Gillnet	1.0	0.04	0.0	0.0	0.0	0.2	0.06	0.08
	Trap	-	-	0.3	1.2	0.0	0.0	0.0	0.0
	Rod and reel*	126.8	70.9	77.6	116.8	72.4	269.6	337.5	251.9
	Troll	0.9	0.8	0.6	0.0	0.9	0.2	5.0	4.5
	Handline	16.8	6.9	4.6	1.8	3.4	7.9	15.9	16.4
	Trawl	0.4	0.0	0.0	0.7	1.2	0.2	0.0	0.0
	Unclassified	0.9	2.1	1.9	6.7	4.7	7.3	6.2	3.5
Gulf of Mexico	Longline	37.0	14.0	19.5	6.9	2.2	13.5	9.2	6.8
	Rod and reel*	0.0	0.0	0.0	0.8	34.9	0.1	7.0	0.06
	Handline	0.01	0.0	0.07	0.09	0.0	0.0	0.0	0.0
	Unclassified	-	-	0.0	0.0	0.0	0.4	0.0	0.0
Caribbean	Longline	3.4	8.9	22.2	5.0	0.0	0.002	8.6	5.4
	Rod and reel*	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.9
	Handline	0.0	0.0	0.0	0.0	0.05	0.0	0.0	0.0
NC Area 94a	Longline	8.4	4.6	3.7	3.7	-	-	-	-
SW Atlantic	Longline	0.0	0.0	0.0	0.2	200.8	3.1	0.2	0.05
All areas	All gears	527.3	488.5	515.2	571.3	718.7	867.4	880.6	866.1

\* 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, 2015.

**Table 4.52 U.S. Landings (mt) of Atlantic Albacore Tuna, by Area and Gear (2007-2014)**

Area	Gear	2007	2008	2009	2010	2011	2012	2013	2014
NW Atlantic	Longline	109.9	115.9	141.3	87.8	138.2	157.7	139.9	187.0
	Gillnet	1.0	2.1	5.6	0.5	0.2	5.7	0.02	3.7
	Handline	5.4	0.2	0.5	1.9	1.7	0.6	2.3	2.3
	Trawl	0.3	0.01	0.08	0.2	2.0	0.3	0.0	0.0
	Trap	0.4	0.005	0.01	0.01	0.0	0.0	0.0	0.0
	Troll	0.2	0.2	0.07	0.04	0.0	0.0	0.2	0.2
	Rod and reel*	393.6	125.2	22.8	46.2	170.6	144.3	340.3	136.7
	Unclassified	4.2	1.9	1.3	2.2	7.8	4.4	0.6	6.8
Gulf of Mexico	Longline	15.4	10.2	16.7	7.1	101.8	103.5	115.4	122.6
	Rod and reel*	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
	Handline	0.0	0.0	0.01	0.01	0.1	0.5	0.02	0.07
Caribbean	Longline	1.2	0.4	0.3	0.7	**	**	**	**
	Gillnet	0.0	0.0	0.0	0.0	-	-	-	-
	Rod and reel*	0.0	0.0	0.0	103.6	**	**	**	**
	Trap	0.0	0.0	0.0	0.0	-	-	-	-
	Handline	0.2	0.4	0.003	0.05	**	**	**	**
NC Area 94a	Longline	0.3	0.8	0.3	0.6	-	-	-	-
SW Atlantic	Longline	0.0	0.0	0.0	0.0	-	-	-	-
All areas	All gears	532.1	256.7	188.8	314.5	422.4	417.7	598.7	459.4

\* Rod and reel catches and landings represent estimates of landings and dead discards based on statistical surveys of the U.S. recreational harvesting sector. \*\* Caribbean landings included in Gulf of Mexico total. Source: NMFS, 2015.

**Table 4.53 U.S. Catches and Landings (mt ww) of Atlantic Swordfish, by Area and Gear (2009-2014)**

Area	Gear	2009	2010	2011	2012	2013	2014
NW Atlantic	Longline*	1,696.0	1,647.7	1,741.8	1,987.0	1,720.5	1,200.4
	Gillnet	0.05	0.0	0.0	0.0	0.0	0.0
	Handline	123.0	126.9	120.4	151.3	104.8	86.9
	Trawl	23.7	21.2	17.9	26.8	2.9	5.3
	Harpoon	0.05	0.6	0.6	0.3	0.5	0
	Rod and reel**	19.0	47.6	48.7	64.3	21.7	35.1
	Trap	0.0	1.8	-	-	-	-
	Unclassified	0.0	2.1	0.0	0.5	1.6	0.4
	Unclassified discards	3.0	3.6	5.8	3.6	0.0	0.0
Gulf of Mexico	Longline*	476.1	212.3	363.6	673.3	531.6	307.4
	Handline	1.9	2.6	0.5	3.3	0.5	0.3
	Rod and reel**	12.6	1.7	4.9	6.3	0.3	1.5
	Unclassified	2.9	-	-	-	-	-
	Unclassified discards	3.5	1.3	2.5	6.8	0.0	0.0
Caribbean	Longline	22.6	41.4	14.2	3.7	20.8	16.5
	Trap*	-	-	-	-	-	-
	Rod and reel**	0.0	0.0	0.0	0.2	0.0	0.07
	Handline	0.003	0.0	0.0	0.0	0.0	0.3
	Unclassified discards	0.2	0.04	0.9	0.0	0.0	0.0
NC Atlantic	Longline*	496.4	304.8	451.3	682.6	539.1	308.0
SW Atlantic	Longline*	0.0	0.3	0.0	0.0	0.06	0.0
All areas	All gears	2,878.0	2,412.1	2,773.7	3,609.6	2,944.4	1,962.2

\* 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, 2015.

**Table 4.54 Commercial Landings of Large Coastal Sharks in the Atlantic Region (lb dw, 2009-2014)**

Large Coastal Sharks	2009	2010	2011	2012	2013	2014
<b>Aggregated Large Coastal Sharks</b>						
Blacktip	229,267	246,617	176,136	215,403	256,277	282,009
Bull	61,396	56,901	49,927	24,504	33,980	32,372
Lemon	30,909	25,316	45,448	21,563	16,791	13,047
Nurse	0	71	0	81	0	0
Sandbar	54,141	84,339	94,295	46,446	46,868	82,308
Silky	1,386	1,049	992	29	186	289
Spinner	20,022	13,544	4,113	10,643	26,892	25,716
Tiger	15,172	43,145	36,425	23,245	16,561	29,062
Total Aggregated LCS carcass weight	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)	464,803 (211 mt dw)
<b>Hammerhead Sharks</b>						
Hammerhead, great	0	0	0	371	7,406	13,538
Hammerhead, scalloped	0	0	0	15,800	27,229	24,652
Hammerhead, smooth	4,025	7,802	110	3,967	1,521	601
Hammerhead, unclassified	62,825	43,345	35,618	9,617	0	0
Total Hammerhead carcass weight	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)	38,791 (18 mt dw)
<b>Shark Research Fishery</b>						
Sandbar	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)	82,293 (37 mt dw)
<b>Unclassified Sharks</b>						
Unclassified, assigned to large coastal	70,894 (32 mt dw)	2,229 (1 mt dw)	50,711 (23 mt dw)	53,705 (24 mt dw)	0 (0 mt dw)	0 (0 mt dw)
Total LCS carcass weight	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)	503,594 (228 mt dw)

Sources: 2009-2012 Cortés pers. comm.; 2013-2014 eDealer.

**Table 4.55 Commercial Landings of Large Coastal Sharks in the Gulf of Mexico Region (lb dw, 2009-2014)**

Large Coastal Sharks	2009	2010	2011	2012	2013	2014
<b>Blacktip sharks</b>						
Blacktip	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)	444,812 (202 mt dw)
<b>Aggregated Large Coastal Sharks</b>						
Bull	150,094	165,894	178,595	255,892	279,379	259,825
Lemon	54,984	21,081	38,132	29,362	12,869	5,259
Nurse	147	0	27	11	0	0
Silky	4,087	270	643	0	1,714	7
Spinner	17,028	78,951	66,996	49,647	68,576	61,607
Tiger	7,874	8,825	21,594	26,209	14,062	16,796
Total Aggregated LCS carcass weight	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)	143,494 (65 mt dw)
<b>Hammerhead Sharks</b>						
Hammerhead, great	1,430	6,339	49	99	28,591	29,783
Hammerhead, scalloped	0	0	0	33,216	1,101	5,299
Hammerhead, smooth	0	0	0	0	0	0
Hammerhead, unclassified	95,678	51,149	68,709	8,005	0	0
Total Hammerhead carcass weight	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)	35,082 (16 mt dw)
<b>Shark Research Fishery</b>						
Sandbar	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)	38,036 (17 mt dw)
<b>Unclassified Shark</b>						
Unclassified, assigned to large coastal	163,320	0 (0 mt dw)	169,651	188,566	0 (0 mt dw)	0 (0 mt dw)
Total LCS carcass weight	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)	864,378 (392 mt dw)

Sources: 2009-2012 Cortés pers. comm.; 2013-2014 eDealer.

**Table 4.56 Commercial Landings of Small Coastal Sharks in the Atlantic Region (lb dw, 2009-2014)**

Small Coastal Sharks	2009	2010	2011	2012	2013	2014
<b>Blacknose Sharks</b>						
Blacknose	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)	38,437 (17 mt dw)
<b>Non-Blacknose Small Coastal Sharks</b>						
Bonnethead	53,912	9,069	28,284	19,907	22,845	13,221
Finetooth	63,359	76,438	52,318	15,922	19,452	19,026
Sharpnose, Atlantic	262,508	211,190	214,382	345,625	183,524	198,568
Total Non-Blacknose	379,779	296,697	294,984	381,454	225,821	230,815
SCS carcass weight	(172 mt dw)	(135 mt dw)	(134 mt dw)	(173 mt dw)	(102 mt dw)	(105 mt dw)
<b>Unclassified Shark</b>						
Unclassified, assigned to small coastal	34,429 (16 mt dw)	851 (1 mt dw)	36,639 (17 mt dw)	492 (1 mt dw)	0 (0 mt dw)	0 (0 mt dw)
Total SCS carcass weight	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)	269,252 (122 mt dw)

Sources: 2009-2012 Cortés pers. comm.; 2013-2014 eDealer.

**Table 4.57 Commercial Landings of Small Coastal Sharks in the Gulf of Mexico Region (lb dw, 2009-2014)**

Small Coastal Sharks	2009	2010	2011	2012	2013	2014
<b>Blacknose Sharks</b>						
Blacknose	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)	3,160 (1 mt dw)
<b>Non-Blacknose Small Coastal Sharks</b>						
Bonnethead	3,444	2,672	12,986	2,601	4,436	8,391
Finetooth	95,705	45,001	159,558	130,278	60,118	64,023
Sharpnose, Atlantic	43,217	17,958	53,723	100,253	116,133	89,674
Total Non-Blacknose	142,366	65,631	226,267	233,132	180,687	162,088
SCS carcass weight	(65 mt dw)	(30 mt dw)	(103 mt dw)	(106 mt dw)	(82 mt dw)	(74 mt dw)
<b>Unclassified Shark</b>						
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	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)	165,248 (75 mt dw)

Sources: 2009-2012 Cortés pers. comm.; 2013-2014 eDealer.

Table 4.58 Commercial Landings of Atlantic Pelagic Sharks (lb dw, 2009-2014)

Pelagic Sharks	2009	2010	2011	2012	2013	2014
<b>Blue Sharks</b>						
Blue	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)	17,806 (8 mt dw)
<b>Porbeagle Sharks</b>						
Porbeagle	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)	6,414 (3 mt dw)
<b>Pelagic Sharks Other Than Blue or Porbeagle</b>						
Mako, shortfin	141,456	220,400	207,630	198,841	199,177	218,295
Mako, unclassified	9,383	0	0	0	0	0
Oceanic whitetip	933	796	2,435	258	62	22
Thresher	33,333	61,290	47,462	63,965	48,768	116,012
Total Other Pelagic carcass weight	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)	334,329 (152 mt dw)
<b>Unclassified Shark</b>						
Unclassified, assigned to pelagic	6,650 (3 mt dw)	16,160 (7 mt dw)	33,884 (15 mt dw)	28,932 (13 mt dw)	0 (0 mt dw)	0 (0 mt dw)
Total Pelagic carcass weight	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)	358,549 (163 mt dw)

Sources: 2009-2012 Cortés pers. comm.; 2013-2014 eDealer.

Table 4.59 Commercial Landings of Shark Fins (lb dw, 2009-2014)

Fins	2009	2010	2011	2012	2013	2014
<b>Atlantic Large Costal Shark and Small Coastal Shark Fins</b>						
Blacktip	0	0	0	0	2,047	288
Bull	0	0	0	0	23	120
Hammerhead, great	0	0	0	0	82	518
Hammerhead, scalloped	0	0	0	0	7	0
Lemon	0	0	0	0	1,457	0
Spinner	0	0	0	0	3	0
Tiger	0	0	0	0	134	5
Unclassified LCS	33,173	20,545	21,535	15,370	0	0
Blacknose	0	0	0	0	3	4
Bonnethead	0	0	0	0	315	1
Finetooth	0	0	0	0	91	0
Sharpnose, Atlantic	0	0	0	0	202	2
Unclassified SCS	0	0	0	0	0	0
Unclassified	0	0	0	0	16,609	19,868
<b>Total Atlantic Fin weight</b>	<b>33,173</b> (15 mt dw)	<b>20,545</b> (9 mt dw)	<b>21,535</b> (10 mt dw)	<b>15,370</b> (7 mt dw)	<b>20,973</b> (10 mt dw)	<b>20,806</b> (9 mt dw)
<b>Gulf of Mexico Large Costal Shark and Small Coastal Shark Fins</b>						
Blacktip	0	0	0	0	20,939	16,141
Bull	0	0	0	0	12,019	10,132
Hammerhead, great	0	0	0	0	220	351
Hammerhead, scalloped	0	0	0	0	3	44
Lemon	0	0	0	0	61	23
Silky	0	0	0	0	58	0
Spinner	0	0	0	0	2,463	1,833
Tiger	0	0	0	0	76	150
Unclassified LCS	35,152	45,425	40,768	40,693	0	0
Bonnethead	0	0	0	0	14	196
Finetooth	0	0	0	0	2,866	2,092
Sharpnose, Atlantic	0	0	0	0	277	10
Unclassified SCS	0	0	0	0	0	0
Unclassified	0	0	0	0	6,103	6,209
<b>Total Gulf of Mexico Fin weight</b>	<b>35,152</b> (16 mt dw)	<b>45,425</b> (21 mt dw)	<b>40,768</b> (18 mt dw)	<b>40,693</b> (18 mt dw)	<b>45,099</b> (20 mt dw)	<b>37,256</b> (17 mt dw)
<b>Pelagic Shark Fins</b>						
Mako, shortfin	0	0	0	0	1,303*	451
Porbeagle	0	0	0	0	2*	0
Thresher	0	0	0	0	1,638	512
Unclassified Pelagic	0	0	0	0	0	0
<b>Total Pelagic Fin weight</b>	<b>0</b> (0 mt dw)	<b>0</b> (0 mt dw)	<b>0</b> (0 mt dw)	<b>0</b> (0 mt dw)	<b>3,151</b> (1 mt dw)	<b>963</b> (1 mt dw)
<b>Total Fin weight</b>	<b>68,325</b> (31 mt dw)	<b>65,970</b> (30 mt dw)	<b>62,303</b> (28 mt dw)	<b>56,063</b> (25 mt dw)	<b>69,187</b> (30 mt dw)	<b>59,025</b> (27 mt dw)

\* NMFS determined that the porbeagle shark fins should have been reported as shortfin mako fins, which was determined after the 2014 SAFE Report was published. Sources: 2009-2012 Cortés pers. comm.; 2013-2014 eDealer.

**Table 4.60 Commercial Landings of Prohibited Shark Species (lb dw, 2009-2014)**

Prohibited Sharks	2009	2010	2011	2012	2013	2014
<b>Previously Large Coastal Shark and Small Coastal Sharks Landed in Atlantic</b>						
Basking <sup>2</sup>	0	0	0	0	0	0
Bignose <sup>1</sup>	0	0	0	0	0	0
Bigeye sand tiger <sup>2</sup>	0	0	0	0	0	0
Caribbean reef <sup>1</sup>	0	0	0	0	0	0
Dusky <sup>1</sup>	0	0	14	172	0	0
Galapagos <sup>1</sup>	0	0	0	0	0	0
Narrowtooth <sup>1</sup>	0	0	0	0	0	0
Night <sup>1</sup>	0	0	0	0	0	0
Sand tiger <sup>2</sup>	0	18	20	66	0	0
Whale <sup>2</sup>	0	0	0	0	0	0
White <sup>2</sup>	0	0	0	0	0	0
Atlantic angel <sup>1</sup>	0	96	11	171	0	0
Sharprnose, Caribbean <sup>1</sup>	0	0	0	0	38	0
Total Atlantic carcass weight	0 (0 mt dw)	114 (1 mt dw)	45 (1 mt dw)	409 (1 mt dw)	38 (1 mt dw)	0 (0 mt dw)
<b>Previously Large Coastal Shark and Small Coastal Sharks Landed in Gulf of Mexico</b>						
Basking <sup>2</sup>	0	0	0	0	0	0
Bignose <sup>1</sup>	0	0	0	109	0	0
Bigeye sand tiger <sup>2</sup>	0	0	0	0	0	0
Caribbean reef <sup>1</sup>	0	0	0	0	0	0
Dusky <sup>1</sup>	0	0	0	0	0	0
Galapagos <sup>1</sup>	0	0	0	0	0	0
Narrowtooth <sup>1</sup>	0	0	0	0	0	0
Night <sup>1</sup>	0	0	208	0	0	0
Sand tiger <sup>2</sup>	0	0	0	0	0	0
Whale <sup>2</sup>	0	0	0	0	0	0
White <sup>2</sup>	0	0	27	0	0	0
Atlantic angel <sup>1</sup>	0	0	0	0	0	0
Sharprnose, Caribbean <sup>1</sup>	0	0	0	0	0	0
Total Gulf of Mexico carcass weight	0 (0 mt dw)	0 (0 mt dw)	235 (1 mt dw)	109 (1 mt dw)	0 (0 mt dw)	0 (0 mt dw)
<b>Previously Pelagic Sharks</b>						
Bigeye thresher <sup>1</sup>	0	28	135	276	0	0
Bigeye sixgill <sup>1</sup>	0	0	0	0	0	0
Mako, longfin <sup>1</sup>	25,264	289	3,465	362	112	147
Sevengill <sup>1</sup>	0	0	0	0	0	0
Sixgill <sup>1</sup>	0	0	0	0	0	0
Total Pelagic carcass weight	25,264 (11 mt dw)	317 (<1 mt dw)	3,600 (2 mt dw)	638 (<1 mt dw)	112 (<1 mt dw)	147 (<1 mt dw)
Total Prohibited carcass weight	25,264 (11 mt dw)	431 (<1 mt dw)	3,880 (2 mt dw)	1,156 (<1 mt dw)	150 (<1 mt dw)	147 (<1 mt dw)

<sup>1</sup> Prohibited in the commercial fishery as of June 21, 2000. <sup>2</sup> Prohibited as of April 1997. Sources: 2009-2012 Cortés pers. comm.; 2013-2014 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.
- Lambert, D.M., E.M. Thunberg, R.G. Felthoven, J.M. Lincoln, and W.S. Patrick. 2016. Guidance on Fishing Vessel Risk Assessments and Accounting for Safety at Sea in Fishery Management Design. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OSF-2, 56 p.
- Lewis, 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. 2015. Annual report of the United States to ICCAT. USDOC, NMFS. ANN-038/2015.
- 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.