FISHERY MANAGEMENT PLAN UPDATE
COASTAL SHARKS
AUGUST 2022

STATUS OF THE FISHERY MANAGEMENT PLAN

Fishery Management Plan History

FMP Documentation:	August 2008	
	Addendum I	September 2009
	Addendum II	May 2013
	Addendum III	October 2013
	Addendum IV	August 2016
	Addendum V	October 2018
Comprehensive Review:	2023: Blue shark (ICCAT)	
	2023: Hammerhead sharks Complex (SEDAR 77)	

The Atlantic States Marine Fisheries Commission (ASMFC) adopted a fishery management plan (FMP) for coastal sharks in 2008 (ASMFC 2008) to complement federal management actions and increase protection of pregnant females and juveniles in inshore nursery areas. Prior to the ASMFC FMP, sharks were domestically managed exclusively under National Marine Fisheries Service (NMFS) FMPs (NOAA Fisheries 1993; NOAA Fisheries 1999; NOAA Fisheries 2006). Atlantic highly migratory species (HMS), which includes sharks, are also managed internationally by the International Commission for the Conservation of Atlantic Tunas (ICCAT). The ASMFC FMP regulates 40 different species of coastal sharks found on the Atlantic coast. The ASMFC does not actively set quotas for any shark species and follows NMFS openings and closures for all shark species and management groups.

Addendum I (ASMFC 2009) modified the FMP to allow limited smooth dogfish processing at sea (removal of fins from the carcass), removed smooth dogfish recreational possession limits, and removed gill net check requirements for smooth dogfish fishermen. The goal of Addendum I was to remove restrictive management intended for large coastal sharks (LCS) from the smooth dogfish fishery and to allow fishermen to continue their operations while upholding the conservation measures of the FMP.

In 2012, NOAA Fisheries created the smoothhound complex for the management of both the Florida smoothhound and smooth dogfish. Addendum II (ASMFC 2013a) modified the FMP to allow year-round smooth dogfish processing at sea and allocated state shares of the smooth dogfish federal quota. The goal of Addendum II was to implement an accurate fin-to-carcass weight ratio and prevent the quota of the smoothhound shark complex from being harvested by one state.

Addendum III (ASMFC 2013b) modified the species groups for hammerhead and blacknose sharks to ensure consistency with NOAA Fisheries. The addendum also increased the recreational size limit for all hammerhead shark species to 78 inches fork length (FL) and blacknose and finetooth sharks to 54 inches FL.

Addendum IV (ASMFC 2016) allows smooth dogfish carcasses to be landed with corresponding fins removed from the carcass if the total retained catch, by weight, is composed of at least 25% smooth dogfish, consistent with federal management measures.

Addendum V (ASMFC 2018a) allows the ASMFC to streamline the process of state implementation of federal shark regulations so that complementary measures are seamlessly and concurrently implemented at the state and federal level whenever possible. Previously, any changes, with the exception of those related to commercial quotas, possession limits and season dates, had to be accomplished through an addendum.

To ensure compliance with interstate requirements, North Carolina also manages the coastal shark complex under the North Carolina Fishery Management Plan for Interjurisdictional Fisheries (IJ FMP). The goal of the IJ FMP is to adopt fishery management plans consistent with North Carolina law, approved by the Mid-Atlantic Fishery Management Council, South Atlantic Fishery Management Council, or the ASMFC by reference and implement corresponding fishery regulations in North Carolina to provide compliance or compatibility with approved fishery management plans and amendments, now and in the future. The goal of these plans, established under the Magnuson-Stevens Fishery Conservation and Management Act (federal council plans) and the Atlantic Coastal Fisheries Cooperative Management Act (ASMFC plans), are like the goals of the Fisheries Reform Act of 1997 to "ensure long-term viability" of these fisheries (NCDMF 2022).

Management Unit

The management unit includes the entire coast-wide distribution of the resource from the estuaries eastward to the inshore boundary of the exclusive economic zone (EEZ). The management unit is split between the Atlantic and Gulf of Mexico regions for aggregated LCS, hammerhead, non-blacknose small coastal sharks (SCS), and blacknose sharks. The management units for pelagic sharks and sandbar sharks (Shark Research Fishery) are not split by region; the respective management units are the Atlantic and Gulf of Mexico combined.

Goal and Objectives

The Interstate FMP for Coastal Sharks (ASMFC 2008) established the following goal and objectives. The goal of the Interstate FMP 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.

In support of this goal, the following objectives are in place for the Interstate Shark FMP:

- Reduce fishing mortality to rebuild stock biomass, prevent stock collapse, and support a sustainable fishery.
- Protect essential habitat areas such as nurseries and pupping grounds to protect sharks during particularly vulnerable stages in their life cycle.
- Coordinate management activities between state and federal waters to promote complementary regulations throughout the species' range.

- Obtain biological and improved fishery related data to increase understanding of state water shark fisheries.
- Minimize endangered species bycatch in shark fisheries.

DESCRIPTION OF THE STOCK

Biological Profile

Sharks belong to the class Chondrichthyes (cartilaginous fish) that also includes rays and skates. Relative to other marine fish, sharks produce few young in their lifetime. The low reproductive rates are due to slow growth, late sexual maturity of females, one to two-year reproductive cycles, and small litter size (Musick 1999). These biological factors leave many species of sharks vulnerable to overfishing (Stevens et al. 2000).

Sharks exhibit a number of different reproductive strategies ranging from giving birth to live pups (young) to egg laying (Dulvy and Reynolds 1997). Generally, female sharks produce a small number (2–25) of large-body pups (Simpfendorfer 1992). For some species, an increased gestation period allows for larger pups which is thought to increase juvenile survivorship (Stevens and McLoughlin 1991). Adults usually gather in specific areas to mate although little is known about shark mating behavior for most species. Sharks also exhibit a wide variety of life history traits across species. Some pelagic species such as shortfin mako (*Isurus oxyrinchus*) or Atlantic thresher (*Alopias vulpinus*), generally remain in offshore ocean environments their whole lives (Casey and Kohler 1992; Smith et al. 2008). Other shark species have an estuarine-dependent component to their life cycle. For example, mature female Atlantic sharpnose sharks (*Rhizoprionodon terraenovae*) and sandbars (*Charcarhinus plumbeus*) travel from near-shore coastal areas into estuarine habitats to pup (Grubbs et al. 2007; Carlson et al. 2008). Coastal shark nursery areas, such as bays and estuaries, are discrete, productive, and highly structured habitats that provide juveniles ample nutrients and refuge from predators (Heupel et al. 2007). Once mature, these shark species will emigrate into coastal ocean environments to continue their life cycle. The variability of life history traits (growth rate, age-at-maturity, reproduction rate, etc.) and highly mobile nature of sharks makes fisheries management across multiple species difficult (Cortés 2002).

Stock Status

Stock status is assessed by individual species when sufficient data is available (Table 1). For species that are data-limited, they are either assessed at the species complex level or have not been assessed. NOAA Fisheries produces an annual Stock Assessment and Fisheries Evaluation (SAFE) Report that reviews the status of Atlantic HMS fish stocks (tunas, swordfish, billfish, and sharks; NOAA Fisheries 2022). These reports are required under the Magnuson-Stevens Fishery Conservation and Management Act and provide the public with information on the latest updates in Atlantic HMS management.

Stock Assessment

Stock status varies between species and species group (Table 1). In 2015 the Southeast Data Assessment and Review (SEDAR) completed a benchmark stock assessment on the smoothhound shark complex (*Mustelus spp*.) in the Gulf of Mexico and Atlantic smooth dogfish in the Atlantic through SEDAR 39. The assessment found that neither stock was overfished or experiencing overfishing (SEDAR 2015).

The SEDAR 21 (2011) benchmark assessment of dusky (*Carcharhinus obscures*), sandbar, and blacknose (*Carcharhinus acrontus*) sharks indicated that both sandbar and dusky sharks were overfished with overfishing occurring for dusky sharks. Blacknose sharks, part of the SCS complex, were also overfished with overfishing occurring. The Coastal Shark Management Board of ASMFC (the Board) approved the blacknose shark assessment for management use in February 2012 and NOAA Fisheries' Highly Migratory Species Division incorporated the results of the assessment as part of Amendment 5a to its FMP (NOAA Fisheries 2013). The dusky shark stock assessment was updated in 2016 and resulted in a determination of the population being overfished with overfishing occurring (SEDAR 2016). In 2017, a new sandbar shark stock assessment was conducted through SEDAR and the same status as the 2011 assessment was determined that the population was overfished but overfishing was not occurring (SEDAR 2017).

The 2007 SEDAR 13 assessed the SCS complex, finetooth (*Carcharhinus isodon*), Atlantic sharpnose (*Rhizoprionodon terraenovae*), and bonnethead (*Sphyrna tiburo*) sharks (SEDAR 2007). The SEDAR 13 peer reviewers considered the data to be the 'best available at the time' and determined the status of the SCS complex to be adequate. Finetooth, Atlantic sharpnose, and bonnethead were all considered to be not overfished and not experiencing overfishing. Atlantic sharpnose and bonnethead were more recently assessed by SEDAR 34 (SEDAR 2013). Atlantic sharpnose status remained as not overfished or undergoing overfishing. Based on SEDAR 34, bonnethead were not overfished or undergoing overfishing. However, the assessment combined the Gulf of Mexico stock and the Atlantic stock for the assessment. Because data shows that they are in fact two separate stocks, the results of the assessment were rejected and the status of the Atlantic stock is officially considered unknown.

SEDAR 11 (2006) assessed the LCS complex and blacktip sharks (*Carcharhinus limbatus*). The LCS assessment suggested that it was 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, NOAA Fisheries 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 was not overfished and overfishing was not occurring, while the status of blacktip sharks in the Atlantic region was unknown. A new stock assessment for Atlantic blacktip sharks was completed in December 2020 (SEDAR 65) and the stock assessment concluded that the stock is not overfished and overfishing is not occurring.

In 2017, ICCAT updated a 2012 stock assessment for shortfin mako sharks (*Isurus oxyrinchus*). This assessment used another modeling approach which incorporated more abundance indices, sex-specific life history data, and tagging information. Based on model results, the population

was considered overfished with overfishing occurring (ICCAT 2017). The next stock assessment is scheduled for 2024.

Porbeagle sharks (*Lamna nasus*) were assessed by ICCAT in 2009 (ICCAT 2009). The assessment found that while the northwest Atlantic stock was increasing in biomass, the stock was considered to be overfished with overfishing not occurring. The most recent porbeagle shark stock assessment, which was completed in 2020, came to the same determination as the 2009 stock assessment; the northwest Atlantic stock is overfished but overfishing is not occurring (ICCAT 2020; NOAA Fisheries 2021).

The most recent blue shark stock assessment was completed in 2015 ICCAT (ICCAT 2015). The assessment found that domestically, the north Atlantic stock is not overfished and overfishing is not occurring. The international north Atlantic stock is not likely overfished and overfishing in not likely occurring. The next stock assessment is scheduled for 2023.

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 (Hayes et al. 2009). This assessment was reviewed by NOAA Fisheries and deemed appropriate to serve as the basis for U.S. management decisions (SEFSC 2010). In response to the assessment findings, NOAA Fisheries established a scalloped hammerhead rebuilding plan that will end in 2023. Since the assessment, research has determined that a portion of animals considered scalloped hammerheads in the US Atlantic are actually a cryptic species, recently named the Carolina hammerhead (*Sphyrna gilberti*; Quattro et al. 2013). Little to no species-specific information exists regarding the distribution, abundance, and life history of the two species. Therefore, both species are currently managed under the name scalloped hammerhead. The stocks of the species in the hammerhead complex (scalloped, Carolina, great, smooth) will be assessed through SEDAR 77. Completion is scheduled for spring 2023 (SEDAR 2021).

DESCRIPTION OF THE FISHERY

Current Regulations

All non-prohibited shark management groups opened in North Carolina on January 1, 2022 (Table 2) reflecting NOAA Fisheries openings. Commercial fishing shark management groups are outlined in Table 3. NOAA Fisheries closes the management groups' fisheries when 80% of their quota is reached. When the fishery closes in federal waters, the Interstate FMP dictates that the fishery also closes in state waters. No harvest or size restrictions are in place for LCS, but there is a retention limit that is set and changed by NOAA fisheries based on available quota. It is unlawful to possess any shark (with the exception of smooth dogfish) without tail and fins naturally attached to the carcass through offloading. Commercial fishermen may completely remove the fins of smooth dogfish, if the total retained catch, by weight, is composed of at least 25% smooth dogfish. If fins are removed, the total wet weight of the shark fins may not exceed 12% of the total dressed weight (dw) of smooth dogfish carcasses landed or found onboard a vessel. It is unlawful for a vessel to retain, transport, land, store, or sell scalloped hammerhead, great hammerhead, or smooth hammerhead sharks with pelagic longline gear onboard. It is unlawful for a vessel to retain sandbar sharks unless the vessel is selected to participate in the

shark research fishery, subject to retention limits established by NOAA Fisheries and only when a NOAA Fisheries approved observer is onboard. It is unlawful to use gears other than rod and reel, handlines, large and small mesh gill nets, shortlines (maximum of two shortlines, 500 yards each with 50 hooks or less, hooks shall not be corrosion resistant and must be designated by the manufacturer as circle hooks), pound nets/fish traps, and trawl nets. It is unlawful to use a large mesh (stretched mesh size greater than or equal to five inches) gill net more than 2,734 yards in length to capture sharks. It is unlawful to sell sharks to anyone who is not a federally permitted shark dealer. NOAA Fisheries sets quotas for coastal sharks through their 2006 Consolidated Highly Migratory Species Fishery Management Plan (HMS FMP; NOAA Fisheries 2006). As indicated above, the states follow NOAA Fisheries openings and closings, which are based on available quotas (Table 2). In March 2019, NOAA HMS implemented final measures to address the overfishing and overfished condition of Atlantic shortfin mako under Amendment 11 to the HMS FMP (NOAA Fisheries 2019). The rules respond to the determination by ICCAT that all member countries need to reduce shortfin mako landings by 72-79% to prevent further population decline. The final commercial rule as implemented allows for Atlantic shortfin mako commercial retention only by properly permitted operations using pelagic longline and gillnet gear and only if the shark is dead at haul back. Additionally, retention by pelagic longline gear is only allowed if a functional electronic monitoring system is on board the vessel. Recreational measures included an increase in the minimum size limit from 54 inches FL to 71 inches FL for males and to 83 inches FL for females. In April of 2019, the ASMFC Coastal Shark Board adopted complementary size limit measures for the recreational fishery in state waters to provide consistency with size limits in federal waters. In May 2022, the Board approved a zero-retention limit in state waters for Atlantic shortfin mako sharks for both recreational and commercial fisheries. These measures are consistent with those implemented by NOAA Fisheries for federal highly migratory species (HMS) permit holders based on the International Commission for the Conservation of Atlantic Tunas (ICCAT) recommendation. This action was taken in response to the 2019 Atlantic shortfin mako stock assessment data update that indicates the resource is overfished and experiencing overfishing, with a rebuild date of 2070. This rule took effect federally on July 5, 2022, and at the state level on July 11, 2022. Additionally, in 2019 the Board moved to require non-offset circle hooks for the recreational shark fishery in state waters with an implementation date of July 1, 2020. The Board chose to do so after NOAA Fisheries requested that the states implement a circle hook requirement for the recreational fishery consistent with the measures approved in HMS Amendment 11. Species authorized for recreational harvest are listed in Table 4 based on management group and recreational size and bag limits are described in Table 5.

Commercial Fishery

Table 2 summarizes preliminary coast-wide Atlantic commercial landings data from 2022. Shark management groups with Atlantic region quotas are LCS, hammerhead, non-blacknose SCS, blacknose, and smoothhound. Commercial landings of LCS totaled 54,063 pounds, dressed weight (lb, dw) in 2022, which was a decrease from 176,753 lb, dw from 2021. Total commercial landings of hammerhead sharks were 34,856 lb, dw in 2022, which was a decrease from 42,933 lb, dw reported in 2021. Commercial landings of non-blacknose SCS shark species in 2022 totaled 35,608 lb, dw, a large decrease from 231,876 lb, dw landed in 2021. The commercial landings total of blacknose sharks south of 34º N latitude (Kure Beach, North Carolina) in 2022 was <4,408 lb, dw. Commercial retention of blacknose sharks is prohibited

north of 34º N latitude. Commercial landings of smoothhound sharks in 2022 were 26,199 lb, dw, which was a decrease from the 825,432 lb dw landed in 2021. Shark management groups with no regional quotas are sandbar (shark research fishery), blue, porbeagle, and other pelagics. There are no reported landings for porbeagle sharks in 2022. Commercial landings of blue sharks was <2,204 lb, dw. Other pelagic shark landings were 16,795 lb, dw. The shark research fishery landed 13,200 lb, dw of sandbar sharks and <2,204 lb, dw of LCS.

In North Carolina, total shark commercial landings steadily decreased since 2014 (Figure 1; Table 6). Smoothhound shark landings have steadily decreased from 783,052 lb, dw in 2013 to 27,686 lb, dw in 2021. Peak harvest of pelagic sharks was highest in 2014 (424,531 lb, dw) and there has been an overall decreasing trend. Similarly, peak harvest of SCS was in 2019 (479,484 lb, dw) and has decreased since. In 2022, 44,298 lb, dw of pelagic sharks were landed. While total shark landings have decreased, landings of hammerheads have generally increased. LCS (non-hammerhead) harvest has fluctuated annually but has been consistent over the last ten years. In 2022, LCS landings totaled 213,172 lb, dw.

Recreational Fishery

Recreational harvest estimates for SCS in North Carolina has fluctuated in the past 10 years from a low of 2,545 pounds in 2017 to a peak in harvest of 106,765 pounds in 2019 (Table 7). The 2022 landings (16,909 pounds) were less than the 10-year average (27,596 pounds). Recreational harvest for LCS in North Carolina tends to be smaller than for SCS. In 2022, there were no estimated harvests of LCS. From 2013 to 2023, average annual harvest was 5,491 lb, dw (Table 8). Recreational harvest of pelagic sharks in North Carolina is highly variable. Harvest was 0 pounds in 2022 and has ranged from 0 to 479,443 pounds from 2013 to 2023 (Table 9). Recreational harvest of smooth dogfish in North Carolina is variable and often low, although releases are common. Harvest for smoothhound ranged from 0 to 186,261 from 2013 to 2023 (Table 10). Recreational landing estimates for all shark species across all years have been updated and are now based on the Marine Recreational Information Program (MRIP) new Fishing Effort Survey-based calibrated estimates. Due to small sample sizes and the relatively rare occurrence of landings, the percent standard errors (PSE) is high for many years of recreational shark landings. For more information on MRIP methodology and changes see https://www.fisheries.noaa.gov/topic/recreational-fishing-data.

MONITORING PROGRAM DATA

Fishery-Dependent Monitoring

North Carolina does not collect individual lengths for sharks other than spiny dogfish; sharks arrive at the dock dressed (i.e., gutted with head and tail removed). Landings in pounds dw are recorded by the Trip Ticket Program.

Fishery-Independent Monitoring

The North Carolina Division of Marine Fisheries (DMF) established a fishery-independent adult red drum longline survey in 2007 (P365) that operates in Pamlico Sound from July to October. Atlantic coastal shark species captured in the survey are measured, tagged, and released. In total,

seven coastal sharks were captured in P365 in 2022. DMF has conducted a fishery-independent gill net survey (P915) which has been conducted in Pamlico Sound since 2001. Sampling was expanded to the Pamlico, Pungo, and Neuse Rivers in 2003 and to the Cape Fear and New Rivers in 2008. Coverage was further expanded to Bogue, Back, and Core Sounds in 2018. The objective of this project is to provide annual indices of relative abundance for key estuarine species in North Carolina estuaries that can be incorporated into stock assessments. Data from this survey are used to improve bycatch estimates, evaluate management measures, and evaluate habitat usage. Results from this project are used by the DMF and other Atlantic coast fishery management agencies to evaluate the effectiveness of current management measures and to identify additional measures that may be necessary to conserve marine and estuarine stocks. Developing fishery independent indices of abundance for target species allows the DMF to assess the status of these stocks without relying solely on commercial and recreational fishery dependent data. The survey employs a stratified random sampling design and utilizes multiple mesh gill nets (3.0 inch to 6.5 inch stretched mesh, by 0.5-inch increments). In 2022, a total of 641 individual coastal sharks were captured in P915 (Table 11), which is more than the project's annual average of 286 individual sharks.

RESEARCH NEEDS

The review of the ASMFC FMP (ASMFC 2022) directs to research needs from the 2018 ASMFC Research Priorities (ASMFC 2018):

Fishery-Dependent Priorities

- Initiate or expand dockside sampling for sharks to verify landings information and species composition.
- The Atlantic menhaden fishery data should be examined to determine shark bycatch estimates, if available.
- Conduct additional length sampling and age composition collection to improve information for developing selectivities.
- Shrimp trawl observer coverage should be expanded to 2 to 5% of total effort, particularly during periods of regulatory or gear changes. The observer coverage program should strive for even spatial coverage (particularly adding more south Atlantic coverage), randomness in vessel selection and full identification of elasmobranch species (continuing on from the 2009 Bycatch Characterization Protocol).
- Increase research on post-release survivorship of all shark species by gear type.
- Continue to acquire better species-specific landings information on number of species, by weight, from dealers.

Fishery-Independent 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.

- Develop a fishery-independent porbeagle shark survey to provide additional size composition and catch rate data to calculate an index of abundance.
- All dealers must report landings by species.
- 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.
- Develop a stock wide fishery-independent monitoring program in state coastal waters for
- Dusky sharks that include annual samples of length and age frequencies.

Life History, Biological, and Habitat Priorities

- Re-evaluate finetooth life history in the Atlantic Ocean in order to validate fecundity and reproductive periodicity.
- 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.
- Examine female sharks during the spawning periods to determine the proportion of
- spawning female
- Continue life history studies for all species of the shark complex to allow for additional species specific assessments. Particularly, natural mortality, age, fecundity, and reproductive frequency. Update age, growth, and reproductive studies of blacknose sharks with emphasis on smaller individuals in the Atlantic and larger individuals in the Gulf of Mexico.
- Coordinate a biological study for Atlantic sharpnose so that samples are made at least monthly, and, within each month, samples would be made consistently at distinct geographic locations. For example, sampling locations would be defined in the northern Gulf, west coast of Florida, the Florida Keys (where temperature is expected to be fairly constant over all seasons), and several locations in the South Atlantic, including the east coast of Florida, Georgia, South Carolina, and North Carolina. This same sampling design could be applied to all small coastal sharks.
- Population level genetic studies are needed that could lend support to arguments for stock discriminations using new loci and/or methodology that has increased levels of sensitivity.
- Determine what is missing in terms of experimental design and/or data analysis to arrive at incontrovertible (to the extent that it may be scientifically possible) conclusions on the reproductive periodicity of the sandbar shark stock.

Management, Law Enforcement, and Socioeconomic Priorities

- Conduct species specific assessments for all shark species, with a priority for smooth dogfish.

MANAGEMENT STRATEGY

Most Atlantic shark species are highly mobile and the NOAA Fisheries' HMS Management Division is responsible for managing them under the Magnuson-Stevens Fishery Conservation and Management Act. In cooperation with an advisory panel, the Division develops and implements FMPs for these species and management groups. The ASMFC adopts NOAA Fisheries regulations in state waters.

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TABLES

Table 1. Stock status designations for coastal sharks species groups.

Species or Complex Name	Stock overfished?	Stock undergoing overfishing?	Stock assessment year and comments
Pelagic			
Porbeagle	Yes	No	2020: Rebuilding ends in 2108
Blue	No	No	2015
Shortfin Mako	Yes	Yes	2017
All other pelagic species	Unknown	Unknown	
Large Coastal Sharks			
Blacktip	No	No	2020
Aggregated Large Coastal Sharks-Atlantic Region	Unknown	Unknown	2006: Difficult to assess as a species complex due to various life history characteristics/lack of available data
Non-blacknose Small Coastal Sharks			
Atlantic Sharpnose	No	No	2013
Bonnethead	Unknown	Unknown	2013
Finetooth	No	No	2007
Hammerhead			
Scalloped	Yes	Yes	2009: Rebuilding ends in 2023
Blacknose			
Blacknose	Yes	Yes	2011: Rebuilding ends in 2043
Smoothhound			
Smooth Dogfish	No	No	2015
Research			
Sandbar	Yes	No	2017: Rebuilding ends 2070
Prohibited			
Dusky	Yes	Yes	2016: Rebuilding ends in 2107
All other prohibited species	Unknown	Unknown	

Table 2. Preliminary 2022 (through May 31, 2022) coast-wide Atlantic coastal shark commercial fishery landings (Atlantic Coastal Cooperative Statistics Program, ACCSP) and annual quota.

Management Group	Region	2023 Quota (lb dw)	Season	2022 Landings (lb dw)
Aggregated LCS	Atlantic	372,552	1/1/2022 – 12/31/2022	54,063
Hammerhead		59,736		34,856
Non-Blacknose SCS		582,333		35,608
Blacknose (South of 34° N. latitude only)		37,921		<4,408
Smoothhound		3,973,902		26,199
Sandbar (shark research fishery)	No Regional Quotas	199,943		<13,200
Blue		601,856		<2,204
Porbeagle		3,748		0
Other pelagics[1]		1,075,856		16,795

[1] As of July 5, 2022, the shortfin mako shark retention limit in all commercial and recreational Atlantic HMS fisheries is zero (87 FR 39373, July 1, 2022).

Table 3. List of commercial shark management groups.

Management Group	Species Within Group
Prohibited	Sand tiger, bigeye sand tiger, whale, basking, white, dusky, bignose, Galapagos, night, reef, narrowtooth, Caribbean sharpnose, smalltail, Atlantic angel, longfin mako, bigeye thresher, sharpnose sevengill, bluntnose sixgill, and bigeye sixgill
Research	Sandbar
Non-Blacknose Small Coastal	Atlantic sharpnose, finetooth, and bonnethead
Blacknose	Blacknose
Aggregated Large Coastal	Silky, tiger, blacktip, spinner, bull, lemon, and nurse
Hammerhead	Scalloped hammerhead, great hammerhead, and smooth hammerhead
Pelagic	Shortfin mako[1], common thresher, oceanic whitetip[3], porbeagle[2], and blue[2]
Smoothhound	Smooth dogfish (referred to as smoothhound throughout this report)

[1]As of July 5, 2022, the shortfin mako shark retention limit in all commercial and recreational Atlantic HMS fisheries is zero (87 FR 39373, July 1, 2022).
[2]Although porbeagle and blue sharks are in the Pelagic Management Group, they each have their own quota.
[3] A rule proposed in March 2023 would prohibit the commercial and recreational retention of oceanic whitetip

Table 4. Recreationally permitted species list.

SPECIES AUTHORIZED FOR RECREATIONAL HARVEST			
Large Coastal Sharks (LCS) (non-ridgeback LCS & tiger)	Small Coastal Sharks (SCS)	Pelagic Sharks	Other
Blacktip Bull Hammerhead, great Hammerhead, scalloped Hammerhead, smooth Lemon Nurse Spinner Tiger	Atlantic Sharpnose Blacknose Bonnethead Finetooth	Blue Oceanic whitetip[1] Porbeagle Thresher	Smoothhound shark (Smooth dogfish) Spiny dogfish

[1]A rule proposed in March 2023 would prohibit the commercial and recreational retention of oceanic whitetip

Table 5. Recreational size and bag limits (as of January 1, 2023). Non-listed species are prohibited.

RECREATIONAL SIZE / BAG LIMITS and SEASONS			
Species*	Minimum Size (FL, inches)	Trip Bag Limit/Calendar Day	Season
Atlantic sharpnose	None	1 per person of each species	Jan. 1 – Dec. 31
Bonnethead	None		
Smooth dogfish	None	None	
Spiny dogfish	None	None	
Hammerheads (Great, Smooth and Scalloped)	78”	1 per vessel OR 1 per person for shore-anglers	
Non-Hammerhead LCS, Tiger, Pelagic, Blacknose, and Finetooth Sharks	54”		

*Check DMF proclamations for most current regulations

Table 6. Summary of North Carolina commercial landings (pounds) for large coastal sharks (LCS), small coastal sharks (SCS), hammerheads, smoothhound, and pelagics, 2013–2022. In this table, sandbar shark landings are included with the LCS and SCS includes blacknose landings.

Year	LCS (non-hammerhead)	SCS	Hammerhead	Smoothhound	Pelagics	Total
2013	157,340	140,798	14,428	783,053	220,872	1,316,491
2014	340,708	204,572	28,264	498,904	424,531	1,496,978
2015	197,948	375,026	41,768	268,429	176,882	1,060,053
2016	288,081	371,140	62,135	178,694	224,746	1,124,796
2017	216,142	359,486	40,743	154,440	240,128	1,010,939
2018	201,146	430,382	55,004	209,760	125,993	1,022,285
2019	263,269	479,484	65,104	102,592	69,182	979,631
2020	209,939	318,268	75,339	49,286	99,468	752,300
2021	165,005	297,193	85,966	42,147	44,648	634,959
2022	213,172	160,464	114,848	27,686	44,298	561,008

Table 7. North Carolina small coastal sharks recreational harvest, discards, and percent standard error (PSE) (including blacknose), 2013–2022.

Year	Number Harvested	PSE	Weight (lb)	PSE	Number Released	PSE
2013	2,171	45.9	13,474	48.0	16,772	42.1
2014	7,420	56.7	24,060	43.9	2,043	57.5
2015	6,656	41.3	38,499	44.3	15,866	70.4
2016	514	66.6	2,545	63.4	133,214	57.0
2017	5,768	56.5	19,256	42.3	58,440	60.5
2018	1,678	38.9	9,097	40.9	4,496	39.5
2019	13,736	70.8	106,765	75.8	34,952	36.1
2020	5,074	70.2	21,114	56.0	16,563	50.9
2021	3,556	57.7	24,241	53.9	21,045	44.9
2022	1,698	49.1	16,909	51.1	30,202	57.1

*PSE higher than 50 indicates a very imprecise estimate

Table 8. North Carolina large coastal sharks recreational harvest, discards, and percent standard error (PSE), 2013–2022. Blank indicates years with estimated harvest of zero.

Year	Number Harvested	PSE	Weight (lb)	PSE	Number Released	PSE
2013	59	113.4	11,128	113.4	7,963	39.8
2014	556	89.4	10,194	91.4	20,647	39.2
2015	10	99.9			139,486	66.1
2016	12	101.0	1,100	101.0	27,885	54.3
2017	910	79.6	27,367	83.4	43041	43.7
2018	39	84.5	235	95.8	4,916	59.3
2019	60	72.1	3,745	72.1	30,032	40.5
2020	26	74.6	551	100.8	8,567	36.0
2021	6	100.8	594	100.8	22,576	97.5
2022					18,735	98.4

*PSE higher than 50 indicates a very imprecise estimate

Table 9. North Carolina pelagic sharks recreational harvest, discards, and percent standard error (PSE), 2013–2022. Blank indicates years with estimated harvest of zero.

Year	Number Harvested	PSE	Weight (lb)	PSE	Number Released	PSE
2013	28	100.8	1,219	100.8	1,865	97.1
2014	26	54.6	2,082	51.5	296	110.5
2015	5,097	76.1	479,443	75.9	987	91.8
2016					3,512	79.0
2017	66	64.1	4,917	62.2	33	86.2
2018	2,043	73.1	160,155	73.1	38	63.0
2019					888	65.7
2020						
2021	111	98.1			20	96.9
2022						

*PSE higher than 50 indicates a very imprecise estimate

Table 10. North Carolina smoothhound recreational harvest, discards, and percent standard error (PSE), 2013–2022. Blank indicates years with estimated harvest of zero.

Year	Number Harvested	PSE	Weight (lb)	PSE	Number Released	PSE
2013	3,423	100.0	8,679	100.0	93,216	49.4
2014					110,938	35.6
2015	1,013	71.2	1,964	71.4	119,678	63.7
2016	10,879	92.6	186,261	97.0	97,256	44.9
2017					34,722	36.2
2018					29,524	49.3
2019	2,856	95.6	6,926	95.6	15,301	73.6
2020	1,289	98.9	3,125	98.9	479,933	49.4
2021					10,815	89.9
2022					9,156	81.5

*PSE higher than 50 indicates a very imprecise estimate

Table 11. Shark species captured in the DMF 2022 statewide Independent Gill Net Survey (P915).

Species	Total Number Measured	Mean Total Length (inches)	Minimum Total Length (inches)	Maximum Total Length (inches)
Atlantic sharpnose	220	17	10	44
Sandbar	146	28	16	65
Bonnethead	83	32	16	47
Blacktip	63	33	13	54
Bignose	56	28	18	51
Smoothhound	35	23	17	49
Bull	24	27	23	45
Finetooth	9	39	32	52
Blacknose	3	38	34	48
Scalloped hammerhead	1	24	24	30
Spinner	1	33	33	42

FIGURES

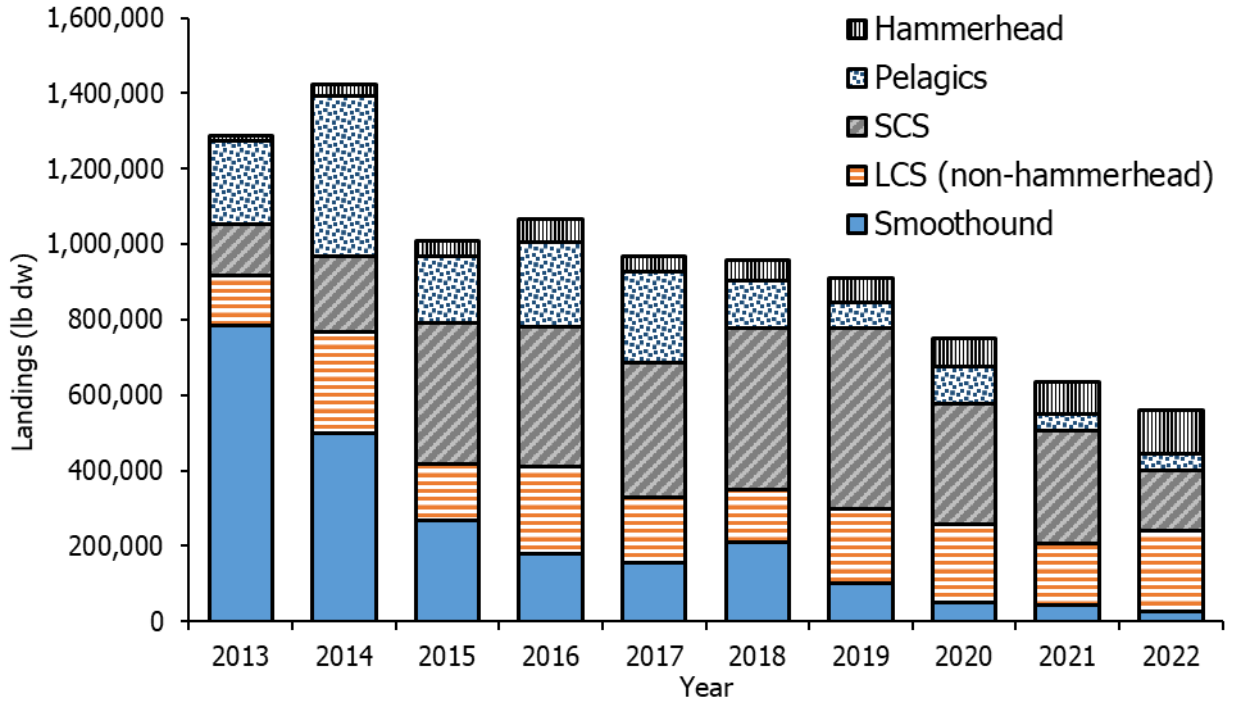

Figure 1. North Carolina commercial shark landings by management group, 2013–2022. In this figure, sandbar shark landings are included with the LCS and SCS includes blacknose landings.