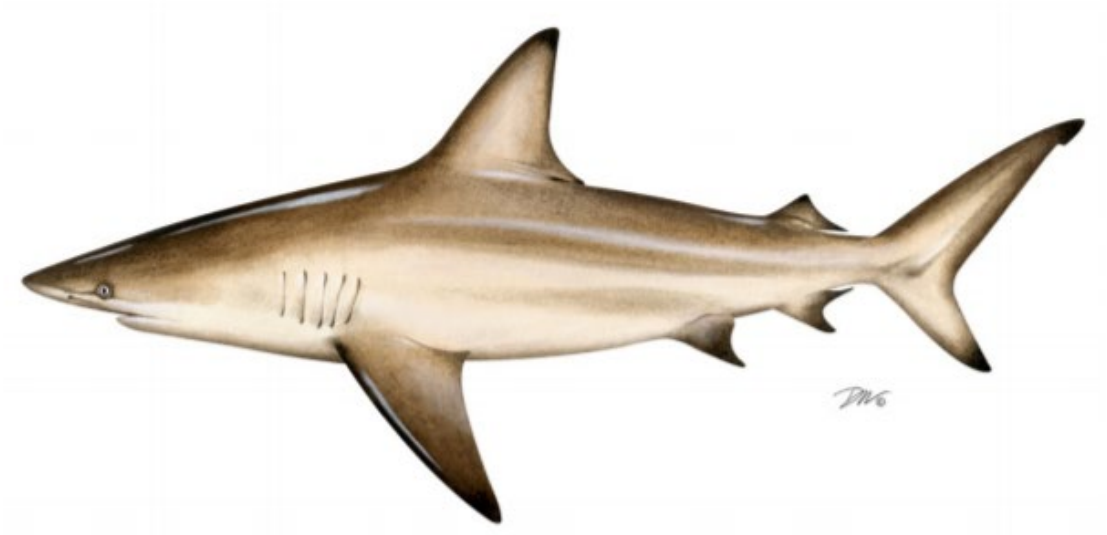
ATLANTIC STATES MARINE FISHERIES COMMISSION

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR COASTAL SHARKS

2014 FISHING YEAR



Prepared by the Plan Review Team

Approved by the Spiny Dogfish & Coastal Sharks Management Board
August 2016

Table of Contents

I. Status of the Fishery Management Plan 2
II. Status of the Stock and Assessment Advice 4
III. Status of the Fishery 6
VI. Implementation of FMP Compliance Requirements for 2014 27
VII. PRT Recommendations 29

I. Status of the Fishery Management Plan

Date of FMP Approval:	August 2008
Amendments	None
Addenda	Addendum I (September 2009) Addendum II (May 2013) Addendum III (October 2013)
Management Unit:	Entire coastwide distribution of the resource from the estuaries eastward to the inshore boundary of the EEZ
States With Declared Interest:	Maine, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida
Active Boards/Committees:	Coastal Shark Management Board, Advisory Panel, Technical Committee, and Plan Review Team

a) Goals and Objectives

The Interstate Fishery Management Plan for Coastal Sharks (FMP) established the following goals and objectives.

GOALS

The goal of the Interstate Fishery Management Plan for Coastal Sharks is "to promote stock rebuilding and management of the coastal shark fishery in a manner that is biologically, economically, socially, and ecologically sound."

OBJECTIVES

In support of this goal, the following objectives proposed for the FMP include:

1. Reduce fishing mortality to rebuild stock biomass, prevent stock collapse, and support a sustainable fishery.
2. Protect essential habitat areas such as nurseries and pupping grounds to protect sharks during particularly vulnerable stages in their life cycle.
3. Coordinate management activities between state and federal waters to promote complementary regulations throughout the species' range.
4. Obtain biological and improved fishery related data to increase understanding of state water shark fisheries.
5. Minimize endangered species bycatch in shark fisheries.

b) Fisheries Management Plan Summary

Atlantic States Marine Fisheries Commission (Commission) adopted its first interstate fishery management plan for coastal sharks in 2008. Coastal sharks are currently managed as

groupings or complexes (Table 1), which include: prohibited, research, non-blacknose small coastal, aggregated large coastal, blacknose, pelagic, hammerhead and smoothhound. The Commission generally approves the opening dates and quotas set forth by NMFS in the annual specifications package and will close fisheries when NMFS has determined the quota has been exceeded. Species in the prohibited category may not be possessed or taken. Sandbar sharks may only be taken with a shark fishery research permit. All species must be landed with their fin attached to the carcass by natural means, with a limited exception for smooth dogfish.

The FMP has been adapted through the following addenda:

Addendum I (2009) modified the FMP to allow limited smooth dogfish processing at sea (removal of fins from the carcass), as long as the total wet weight of the shark fins does not exceed 5 percent of the total dressed weight. In addition, smoothhound recreational possession limits and gillnet check requirements for smoothhound fishermen were removed. These restrictions were removed because they were intended for large coastal sharks. The removal allowed smoothhound fishermen to continue operations while upholding the conservation measures of the FMP.

Addendum II (2013) modified the FMP to allow year round smooth dogfish processing at sea, if fins are removed the total wet weight of the shark fins may not exceed 12 percent of the total dressed weight. State-shares of the smoothhound coastwide quota were allocated. The goal of Addendum II was to implement an accurate fin-to-carcass ratio and prevent any one state from harvesting the entire smoothhound quota, thereby excluding the others.

Addendum III (2013) modified the species groups in the FMP to ensure consistency with NOAA Fisheries (Table 1). The recreational size limit for the hammerhead species group was increased to 78” fork length.

Table 1. List of commercial shark management groups

Species Group	Species within Group
Prohibited	Sand tiger, bigeye sand tiger, whale, basking, white, dusky, bignose, Galapagos, night, reef, narrowtooth, Caribbean sharpnoes, smalltail, Atlantic angel, longfin mako, bigeye thresher, sharpnose sevengill, bluntnose sixgill and bigeye sixgill sharks
Research	Sandbar sharks
Non-Blacknose Small Coastal	Atlantic sharpnose, finetooth, and bonnethead sharks
Blacknose	Blacknose sharks
Aggregated Large Coastal	Silky, tiger, blacktip, spinner, bull, lemon, and nurse
Hammerhead	scalloped hammerhead, great hammerhead and smooth hammerhead
Pelagic	Shortfin mako, porbeagle, common thresher, oceanic whitetip and blue sharks
Smoothhound	Smooth dogfish and Florida smoothhound

II. Status of the Stocks

Stock status is assessed by species or by species complex if there is not enough data for an individual assessment. In summary, fourteen species have been assessed domestically, three species have been assessed internationally, and the rest have not been assessed. Table 2 describes stock status and the associated entity preforming the assessment.

In 2015, a benchmark stock assessment (SEDAR 39) was conducted for the smoothhound complex, including smooth dogfish, the only species of smoothhound occurring in the Atlantic. The assessment indicates Atlantic smooth dogfish (*Mustelus canis*) is not overfished and not experiencing overfishing.

The North Atlantic blue shark (*Prionace glauca*) stock was assessed by ICCAT's Standing Committee on Research and Statistics (SCRS) in 2015. The assessment indicated the stock is not overfished and not experiencing overfishing, as was also concluded in the 2008 stock assessment. However, scientists acknowledge there is a high level of uncertainty in the data inputs and model structural assumptions; therefore, the assessment results should be interpreted with caution.

SEDAR 34 (2013) assessed the Atlantic sharpnose (*Rhizoprionodon terraenovae*) and bonnethead (*Sphyrna tiburo*) sharks. The Atlantic sharpnose stock is not overfished and not experiencing overfishing. The stock status of bonnethead shark stocks (Atlantic and Gulf of Mexico) is unknown. It is recommended that a benchmark assessment for both stocks be undertaken.

The North Atlantic shortfin mako shark (*Isurus oxyrinchus*) stock was assessed by ICCAT SCRS. According to the 2012 assessment, current levels of catch may be considered sustainable as potential indicators of overfishing identified in the prior assessment have diminished. The stock is not overfished nor experiencing overfishing.

A 2011 benchmark assessment (SEDAR 21) of dusky (*Carcharhinus obscures*), sandbar (*Carcharhinus plumbeus*), and blacknose (*Carcharhinus acrontus*) sharks indicates that both dusky and blacknose sharks are overfished and experiencing overfishing. Sandbar sharks continued to be overfished. As described in the Magnuson-Stevens Act, NOAA Fisheries must establish a rebuilding plan for an overfished stock. As such, the rebuilding date for dusky sharks is 2108, sandbar sharks is 2070, and blacknose sharks is 2043. A dusky stock assessment update is scheduled for 2016.

Porbeagle sharks (*Lamna nasus*) were assessed by the ICCAT's SCRS in 2009. The assessment found the Northwest Atlantic stock is increasing in biomass, however the stock is considered to be overfished with overfishing not occurring. NOAA Fisheries established a 100-year rebuilding plan for porbeagle sharks; the expected rebuilding date is 2108.

A 2009 stock assessment for the Northwest Atlantic and Gulf of Mexico populations of scalloped hammerhead sharks (*Sphyrna lewini*) indicated the stock is overfished and experiencing overfishing. This assessment was reviewed by NOAA Fisheries and deemed appropriate to serve as the basis for U.S. management decision. In response to the assessment findings, NOAA Fisheries established a scalloped hammerhead rebuilding plan that will end in 2023.

SEDAR 11 (2006) assessed the LCS complex and blacktip sharks (*Carcharhinus limbatus*). The LCS assessment suggested that it is inappropriate to assess the LCS complex as a whole due to the variation in life history parameters, different intrinsic rates of increase, and different catch and abundance data for all species included in the LCS complex. Based on these results, NMFS changed the status of the LCS complex from overfished to unknown. As part of SEDAR 11, blacktip sharks were assessed for the first time as two separate populations: Gulf of Mexico and Atlantic. The results indicated that the Gulf of Mexico stock is not overfished and overfishing is not occurring, while the current status of blacktip sharks in the Atlantic region is unknown.

Table 2. Stock Status of Atlantic Coastal Shark Species and Species Groups

Species or Complex Name	Stock Status		References/Comments
	Overfished	Overfishing	
Pelagic			
Porbeagle	Yes	No	Porbeagle Stock Assessment, ICCAT Standing Committee on Research and Statistics Report (2009); Rebuilding ends in 2108 (HMS Am. 2)
Blue	No	No	ICCAT Standing Committee on Research and Statistics Report (2015)
Shortfin mako	No	No	ICCAT Standing Committee on Research and Statistics Report (2012)
All other pelagic sharks	Unknown	Unknown	
Aggregated Large Coastal Sharks (LCS)			
Atlantic Blacktip	Unknown	Unknown	SEDAR 11 (2006)
Aggregated Large Coastal Sharks - Atlantic Region	Unknown	Unknown	SEDAR 11 (2006); difficult to assess as a species complex due to various life history characteristics/ lack of available data
Non-Blacknose Small Coastal Sharks (SCS)			
Atlantic Sharpnose	No	No	SEDAR 34 (2013)
Bonnethead	Unknown	Unknown	SEDAR 34 (2013)
Finetooth	No	No	SEDAR 13 (2007)
Hammerhead			
Scalloped	Yes	Yes	SEFSC Scientific Review by Hayes et al. (2009); Rebuilding ends in 2023 (HMS Am. 5a)
Blacknose			
Blacknose	Yes	Yes	SEDAR 21 (2010); Rebuilding ends in 2043 (HMS Am. 5a)
Smoothhound			
Atlantic Smooth Dogfish	No	No	SEDAR 39 (2015)
Research			
Sandbar	Yes	No	SEDAR 21 (2010)
Prohibited			
Dusky	Yes	Yes	SEDAR 21 (2010); Rebuilding ends in 2108 (HMS Am. 2)
All other prohibited sharks	Unknown	Unknown	

III. Status of the Fishery

Specifications (Opening, closures, quotas)

NOAA Fisheries sets quotas for coastal sharks through the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan. The opening dates, closures dates and quotas are detailed in Table 3. All non-prohibited coastal shark management groups, except aggregated large coastal and hammerheads shark groupings, opened on January 1, 2014. NOAA Fisheries closes commercial shark fisheries when 80% of the available quota is reached. Commercial shark dealer reports indicate the following commercial fisheries exceeded 80% of the available quota and had an early closure: blacknose, non-blacknose small coastals, aggregated large

coastal and hammerhead fishery. When the fishery closes in federal waters, the Interstate FMP dictates that the fishery also closes in state waters.

Table 3. Commercial quotas and opening dates for 2014 shark fishing season

Species Group	Region	2014 Annual Quota (mt dw)	Season Opening Dates	Closing Date (if any)
Aggregated Large Coastal Sharks (LCS)	Atlantic	168.9	June 1, 2014	Nov. 30, 2014
Hammerhead Sharks	Atlantic	27.1	June 1, 2014	Nov. 30, 2014
Non-Blacknose Small Coastal Sharks (SCS)	Atlantic	264.1	January 1, 2014	July 28, 2014
Blacknose Sharks	Atlantic	17.5	January 1, 2014	July 28, 2014
Blue Sharks	No regional quotas	273.0	January 1, 2014	
Porbeagle Sharks	No regional quotas	1.2	January 1, 2014	Dec. 17, 2014
Pelagic Sharks other than Porbeagle or Blue	No regional quotas	488.0	January 1, 2014	
Shark Research Quota (Aggregated LCS)	No regional quotas	50.0	January 1, 2014	
Sandbar Research Quota	No regional quotas	116.6	January 1, 2014	

Commercial Landings

Commercial landings of Atlantic large coastal sharks species in 2014 were 464,803 pounds (lbs) dressed weight (dw), slightly above 2012-2013 landings (Table 4). Commercial landings of small coastal shark species in 2014 were 269,252 lbs dw, roughly similar to 2013 landings which were the lowest SCS landings in five years (Table 5). Commercial landings of Atlantic pelagic sharks was 358,549 lbs dw, which represents the largest landings in the six year time series and a 40% increase from 2013 landings—the lowest landings in the time series (Table 6). The increase in pelagic shark landings can be attributed to a 138% increase in the commercial harvest of thresher sharks.

Table 4. Commercial landings of authorized Atlantic large coastal sharks by species (pounds dw), 2008-2014. Source: HMS SAFE Report, 2015.

	2008	2009	2010	2011	2012	2013	2014
Great hammerhead	0	0	0	0.0	371	7,406	13,538
Scalloped hammerhead	0	0	0	0.0	15,800	27,229	24,652
Smooth hammerhead		4,025	7,802	110	3,967	1,521	601
Unclassified	21,631	62,825	43,345	35,618	9,617	0	0
Hammerhead Total	**21,631**	**66,850**	**51,147**	**35,728**	**29,755**	**36,156**	**38,791**
Blacktip	258,035	229,267	246,617	176,136	215,403	256,277	282,009
Bull	43,200	61,396	56,901	49,927	24,504	33,980	32,372
Lemon	22,530	30,909	25,316	45,448	21,563	16,791	13,047
Nurse	10	0	71	0	81	0	0
Silky	306	1,386	1,049	992	29	186	289
Spinner	1,265	20,022	13,544	4,113	10,643	26,892	25,716
Tiger	14,119	15,172	43,145	36,425	23,245	16,561	29,062
Unclassified	187,670	70,894	2,229	50,711	53,705	0	0
Aggregated LCS Total	**527,135**	**429,046**	**388,872**	**363,766**	**349,345**	**350,687**	**382,495**
Sandbar	63,035	54,141	84,339	94,295	46,446	46,868	82,308
Hammerhead, Aggregated LCS, Sandbar Total	**611,801**	**550,037**	**524,358**	**493,775**	**425,374**	**433,710**	**464,803**

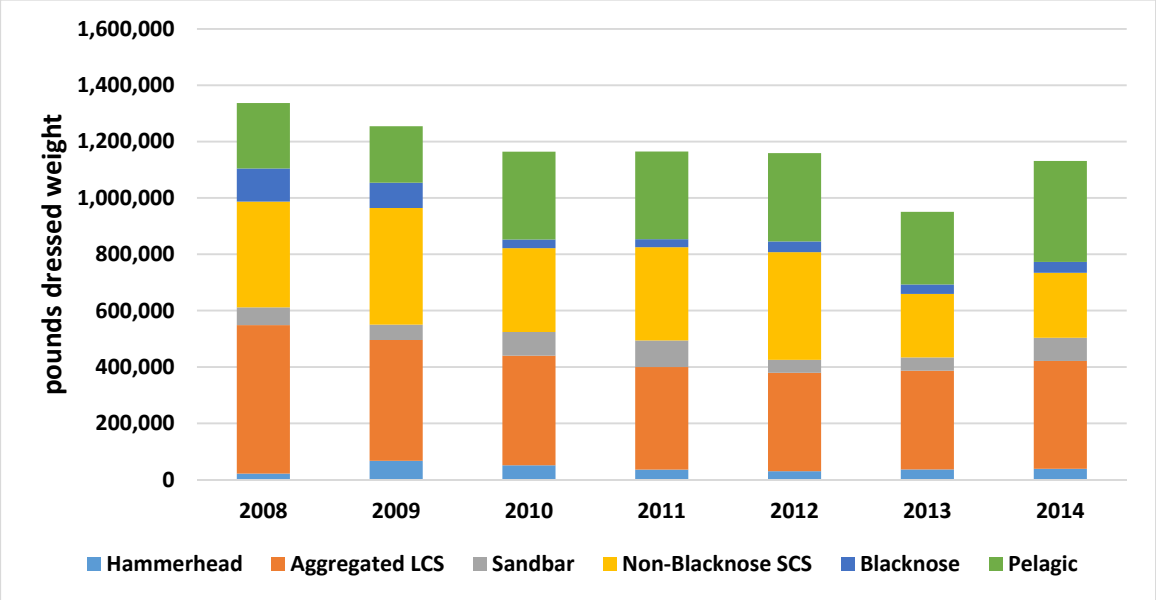
Table 5. Commercial landings of authorized Atlantic small coastal sharks by species (lbs dw), 2008-2014. Source: HMS SAFE Report, 2015.

	2008	2009	2010	2011	2012	2013	2014
Blacknose	117,197	90,023	30,287	28,373	37,873	33,382	38,437
Bonnethead	61,549	53,912	9,069	28,284	19,907	22,845	13,221
Finetooth	28,872	63,359	76,438	52,318	15,922	19,452	19,026
Atl. Sharpnose	261,788	262,508	211,190	214,382	345,625	183,524	198,568
Unclassified	23,077	34,429	851	36,639	492	0	0
SCS Total	**490,483**	**504,231**	**327,835**	**359,996**	**419,819**	**259,203**	**269,252**

Table 6. Commercial landings of authorized pelagic sharks by species off the Atlantic coast of the United States (lb dw), 2008-2014. Source: HMS SAFE Report, 2015.

	2008	2009	2010	2011	2012	2013	2014
Blue	3,229	4,793	9,135	13,370	17,200	9,767	17,806
Porbeagle	5,259	3,609	4,097	5,933	4,250	54	6,414
Shortfin Mako	120,255	141,456	220,400	207,630	198,841	199,177	218,295
Unclassified Mako	39,661	9,383	0	0	0	0	0
Oceanic whitetip	1,899	933	796	2,435	258	62	22
Thresher	47,528	33,333	61,290	47,462	63,965	48,768	116,012
Unclassified pelagic	14,819	6,650	16,160	33,884	28,932	0	0
Pelagic Total	**232,650**	**200,157**	**311,878**	**310,714**	**313,446**	**257,828**	**358,549**

Figure 1: Commercial landings of coastal sharks off the east coast of the United States by species complex, 2008-2014. Source: HMS SAFE Report, 2015.



Recreational Landings

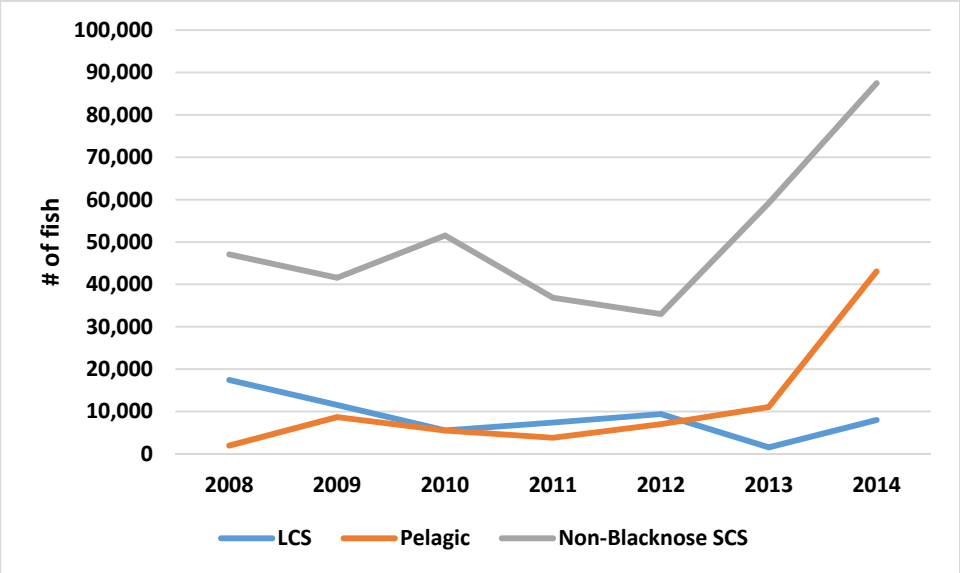
Approximately 145,000 sharks were harvested during the 2014 recreational fishing season, which represents the largest harvest in the time series (Table 7). The non-blacknose small coastal shark (SCS) group comprised 60% of the overall recreational harvest, all species within this group (Atlantic sharpnose, bonnethead, finetooth) had harvest increases. The LCS group increase is attributed to requiem shark and blacktip shark harvest increases. The estimated recreational harvest for the pelagic shark group is comprised of harvest from the Atlantic Ocean and the Gulf of Mexico. The increases in pelagic harvest is attributed to mackerel sharks, shortfin mako, and thresher sharks.

Table 7. Estimated recreational harvest of all Atlantic shark species by species group in numbers of fish, 2008-2014. Source: HMS SAFE Report, 2015.

	2008	2009	2010	2011	2012	2013	2014
Aggregated LCS	17,441	11,536	5,540	7,396	9,386	1,547	8,010
Hammerhead	4	574	13	179	41	600	900
Pelagic*	1,972	8,694	5,529	3,806	7,034	11,056	43,049
Blacknose	2	947	0	573	0	70	4146
Non-Blacknose SCS	47,059	41,577	51,529	36,850	33,005	59,207	87,481
Sandbar	4,210	6,461	2,193	1,125	857	399	1,873
Prohibited	1,502	506	4	23	15	16	2
Total	72,190	70,295	64,808	49,952	50,338	72,895	145,461

*Pelagic sharks include Gulf of Mexico landings.

Figure 2: Estimated recreational harvest for LCS, SCS and pelagic species by species group, in numbers of fish, 2008-2014. Source: HMS SAFE Report, 2015.



IV. Status of Research and Monitoring

Under the Interstate Fishery Management for Coastal Sharks, the states are not required to conduct any fishery dependent or independent studies, however they are encouraged to submit any information collected while surveying for other species. This section describes the research and monitoring efforts during the 2014 fishing year, where available.

The Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) appears in multiple state monitoring efforts, a brief description is below. The survey monitors the presence of young-of-year and juvenile sharks along the east coast. It is managed and coordinated by NOAA's Northeast Fisheries Science Center (NEFSC) through the Apex Predators Program based at the NEFSC's Narragansett Laboratory in Rhode Island. Longline and gillnet sampling, and mark-recapture techniques are used to determine the relative abundance, distribution and migration of sharks utilizing nursing grounds from Massachusetts to Florida. In 2014, COASTSPAN program participants were the Georgia Department of Natural Resources and the South Carolina Department of Natural Resources. In addition, the survey is conducted in summer months in Narragansett and Delaware Bays, and in Massachusetts waters. Standardized indices of abundance from COASTPAN surveys are used in the stock assessments for large and small coastal sharks.

Massachusetts

Movement and Habitat Studies: With external funding from private and federal grants, *MarineFisheries* personnel continued in 2014 to collaborate with federal and academic researchers on the study of broad and fine-scale movements of numerous shark species using pop-up satellite tags, real-time satellite tags, acoustic transmitters, and conventional tags. These species include white, basking, blue, shorfin mako, tiger, and sand tiger sharks.
Basking Shark: Since 2004, 57 basking sharks have been tagged with PSAT tags and 10 with SPOT tags. A quantitative analysis of the fine-scale movements of SPOT-tagged basking sharks as they relate to oceanographic features derived from satellites was published (Curtis et al., 2014).

White Shark: From 2009 through 2014, a total of 56 individual white sharks were tagged off the eastern coast of Cape Cod, primarily in nearshore shallow waters from Orleans to the southern tip of Monomoy. Five of these sharks were tagged in partnership with the non-profit organization, OCEARCH, in 2012 and 2013. These five sharks—the first to be tagged with real time satellite transmitters in the Atlantic Ocean—can be followed live through OCEARCH's interactive tracking website. The remaining sharks were tagged with one or more of the following tags: pop-up satellite archival tags, coded acoustic transmitters, autonomous underwater vehicle transponders, active acoustic transmitters, and NOAA Fisheries conventional tags. The 56 tagged sharks ranged from roughly 7.5 to 18.5 feet in total length.
In 2014, project personnel initiated a study to quantify the regional population size of white sharks in Massachusetts waters. With funding and logistical support from the Atlantic White Shark Conservancy, a formal survey was conducted from mid-June through October off the southern coast of Cape Cod. In total, 68 individual white sharks (43 males, 25 females) were identified. Of these, 18 were tagged with acoustic transmitters. Over the course of the summer and fall, 22 white sharks were detected by the *MarineFisheries* acoustic array off Cape Cod.
Blue, Shortfin Mako, and Tiger Sharks: In cooperation with OCEARCH and the Montauk Marine Basin, one blue, two tiger, and three shortfin mako sharks were tagged with real-time SPOT tags during the second annual Shark's Eye All-release Shark Tournament held July 12-13, 2014 in Montauk, New York. The movements of these sharks can be followed on the OCEARCH interactive tracking website.

Post-release Survivorship Studies: In 2014, work continued with University of Massachusetts researchers to study the physiological effects of longline capture in sandbar and dusky sharks. Funding for the study was obtained from the Saltonstall-Kennedy Program.

Life History: Working with NOAA Fisheries and WHOI researchers, personnel generated age and growth estimates for the white shark in the western North Atlantic. Using bomb-produced radiocarbon, which acts as a kind of bone marker, vertebral growth bands were counted and validated as annual. In 2014, part of this research was published (Hamady et al., 2014).

The following peer-reviewed publications were issued in 2014:

Hamady, L.L., L.J. Natanson, G.B. Skomal, and S.R. Thorrold. 2014. Vertebral bomb radiocarbon suggests extreme longevity in white sharks. Plos One, DOI: 10.1371/journal.pone.0084006.

Braun, C.D., G.B. Skomal, S.R. Thorrold, M.L. Berumen. 2014. Diving behaviors of the reef manta ray (Manta alfredi) link coral reefs with adjacent deep pelagic habitats. PLoS One, DOI: 10.1371/journal.pone.0088170.

Kneebone, J., J. Chisholm, and G.B. Skomal. 2014. Movement patterns of juvenile sand tigers (Carcharias taurus) along the east coast of the USA. Marine Biology 161:1149-1163.

Curtis,T.H., C.T. McCandless, J.K. Carlson, G.B. Skomal, N.E. Kohler, L.J. Natanson, G.H. Burgess, J. J. Hoey, and H.L. Pratt, Jr. 2014. Seasonal distribution and historic trends in abundance of white sharks, Carcharodon carcharias, in the western North Atlantic Ocean. PLoS ONE 9(6): e99240. doi:10.1371/journal.pone.0099240.

Thorrold, S.R., P. Afonso, J. Fontes, C.D. Braun, R.S. Santos, G.B. Skomal, and M.L. Berumen. 2014. Extreme diving behavior in devil rays links surface waters and the deep ocean. Nature Communications, DOI: 10.1038/ncomms5274.

Berumen, M.L., C.D. Braun, J. E.M. Cochran, G. B. Skomal, S. R. Thorrold. 2014. Movement patterns of juvenile whale sharks tagged at an aggregation site in the Red Sea. PLoS ONE 9(7): e103536. doi:10.1371/journal.pone.0103536.

Curtis, T.H., S.I. Zeeman, E.L. Summers, S.X. Cadrin, and G. B. Skomal. 2014. Eyes in the sky: linking satellite oceanography and biotelemetry to explore habitat selection by basking sharks. Animal Biotelemetry, www.animalbiotelemetry.com/content/2/1/12

Rhode Island

Fishery independent monitoring is limited to coastal shark species taken in the RI Division of Fish & Wildlife, Marine Fisheries Section monthly and seasonal trawl survey. During the 2014 calendar year the only coastal shark species captured in the trawl survey was smooth dogfish (*Mustelus canis*). A summary of fishery independent monitoring for coastal sharks is summarized in Table 8 below.

Table 8. Total number of coastal sharks (smooth dogfish) caught per month and during the Rhode Island seasonal trawl surveys in 2014

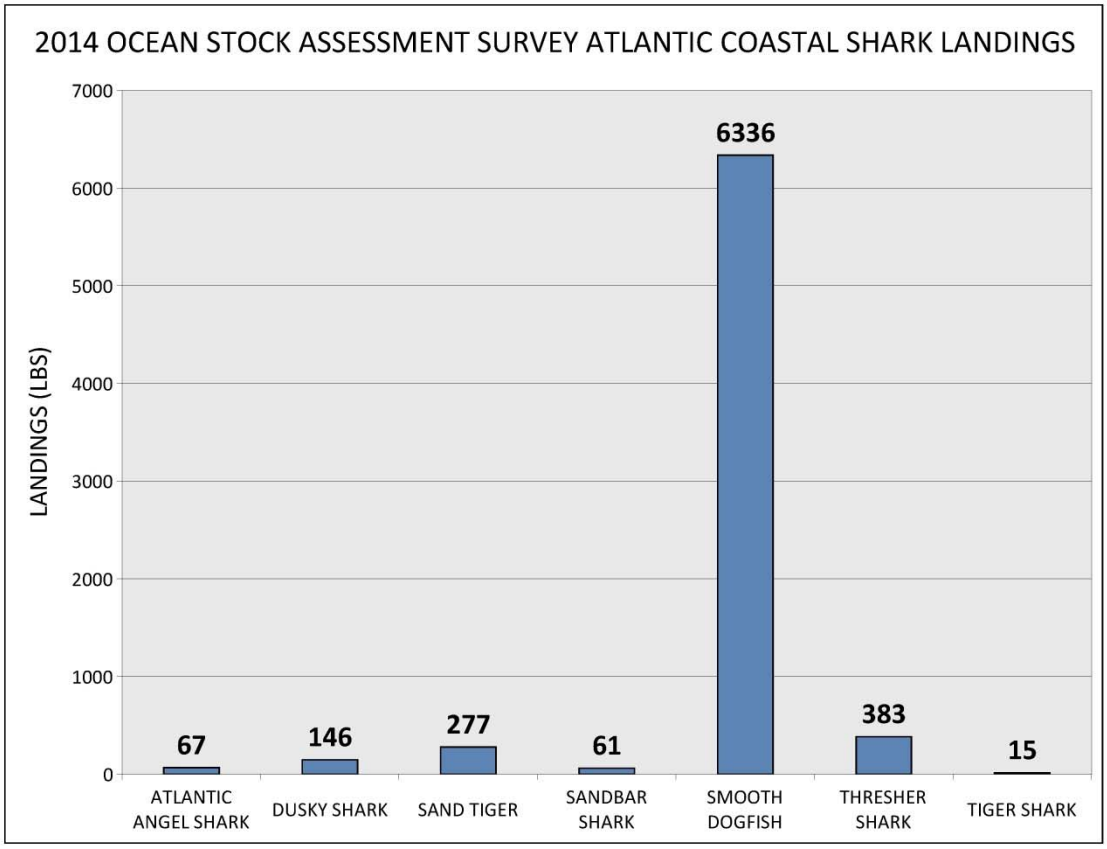
Year	Month	Tows conducted	Total weight (kg)	Total number	Number per tow	kg per tow
Monthly Coastal Trawl Survey			-	-	-	-
2014	JAN	11	0	0	0.00	0.00
2014	FEB	12	0	0	0.00	0.00
2014	MAR	10	0	0	0.00	0.00
2014	APR	13	0	0	0.00	0.00
2014	MAY	13	1.23	1	0.08	0.09
2014	JUN	13	13.94	6	0.46	1.07
2014	JUL	13	11.45	13	1.00	0.88
2014	AUG	13	11.125	13	1.00	0.86
2014	SEP	13	7.695	14	1.08	0.59
2014	OCT	13	0	0	0.00	0.00
2014	NOV	7	0	0	0.00	0.00
2014	DEC	13	0	0	0.00	0.00
Seasonal Coastal Trawl Survey			-	-	-	-
2014	Spring	44	0	0	0.00	0.00
2014	Fall	44	48.79	51	1.16	1.11

New Jersey

New Jersey does not currently conduct any fishery-independent monitoring programs for Atlantic Coastal Sharks, but does receive sharks from the State's Ocean Stock Assessment Survey. In 2014, the Survey caught approximately 67lbs of Atlantic Angel Sharks, 146lbs of Dusky Sharks, 277lbs of Sand Tiger Sharks, 61lbs of Sandbar Sharks, 6,336lbs of Smooth Dogfish, 383lbs of Thresher Sharks, and 15lbs of Tiger Sharks (Figure 3).

Sharks from the New Jersey Ocean Stock Assessment Survey are collected by a 30-meter otter trawl every January, April, June, August, and October since 1989. Tows are approximately 1 nautical mile and are performed via a stratified random sampling design. Latitudinal strata are identical to those used by the National Marine Fisheries Service groundfish survey. Longitudinal boundaries are defined by the 18-30, 30-60, and 60-90 foot isobaths. Smooth Dogfish are cumulatively weighed and measured by total length in centimeters. All other shark species are sorted by gender, weighed individually, and measured by total length in centimeters.

Figure 3. 2014 New Jersey Ocean Stock Assessment Survey, Shark Landings (lbs)



Delaware

Delaware conducts a 30' adult trawl survey and a 16' juvenile trawl survey in the Delaware Bay. In the adult trawl survey, smooth dogfish were the most common shark species caught (Figure 9), with Sand Tiger (Figure 10) and Sandbar Sharks (Figure 11) taken in low numbers. Thresher, Atlantic angel shark, Atlantic sharpnose shark (Figure 12) and dusky shark were caught in the past, but rarely. Sand tiger catch per nautical mile remained high for the time series and showed a marked increase in 2014. Sandbar shark catch per nautical mile were above average for the time series and showed a marked increase in 2014. Smoothhound catch per nautical mile continues to increase from its most recent period of low abundance in 2004 and 2005. In the juvenile trawl, the species caught were sand tiger (Figure 13), sandbar (Figure 14) and smoothhound (Figure 15). With the exception of smoothhound, the capture of coastal sharks in the juvenile trawl is a rare occurrence. Delaware will continue to conduct monitoring programs at the same level in 2015.

Figure 9. Smooth dogfish shark relative abundance (mean number per nautical mile), time series (1966 – 2014) as measured in 30-foot trawl sampling in the Delaware Bay.

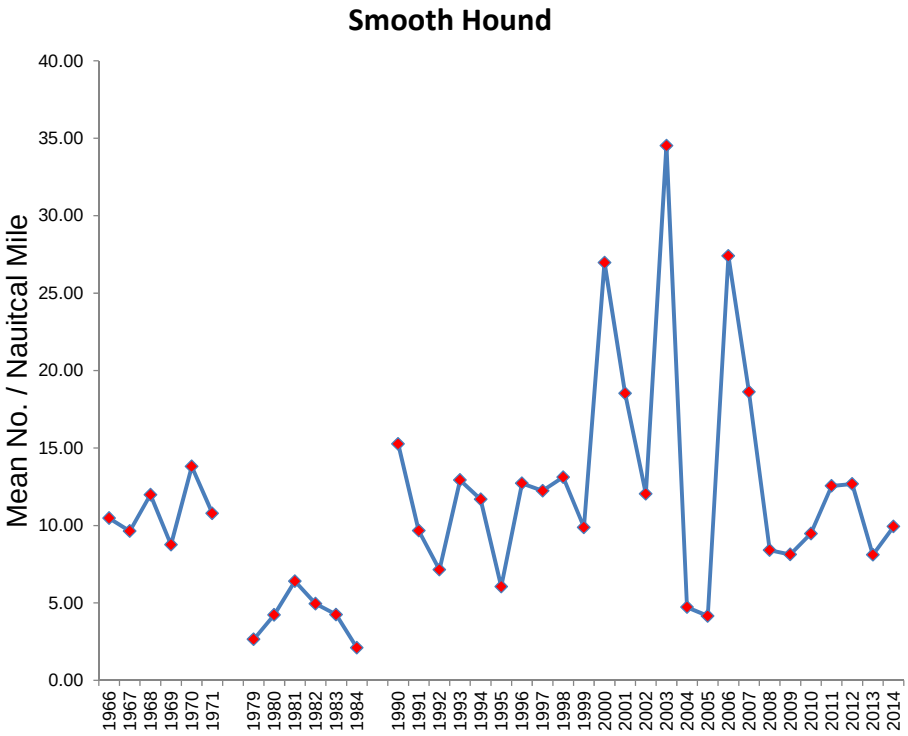


Figure 10. Sand tiger shark relative abundance (mean number per nautical mile), time series (1966 – 2014) as measured in 30-foot trawl sampling in the Delaware Bay.

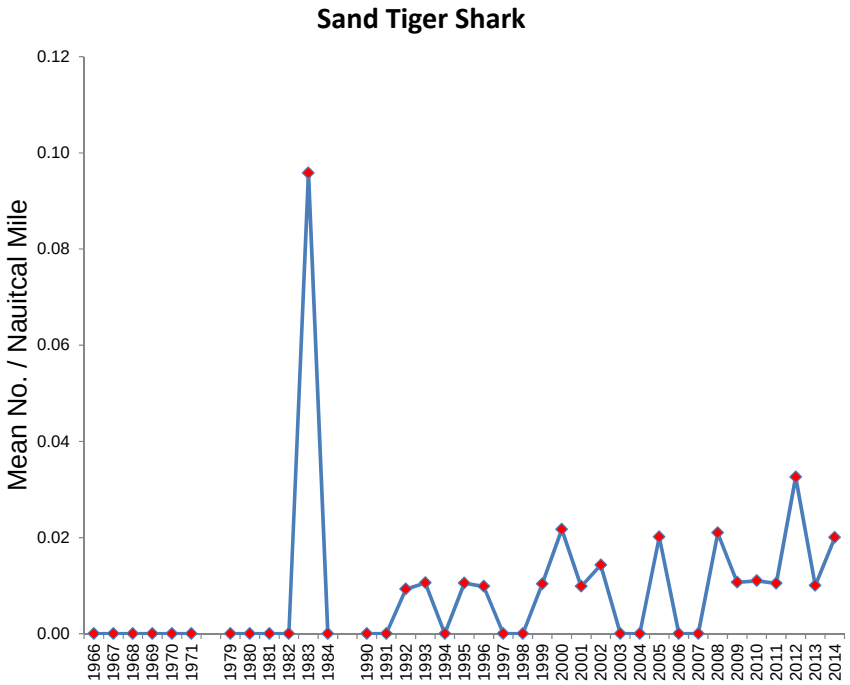


Figure 11. Sandbar shark relative abundance (mean number per nautical mile), time series (1966 – 2014) as measured in 30-foot trawl sampling in the Delaware Bay.

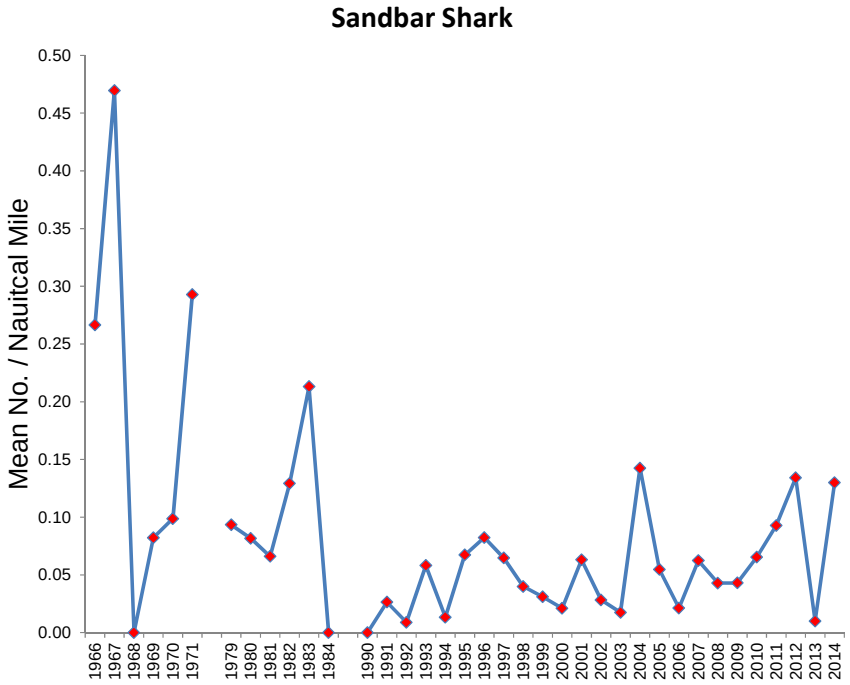


Figure 12. Atlantic sharpnose shark relative abundance (mean number per nautical mile), time series (1966 – 2014) as measured in 30-foot trawl sampling in the Delaware Bay.

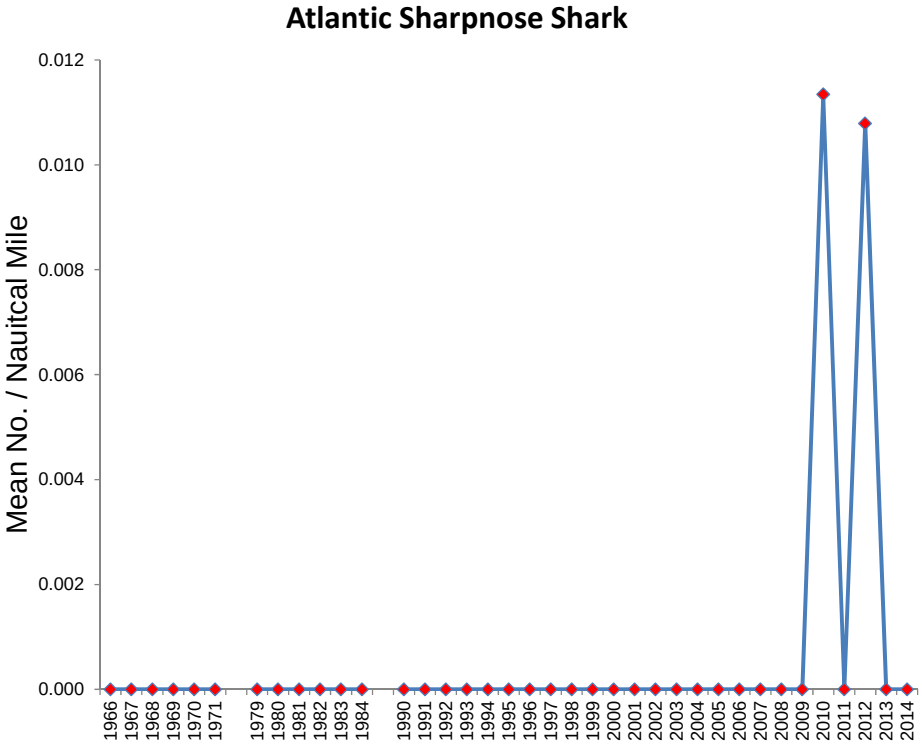


Figure 13. Index of sand tiger shark, time series (1980 – 2014) as measured by 16-foot trawl sampling in the Delaware estuary.

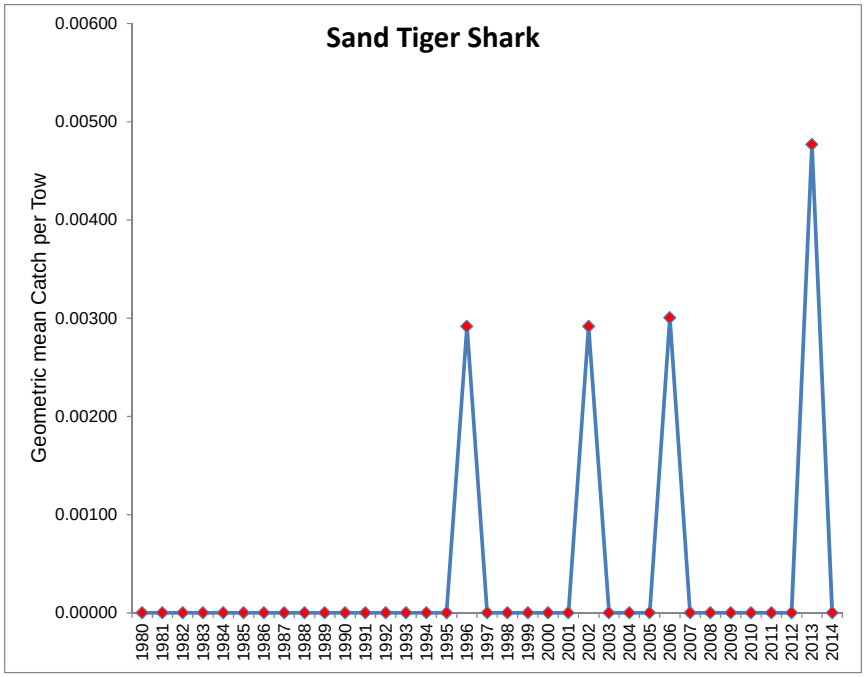


Figure 14. Index of sandbar shark, time series (1980 – 2014) as measured by 16-foot trawl sampling in the Delaware estuary.

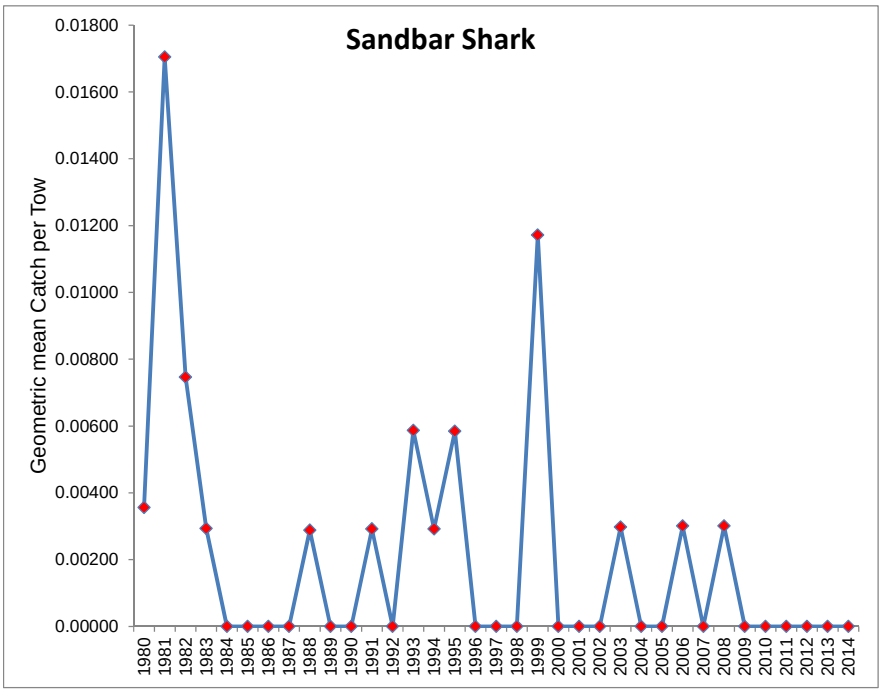
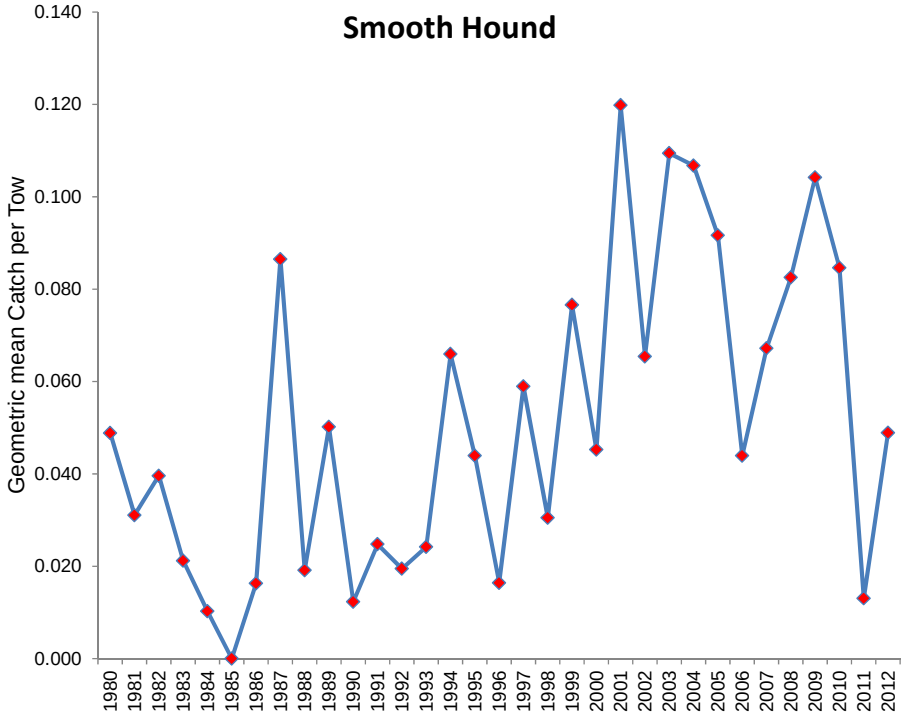


Figure 15. Index of young-of-the-year smooth dogfish abundance, time series (1980 – 2014) as measured by 16-foot trawl sampling in the Delaware estuary.



Maryland

There was no specific at sea sampling program for Atlantic coastal sharks in Maryland. Limited biological sampling of commercial catch onboard commercial offshore trawlers targeting horseshoe crabs occurred and nine sharks were encountered. Two smooth dogfish were captured on November 3, 2014 (unknown sex). Five angel sharks were caught and released on July 7, 2014 and October 8, 2014 (4 unknown sex, one female). Two sand tiger sharks were caught on July 7, 2014 (unknown sex). No fishery independent monitoring for Atlantic coastal sharks was conducted in Maryland state waters.

Virginia

The Virginia Institute of Marine Science Shark Research Program began in 1973 and is one of the longest running longline surveys in the world. The program has provided data on habitat utilization, age, growth, reproduction, trophic interactions, basic demographics, and relative abundance for dominant shark species. Cruise times have been variable over the time series, but generally sampling has occurred monthly from May through October. The survey utilizes a fixed station design with nine core sampling locations, although additional auxiliary locations have been sampled frequently over the years.

Beginning in 2012, the Virginia Institute of Marine Science Shark Research Program, with funding from NMFS, initiated a new longline survey designed specifically to target YOY sandbar sharks in the lower Chesapeake Bay and Eastern Shore. The survey follows a stratified random sampling design, rather than a fixed survey design, and falls under the broader COASTSPAN umbrella survey.

North Carolina

Fishery dependent sampling of North Carolina commercial fisheries has been ongoing since 1982 (conducted under Title III of the Interjurisdictional Fisheries Act, and funded in part by the U.S. Department of Commerce, National Marine Fisheries Service). Predominant fisheries sampled include the ocean sink net fishery, estuarine gill net fishery, winter trawl fishery, long haul seine/swipe net fishery, beach haul seine fishery, and pound net fishery.

A total of 64 fishery-dependent samples containing sharks were collected from the ocean gill net, ocean trawl and estuarine gill net fisheries in 2014. Peak sampling occurred in January, February, and April (Table 5) for sharks, including smoothhound sharks. Whole weights and lengths for sharks other than spiny dogfish are rarely obtained during sampling. Sharks are typically dressed or processed when sampling occurs therefore the number of processed individuals and aggregate weights are obtained during sampling. Smoothhound sharks and Atlantic sharpnose were the most abundant species in dependent sampling by number (Table 9).

Table 9. North Carolina fishery-dependent shark sampling summary by month in 2014

Month	# of Samples
January	10
February	10
March	3
April	9
May	7
June	3
July	2
August	1
September	6
October	2
November	5
December	6
Total	64

Table 10. North Carolina fishery-dependent shark sampling summary by species, number of individuals, sum of sample weight (lb) and sum of harvest weight (lb) in 2014

Species	# Indv.	Sum of Sample Wgt. (lb)	Sum of Harvest Wgt. (lb)
Smoothhound Shark (*M. canis*)	547	3,031	10,034
Atlantic Sharpnose Shark (*R. terraenovae*)	158	587	3,058
Sharks (*Chondrichthyes spp.)*	40	343	348
Thresher Shark (*A. vulpinus*)	31	588	670
Blacktip Shark (*C. limbatus*)	26	315	623
Spinner Shark (*C. brevipinna*)	12	234	518
Blacknose Sharks (*C. acronotus*)	9	115	115
Hammerhead Sharks (*Sphyrna spp.*)	4	535	535
Total	827	5,748	15,901

The NCDMF initiated a fishery-independent red drum longline survey in 2007 for developing an index of abundance for adult red drum; this project also allows for capture and tagging of Atlantic coastal sharks in cooperation with the North East Fisheries Science Center's (NEFSC) Cooperative Shark Tagging Program. The red drum longline survey in the Pamlico Sound resulted in a catch of 18 sharks in 2014 (Table 11). Four species of shark were captured, ten (10) blacktip (*C. limbatus*), six (6) sandbar (*C. plumbeus*), one (1) Atlantic sharpnose, and one (1) finetoothf (*C. isodon*). A total of twelve (12) sharks were tagged with M-tags from the NEFSC Cooperative Shark Tagging Program, five (5) blacktip, six (6) sandbar, and one (1) finetooth.

Table 11. Species, number of individuals, sex and average total length [TL (mm)] of sharks caught in the 2014 estuarine red drum longline survey.

Species	# Indv.	Avg. TL (mm)
Blacktip Shark (*C. limbatus*)		
Female	9	1,437
Male	1	n/a
Atlantic Sharpnose Shark (*R. terraenovae*)		
Female	1	431
Sandbar Shark (*C. plumbeus*)		
Female	5	910
Male	1	800
Finetooth Shark (*C. isodon*)		
Male	1	1,435
Total	18	

The NCDMF initiated a fishery-independent gill net survey in 2001 and expanded its coverage in 2008 to include the Cape Fear and New Rivers and the near shore (0-3 miles) Atlantic Ocean from New River Inlet south to the South Carolina state line. The objective of this project is to provide annual, independent, relative abundance indices for key estuarine species in the near shore Atlantic Ocean, Pamlico Sound, Pamlico, Pungo, Neuse, New, and Cape Fear Rivers. The survey employs a stratified random sampling design and utilizes multiple mesh gill nets (3.0 inch to 6.5 inch stretched mesh, by ½ inch increments). Sharks from the 2014 Pamlico Sound independent gill net survey catch included: 25 smoothhound, two (2) Atlantic sharpnose, two (2) bonnethead (*S. tiburo*), and five (5) bull sharks [(*C. leucas*) Table 12]. Sharks from the 2014 Cape Fear, New and Neuse River independent gill net survey catch included: 83 Atlantic sharpnose, two (2) blacktip, 21 bonnethead, two (2) bull, and six (6) sandbar sharks (Table 13).

Table 12. Species, number of individuals, sex and average total length [TL (mm)] of sharks caught in the 2014 North Carolina Pamlico Sound gill net survey.

Species	# Indv.	Avg. TL (mm)
Atlantic Sharpnose Shark (*R. terraenovae*)		
Male	2	807
Bonnethead Shark (*S. tiburo*)		
Female	2	861
Bull Shark (*C. leucas*)		
Unknown	5	733
Smoothhound Shark (*M. canis*)		
Male	17	587
Female	8	577
Total	34	

Table 13. Species, number of individuals, sex and average total length [TL (mm)] of sharks caught in the 2014 North Carolina Cape Fear, Neuse and New River gill net survey.

Species	# Indv.	Avg. TL (mm)
Atlantic Sharpnose Shark (*R. terraenovae*)		
Male	33	807
Female	44	387
Unknown	6	368
Blacktip Shark (*C. limbatus*)		
Male	1	1,120
Female	1	1,130
Bonnethead Shark (*S. tiburo*)		
Female	21	1,027
Bull Shark (*C. leucas*)		
Male	1	950
Unknown	1	671
Sandbar Shark (*C. plumbeus*)		
Male	3	743
Female	3	1,024
Total	114	

The fisheries-independent assessment ocean gill net survey began in February, 2008, funded by the Coastal Recreational Fishing License receipts. The program utilizes the same sampling framework as the fisheries-independent gill net survey. This program is designed to gather data on fishes utilizing the nearshore ocean (<3 miles) from New River Inlet south to the SC/NC state line. The goals of the program are to provide CPUE data for coastal fishes, to supplement age, growth, and reproduction studies, to evaluate catch rates and species distribution for use in management plans, and to characterize habitat use. In 2014, 452 sharks were captured in the near shore ocean waters from New River Inlet south to the SC/NC state line (Table 14). Coastal sharks from the 2014 ocean gill net survey catch included: 281 Atlantic sharpnose, 70 bonnethead, 13 smoothhound, 34 blacktip, 42 blacknose (*C. acronotus*), two (2) sand tiger (*C. taurus*), and ten (10) scalloped hammerhead (*S. lewini*).

Table 14. Species, number of individuals, sex and average total length [TL (mm)] of sharks caught in the 2014 North Carolina ocean gill net survey.

Species	# Indv.	Avg. TL (mm)
Atlantic Sharpnose Shark (*R. terraenovae*)		
Male	164	740
Female	115	716
Blacknose Shark (*C. acronotus*)		
Male	24	1,107
Female	18	1,057
Blacktip Shark (*C. limbatus*)		
Male	12	1,243
Female	22	1,236
Bonnethead Shark (*S. tiburo*)		
Male	27	850
Female	43	988
Sand Tiger Shark (*C. taurus*)		
Unknown	2	2,279
Scalloped Hammerhead (*S. lewini*)		
Male	2	842
Female	7	811
Unknown	1	1,183
Smoothhound Shark (*M. canis*)		
Male	7	594
Female	6	597
Total	452	

South Carolina

Data related to the presence and movement of sharks in South Carolina's coastal waters will continue to be collected as encountered within the context of existing fishery dependent or fishery independent programs conducted by the SCDNR. Currently, data are collected from estuarine waters by the SCDNR Cooperative Atlantic States Shark Pupping and Nursery Habitat survey (COASTSPAN) and the SCDNR trammel net survey. The COASTSPAN survey monitors the presence and abundance of young-of-year and juvenile sharks in the estuaries and bays of South Carolina. The survey operates from April-September using gillnets, longlines and drumlines to sample index stations.

The SCDNR trammel net survey is designed to sample recreationally important species in shallow estuarine waters. Sharks are not a target species, but their abundance as well as length and sex data are recorded (Table 15). Stations selected based on suitable habitats are randomly sampled using a multi-panel gillnet to encircle a section of marsh. Species captured are measured, sexed if possible, select species (no sharks) are tagged and released and physical and water quality data are recorded.

The presence and abundance of juvenile and adult coastal sharks in the bays, sounds and coastal waters of South Carolina are documented by the Adult Red Drum and Coastal Shark Longline survey. This survey uses a stratified-random approach to sample for adult red drum and coastal sharks. The survey operates annually from August to December using longlines to sample suitable habitat for targeted species. Species captured are measured, sexed, tagged and released, and physical and water quality parameters are recorded. Species encountered and tagged for all surveys are reported in Table 15. The data gathered from these programs are shared with the NMFS apex predators program and are utilized in stock assessments and management decisions in South Carolina.

Table 15. Number of sharks captured by South Carolina Department of Natural Resources' Cooperative Atlantic States Shark Pupping and Nursery Habitat Survey (COASTSPAN), the Trammel Net Survey, and Adult Red Drum and Coastal Sharks Longline survey in 2014

	COASTSPAN		Trammel Net		Adult Red Drum and Coastal Sharks	
Shark Species	Captured	Tagged	Captured	Tagged	Captured	Tagged
Atlantic Sharpnose	198	-	187	-	913	-
Blacknose	1	-	-	-	177	151
Blacktip	84	56	5	-	66	51
Bonnethead	205	170	215	-	22	18
Bull	2	2	-	-	3	2
Finetooth	304	186	58	-	99	51
Great Hammerhead	-	-	-	-	-	-
Lemon	8	8	4	-	3	1
Nurse	-	-	-	-	3	1
Sandbar	117	113	1	-	90	80
Sandtiger	2	2	-	-	-	-
Scalloped Hammerhead	81	9	3	-	2	2
Smooth Dogfish	1	1	-	-	-	-
Spinner	1	1	-	-	4	4
Tiger	-	-	-	-	2	1
Total	1,004	548	473	-	1,384	362

Georgia

Although a directed fishery for sharks does not exist in Georgia waters, there are a several fishery dependent sampling surveys conducted by the Coastal Resources Division that could result in the incidental capture of coastal sharks. In 2014, coastal sharks were found in the following fishery independent surveys.

Sampling for the *Adult Red Drum Survey (via SEAMAP)* occurs in inshore and nearshore waters of southeast Georgia and in offshore waters of northeast Florida. Sampling occurs from mid-May through the end of December. Sampling gear consists of a bottom set 926m, 600lb test monofilament mainline configured with 60, 0.5 m gangions made of 200lb test monofilament. Each gangion consists of a longline snap and either a 12/0 or 15/0 circle hook. Thirty hooks of each size are deployed during each set. All hooks are baited with squid. Soak time for each set is 30 minutes. During 2013, CRD staff deployed 217 sets consisting of 13,014 hooks and 142

hours of soak time. During 2014, CRD staff deployed 223 sets consisting of 13,380 hooks and 111.5 hours of soak time. A total of 621 sharks, representing 10 species were captured (Table 16).

Sampling for the *Shark Nursery Survey (via COASTSPAN)* occurs in the inshore waters of St. Simons and St. Andrew sounds. Sampling occurs from mid-April through the end of September. Sampling gear consists of a 305 m braided rope mainline configured with 50, 1 m gangions made of 200lb test monofilament. Each gangion is configured with a longline snap and a 12/0 circle hook. All hooks are baited with squid. Soak time for each set is 30 minutes. During 2014, CRD staff fished 120 longline stations consisting of 6,000 hooks and a total of 60 hours of soak time. A total of 466 sharks, representing 7 species were captured (Table 3).

Each month the *Ecological Monitoring Trawl Survey (EMTS)*, a 40-foot flat otter trawl with neither a turtle excluder device nor bycatch reduction device, is deployed at up to 42 stations across six estuaries. At each station, a standard 15 minute tow is made. During this report period, 496 tows/observations were conducted, totaling 124.3 hours of tow time. A total of 321 sharks, representing 5 species, were captured during 2014 (Table 16).

Monitoring of estuarine finfish and crustaceans in the lower salinity, upriver sectors of selected estuaries is done monthly as part of the *Juvenile Trawl Survey* conducted onboard the research vessel *Navigator*. A 20-foot, semi-balloon otter trawl is towed for 5 minutes at up to 18 stations within three Georgia estuaries. In 2014, 121 tows (observations) were conducted, totaling 10.1 hours of tow time. No sharks were observed during the 2014 season.

The Marine Sportfish Population Health Survey (MSPHS) is a multi-faceted ongoing survey used to collect information on the biology and population dynamics of recreationally important finfish. Currently two Georgia estuaries are sampled on a seasonal basis using entanglement gear. During the June to August period, young-of-the-year red drum in the Altamaha/Hampton River and Wassaw estuaries are collected using gillnets to gather data on relative abundance and location of occurrence. During the September to November period, fish populations in the Altamaha/Hampton River and Wassaw estuaries are monitored using monofilament trammel nets to gather data on relative abundance and size composition. In 2014, a total of 216 gillnet and 150 trammel net sets were made, resulting in the capture of 165 individuals representing five species of coastal sharks (Table 16).

Table 16. Numbers of coastal sharks captured in Georgia fishery independent surveys in 2014 by species and by survey.

	SEAMAP (Adult Red Drum Survey)	COASTSPAN (Shark Nursery Survey)	EMTS (Ecological Monitoring Trawl Survey)	MSPHS (Trammel and Gill Net Survey)
Atlantic sharpnose shark	316	280	213	45
Blacknose	130	7	---	---
Bonnethead	124	106	104	105
Blacktip shark	23	16	2	7
Sandbar shark	13	54	---	---
Smooth dogfish	7	---	---	---
Finetooth shark	4	---	1	7
Scalloped hammerhead	2	2	1	---
Tiger shark	1	---	---	---
Spinner shark	1	---	---	---
Lemon shark	---	1	---	1
All Species Combined	621	466	321	165

V. Status of Management Measures and Issues

Fishery Management Plan

Coastal Sharks are managed under the Interstate FMP for Coastal Sharks, which was implemented in August 2008, Addendum I (2009), Addendum II (2013) and Addendum III (2013). The FMP addresses the management of 40 species and establishes a suite of management measures for recreational and commercial shark fisheries in state waters (0 – 3 miles from shore).

Prior to the FMP, shark management in state waters consisted of disjointed state-specific regulations. The FMP allows for consistency across jurisdictions. For the small coastal, pelagic, smoothhound, hammerhead and aggregated large coastal complexes, the Commission's Board does not set active quotas, but instead follows NOAA Fisheries closures.

Addendum I was added to allow commercial fishermen limited processing of smoothhounds at sea and remove recreational possession limits for smoothhounds, as well as the 2 hour net check requirement for commercial fishermen using large mesh gillnets. Addendum II modified smooth dogfish processing at sea regulation and allocated state-shares of the smoothhound

federal quota. Addendum III changed the species groupings and increased the size limit for hammerhead sharks. Addendum III was initiated in response to changes in the federal plan and was implemented in March 2014 to ensure consistency between the two management plans. ASMFC will continue to respond to changes in the Atlantic Highly Migratory Species FMP and make changes as necessary to the interstate FMP.

VI. Implementation of FMP Compliance Requirements for 2014

Addendum III to the Coastal Sharks FMP was implemented in March 2014. All states must demonstrate through the inclusion of regulatory language that the following management measures were implemented.

i. Recreational Minimum Size Limits

This modifies Section 4.2.4 Recreational Minimum Size Limits in the FMP.

Sharks caught in the recreational fishery must have a minimum fork length of 4.5 feet (54 inches) with the exception of smooth hammerhead, scalloped hammerhead, great hammerhead, smoothhound, Atlantic sharpnose, blacknose, finetooth, and bonnethead.

Smooth hammerhead, scalloped hammerhead and great hammerhead must have a minimum fork length of 6.5 feet (78 inches).

Smoothhound, Atlantic sharpnose, blacknose, finetooth and bonnethead do not have recreational minimum size limits.

Table 4.4 in the FMP is modified as follows:

Table 4.4. Recreational minimum size limits.

No Minimum Size	Minimum Fork Length of 4.5 Feet		Minimum Fork Length of 6.5 Feet
Smoothhound	Tiger	Shortfin mako	
Atlantic sharpnose	Blacktip	Porbeagle	Scalloped hammerhead
Finetooth	Spinner	Thresher	Smooth hammerhead
Blacknose	Bull	Oceanic whitetip	Great hammerhead
Bonnethead	Lemon	Blue	
	Nurse		

ii. Commercial Species Groupings

This modifies Section 4.3.3 Commercial Species Groupings (and the appropriate sub-sections, outlined below). Two new species groups ('Blacknose' and 'Hammerhead') are created.

This FMP establishes eight commercial 'species groups' for management (Table 4.5 and 4.6): Prohibited, Research, Smoothhound, Non-Blacknose Small Coastal, Blacknose, Aggregated

Large Coastal, Hammerhead and Pelagic. These groupings apply to all commercial shark fisheries in state waters.

Table 4.6 in the FMP is modified as follows:

Table 4.6. Commercial species groupings

Smoothhound	
Smooth Dogfish	Mustelus canis
Florida smoothhound	Mustelus norrisi
Non-Blacknose Small Coastal	
Atlantic sharpnose	*Rhizoprionodon terraenovae*
Finetooth	*Carcharhinus isodon*
Bonnethead	*Sphyrna tiburo*
Blacknose	
Blacknose	*Carcharhinus acronotus*
Aggregated Large Coastal	
Silky	*Carcharhinus falciformis*
Tiger	*Galeocerdo cuvier*
Blacktip	*Carcharhinus limbatus*
Spinner	*Carcharhinus brevipinna*
Bull	*Carcharhinus leucas*
Lemon	*Negaprion brevirostris*
Nurse	*Ginglymostoma cirratum*
Hammerhead	
Scalloped hammerhead	*Sphyrna lewini*
Great hammerhead	*Sphyrna mokarran*
Smooth hammerhead	*Sphyrna zygaena*
Pelagic	
Shortfin mako	*Isurus oxyrinchus*
Porbeagle	*Lamna nasus*
Common thresher	*Alopias vulpinus*
Oceanic whitetip	*Carcharhinus longimanus*
Blue	*Prionace glauca*

Prohibited	
Sand tiger	*Carcharias taurus*
Bigeye sand tiger	*Odontaspis noronhai*
Whale	*Rhincodon typus*
Basking	*Cetorhinus maximus*
White	*Carcharodon carcharias*
Dusky	*Carcharhinus obscurus*
Bignose	*Carcharhinus altimus*
Galapagos	*Carcharhinus galapagensis*
Night	*Carcharhinus signatus*
Reef	*Carcharhinus amblyrhynchos*
Narrowtooth	*Carcharhinus brachyurus*
Caribbean sharpnose	*Rhizoprionodon porosus*
Smalltail	*Carcharhinus porosus*
Atlantic angel	*Squatina squatina*
Longfin mako	*Isurus paucus*
Bigeye thresher	*Alopias superciliosus*
Sharpnose sevengill	*Heptranchias perlo*
Bluntnose sixgill	*Hexanchus griseus*
Bigeye sixgill	*Hexanchus nakamurai*
Research	
Sandbar	*Carcharhinus plumbeus*

VII. PRT Recommendations

State Compliance
All states with a declared interest in the management of sharks, except Connecticut, have submit compliance reports and have regulations in place that meet or exceed the requirements of the Interstate Fisheries Management Plan for Coastal Sharks and associated addenda.

The state of Connecticut has not provided coastal shark compliance reports for the 2014 fishing years. The PRT attempted to review regulations online and only found an accurate list of prohibited shark species. If the prohibited species list is the only shark regulation that Connecticut has implemented in state waters, then Connecticut would need to implement the full suite of ASMFC shark regulations included in Appendix 1 to be consistent with the FMP and associated addenda.

De Minimis Status
This FMP does not establish specific *de minimis* guidelines that would exempt a state from regulatory requirements contained in this plan. *De minimis* shall be determined on a case-by case basis. *De minimis* often exempts states from monitoring requirements in other fisheries but this plan does not contain any monitoring requirements.

De minimis guidelines are established in other fisheries when implementation and enforcement of a regulation is deemed unnecessary for attainment of the fishery management plan's objectives and conservation of the resource. Due to the unique characteristics of the coastal shark fishery, namely the large size of sharks compared to relatively small quotas, the taking of a single shark could contribute to overfishing of a shark species or group. Therefore, exempting a state from any of the regulatory requirements contained in this plan could threaten attainment of this plans' goals and objectives.

States that have been granted *de minimis* status are Maine and Massachusetts. New Hampshire has renounced management interest and is therefore no longer a member of the coastal shark management board. These states do not land sharks in any significant quantity and very few of the species managed by this plan are ever encountered in their state waters. These states can continue to have *de minimis* status until their landings patterns change or they request a discontinuation.

In some cases, it is unnecessary for states with *de minimus* status to implement all regulatory requirements in the FMP.

A. Massachusetts has implemented all regulations with two exceptions, it is exempt from the possession limit and closures of the aggregated large coastal and hammerhead shark fisheries.

B. Maine and New Hampshire have implemented the following regulations to comply with the goals and objectives of the FMP:
   - Require federal dealer permits for all dealers purchasing a permitted species
   - Prohibit the take or landings of prohibited species
   - Close the fishery for porbeagle sharks when the NMFS quota has been harvested
   - Prohibit the commercial harvest of porbeagle sharks in state waters
   - Require that head, fins and tails remain attached to the carcass of all shark species, except smoothhound, through landing

Research Priorities

Species-Specific Priorities

- Investigate the appropriateness of using vertebrae for ageing adult sandbar sharks. If appropriate, implement a systematic sampling program that gathers vertebral samples from entire size range for annual ageing to allow tracking the age distribution of the catch as well as updating of age-length keys.[1]

[1] Recent bomb radiocarbon research has indicated that past age estimates based on tagging data for sandbar sharks may be correct and that vertebral ageing may not be the most reliable method for mature individuals. See Andrews *et al.* 2011.

- Develop and conduct tagging studies on dusky and blacknose stock structure with increased international collaboration (e.g., Mexico) to ensure wider distribution and returns of tags. Expand research efforts directed towards tagging of individuals in south Florida and Texas/Mexico border to get better data discerning potential stock mixing.

General Priorities

- Generally update age and growth and reproductive studies for all species currently assessed
- Determine gear-specific post-release mortality estimates for all species currently assessed
- Determine life history information for data-poor species that are currently not assessed
- Examine female sharks during the pupping periods to determine the proportion of reproductive females. Efforts should be made to develop non-lethal methods of determining pregnancy status
- Expand or develop monitoring programs to collect appropriate length and age samples from the catches in the commercial sector by gear type, from catches in the recreational sector, and from catches taken in research surveys to provide reliable length and age compositions for stock assessment
- Continue investigations into stock structure of coastal sharks using genetic, conventional and electronic tags to determine appropriate management units
- Evaluate to what extent the different CPUE indices track population abundance (e.g., through power analysis)
- Explore modeling approaches that do not require an assumption that the population is at virgin level at some point in time.
- Increase funding to allow hiring of additional HMS stock assessment scientists. There are currently inadequate staff to conduct stock assessments on more than one or two stocks/species per year.

References

Andrews et al. 2011. Bomb radiocarbon and tag-recapture dating of sandbar shark (*Carcharhinus plumbeus*). Fisheries Bulletin. 109: 454-465.

Stock Assessment and Fishery Evaluation (SAFE) Report for Atlantic Highly Migratory Species. 2014. NOAA Fisheries, December 18, 2015. http://www.nmfs.noaa.gov/sfa/hms/hmsdocument_files/SAFEreports.htm

APPENDIX 1. OVERVIEW OF COASTAL SHARK REGULATIONS

Coastal Sharks FMP Regulatory Requirements

1. Recreational seasonal closure (Section 4.2.1)

    a. Recreational anglers are prohibited from possessing silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead in the state waters of Virginia, Maryland, Delaware and New Jersey from May 15 through July 15—regardless of where the shark was caught.

    b. Recreational fishermen who catch any of these species in federal waters may not transport them through the state waters of VA, MD, DE, and NJ during the seasonal closure.

2. Recreationally permitted species (Section 4.2.2)

    a. Recreational anglers are allowed to possess aggregated large coastal sharks, hammerheads, tiger sharks, SCS, and pelagic sharks. Authorized shark species include: aggregated LCS (blacktip, bull, spinner, lemon, and nurse); hammerhead (great hammerhead, smooth hammerhead, scalloped hammerhead); tiger sharks; SCS (blacknose, finetooth, Atlantic sharpnose, and bonnethead sharks); and, pelagic sharks (blue, shortfin mako, common thresher, oceanic whitetip, and porbeagle). Sandbar sharks and silky sharks (and all prohibited species of sharks) are not authorized for harvest by recreational anglers.

3. Landings Requirements (Section 4.2.3)

    a. All sharks (with exception) caught by recreational fishermen must have heads, tails, and fins attached naturally to the carcass. Anglers may still gut and bleed the carcass by making an incision at the base of the caudal peduncle as long as the tail is not removed. Filleting sharks at sea is prohibited.

    b. All sharks (with exception) harvested by commercial fishermen within state boundaries must have the tails and fins attached naturally to the carcass through landing. Fins may be cut as long as they remain attached to the carcass (by natural means) with at least a small portion of uncut skin. Sharks may be eviscerated and have the heads removed. Sharks may not be filleted or cut into pieces at sea.

    c. Exception: Fishermen holding a valid state commercial permit may process smooth dogfish sharks at sea out to 50 miles from shore, as long as the total weight of smooth dogfish shark fins landed or found on board a vessel does not exceed 12 percent of the total weight of smooth dogfish shark carcasses landed or found on board.

4. Recreational Minimum Size Limits (Section 4.2.4)

    a. Sharks caught in the recreational fishery must have a fork length of at least 4.5 feet with the exception of Atlantic sharpnose, blacknose, finetooth, bonnethead and smoothhound which have no minimum size. Hammerhead species must have a fork length of 6.5 feet.

5. Authorized Recreational Gear (Section 4.2.5)

    a. Recreational anglers may catch sharks only using a handline or rod & reel. Handlines are defined as a mainline to which no more than two gangions or hooks are attached. A handline must be retrieved by hand, not by mechanical means.

6. Possession limits in one twenty-four hour period (Section 4.2.7 and 4.3.6)

    a. Recreational and commercial possession limits as specified in Table 9.

    b. Smooth dogfish harvest is not limited in state waters and recreational shore-anglers may harvest an unlimited amount of smooth dogfish.

7. Commercial Seasonal Closure (Section 4.3.2)

    a. All commercial fishermen are prohibited from possessing silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead in the state waters of Virginia, Maryland, Delaware and New Jersey from May 15 through July 15. Fishermen who catch any of the above species in a legal manner in federal waters may transit through the state waters listed above is allowed if all gear is stowed.

8. Quota Specification (Section 4.3.4)

    a. When NOAA Fisheries closes the fishery for any species, the commercial landing, harvest, and possession of that species will be prohibited in state waters until NOAA Fisheries reopens the fishery.

9. Permit requirements (Section 4.3.8)

    a. State: Commercial shark fishermen must hold a state commercial license or permit in order to commercially catch and sell sharks in state waters.

    b. Federal: A federal Commercial Shark Dealer Permit is required to buy and sell any shark caught in state waters.

    c. Display and research permit is required to be exempt from seasonal closure, quota, possession limit, size limit, gear restrictions, and prohibited species restrictions. States are required to include annual information for all sharks taken for display throughout the life of the shark.

10. Authorized commercial gear (Section 4.3.8.3)

    a. Commercial fishermen can only use one of the following gear types (and are prohibited from using any gear type not listed below) to catch sharks in state waters.

        i. Rod & reel
        ii. **Handlines.** Handlines are defined as a mainline to which no more than two gangions or hooks are attached. A handline is retrieved by hand, not by mechanical means, and must be attached to, or in contact with, a vessel.
        iii. **Small Mesh Gillnets.** Defined as having a stretch mesh size smaller than 5 inches.
        iv. **Large Mesh Gillnets.** Defined as having a stretch mesh size equal to or greater than 5 inches.
        v. Trawl nets.
        vi. **Shortlines.** Shortlines are defined as fishing lines containing 50 or fewer hooks and measuring less than 500 yards in length. A maximum of 2 shortlines are allowed per vessel.
        vii. Pounds nets/fish traps.
        viii. Weirs.

11. Bycatch Reduction Measures (Section 4.3.10)

    a. Any vessel using a shortline must use corrodible circle hooks. All shortline vessels must practice the protocols and possess the recently updated federally required release equipment for pelagic and bottom longlines for the safe handling, release, and disentanglement of sea turtles and other non-target species; all captains and vessel owners must be certified in using handling and release equipment.

12. Smooth Dogfish
    a. Each state must identify their percentage of the overall quota (Addendum II, 3.1)
    b. 12% fin-to-carcass ratio must be implemented if a state allows the fins of smooth dogfish to be removed at sea (Addendum II, 3.5)

13. This FMP establishes eight commercial 'species groups' for management which include: Prohibited, Research, Smoothhound, Non-Blacknose Small Coastal, Blacknose, Aggregated Large Coastal, Hammerhead and Pelagic. These groupings apply to all commercial shark fisheries in state waters.

14.

Smoothhound	
Smooth Dogfish	Mustelus canis
Florida smoothhound	Mustelus norrisi
Non-Blacknose Small Coastal	
Atlantic sharpnose	*Rhizoprionodon terraenovae*
Finetooth	*Carcharhinus isodon*
Bonnethead	*Sphyrna tiburo*
Blacknose	
Blacknose	*Carcharhinus acronotus*
Aggregated Large Coastal	
Silky	*Carcharhinus falciformis*
Tiger	*Galeocerdo cuvier*
Blacktip	*Carcharhinus limbatus*
Spinner	*Carcharhinus brevipinna*
Bull	*Carcharhinus leucas*
Lemon	*Negaprion brevirostris*
Nurse	*Ginglymostoma cirratum*
Hammerhead	
Scalloped hammerhead	*Sphyrna lewini*
Great hammerhead	*Sphyrna mokarran*
Smooth hammerhead	*Sphyrna zygaena*
Pelagic	
Shortfin mako	*Isurus oxyrinchus*
Porbeagle	*Lamna nasus*
Common thresher	*Alopias vulpinus*
Oceanic whitetip	*Carcharhinus longimanus*
Blue	*Prionace glauca*

Prohibited	
Sand tiger	Carcharias taurus
Bigeye sand tiger	*Odontaspis noronhai*
Whale	*Rhincodon typus*
Basking	*Cetorhinus maximus*
White	*Carcharodon carcharias*
Dusky	*Carcharhinus obscurus*
Bignose	*Carcharhinus altimus*
Galapagos	*Carcharhinus galapagensis*
Night	*Carcharhinus signatus*
Reef	*Carcharhinus amblyrhynchos*
Narrowtooth	*Carcharhinus brachyurus*
Caribbean sharpnose	*Rhizoprionodon porosus*
Smalltail	*Carcharhinus porosus*
Atlantic angel	*Squatina squatina*
Longfin mako	*Isurus paucus*
Bigeye thresher	*Alopias superciliosus*
Sharpnose sevengill	*Heptranchias perlo*
Bluntnose sixgill	*Hexanchus griseus*
Bigeye sixgill	*Hexanchus nakamurai*
Research	
Sandbar	*Carcharhinus plumbeus*

Table 10. Possession/retention limits for shark species in state waters

Recreational	*Shore-angler*	1 shark (of any species except prohibited) per person per day; plus one Atlantic sharpnose, bonnethead and smoothhound
	Vessel-fishing	1 shark (of any species except prohibited) per vessel per trip; plus one Atlantic sharpnose, bonnethead and smoothhound per person, per vessel
Commercial	*Directed permit*	Variable possession limit for aggregated large coastal sharks and hammerhead shark management groups, the Commission will follow NMFS for in-season changes to the possession limit. The possession limit range is 0-55, the default is 45 sharks per trip. No limit for SCS or pelagic sharks.
	Incidental permit	3 aggregated LCS per vessel per trip, 16 pelagic or SCS (combined) per vessel per trip