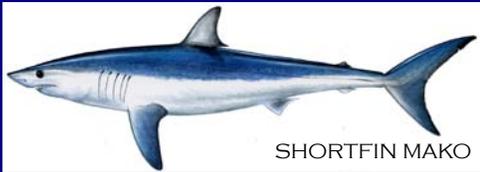
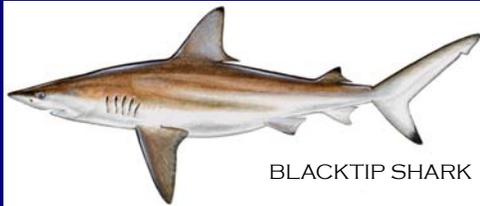


BLACKNOSE SHARK



SHORTFIN MAKO



BLACKTIP SHARK



SANDBAR SHARK

Coastal Sharks

Interesting Facts:

- * Sharks have a special sensory organ called the Ampullae of Lorenzini which enables them to detect electromagnetic fields emitted by living animals.
- * The earliest known sharks have been identified from fossils from the Devonian period, over 400 million years ago.
- * The life span of sharks in the wild is not known, but it is believed that many sharks may live more than 30-40 years.
- * There are ~350 species of sharks; ASMFC's FMP addresses 40 of these.
- * Extreme diversity among shark species exist, with the pygmy shark being the smallest at 7.8" and the whale shark being the biggest at 39'.
- * The 1st hybrid shark, containing both common and Australian blacktip DNA, was found off the coast of Australia in 2011. Scientists theorize this may be a potential sign that predators are adapting to cope with climate change.

Stock Status: Varies by species and species group

* Shark illustrations by Diane Rome Peebles

Species Profile: Atlantic Coastal Sharks States Plan Studies to Implement Shark Conservation Act Measures

Introduction

Sharks are a vital part of ocean ecosystems all over the world. Scientists consider them to be a keystone species because they generally reside at the top of the food chain, having a strong impact on other species either directly or indirectly. Removing or reducing shark populations in an area can cause an imbalance in the food chain and produce far reaching negative impacts. Because of this, the health of shark populations in an ecosystem is often an accurate indicator of the overall health of the system.

Though well understood today, fisheries managers did not always fully understand the life cycle and ecological role of sharks. In the mid-1980s, sharks were considered an under-utilized resource and fishermen were encouraged to target them. Over the next few years, fishing effort increased considerably and the impact of unregulated harvest was beginning to take its toll on some shark species.

In the early 1990s, the National Marine Fisheries Service (NMFS) implemented a Fishery Management Plan (FMP) for Sharks of the Atlantic Ocean to rebuild depleted stocks and protect healthy stocks from overfishing. In May 2008, the Atlantic States Marine Fisheries Commission adopted an Interstate FMP for Atlantic Coastal Sharks to complement federal management actions and increase protection of pregnant females and juveniles inshore in nursery areas.

Passage of the Shark Conservation Act of 2010 instituted additional measures to protect shark species from illegal, unreported, and unregulated (IUU) fishing activities, as well as allowed for the continued, regulated harvest of smooth dogfish within U.S. waters. As part of these efforts, the Act adjusts the required fin to carcass ratio of processed smooth dogfish from 5% to 12%. The Commission's Coastal Sharks Technical Committee will conduct studies this fall to determine the appropriate fin to carcass ratio for the smooth dogfish fishery, based on a fishery's particular processing methods. These efforts will help ensure continued enforcement of shark regulations and protection of other shark species.

Life History

Sharks belong to the class Chondrichthyes (cartilaginous fish) that also includes rays, skates, and deep-water chimaeras (ratfishes). Relative to other marine fish, sharks have a very low reproductive potential. Various factors create this low reproductive rate such as slow growth, late sexual maturity, one to two-year reproductive cycles, a small number of young per brood, and specific requirements for nursery areas. These biological factors leave many species of sharks vulnerable to overfishing. Sharks have internal fertilization and the embryo of most species spend their entire developmental period



Nichola Meserve (MA DMF) with a common thresher shark captured during the SEAMAP Winter Cooperative Tagging Cruise.

protected within their mother's body, although some species lay eggs. Females produce a small number (2 – 25) of large pups, which have an increased chance of survival due to their size. Adults usually congregate in specific areas to mate and females travel to specific nursery areas to pup. These nursery areas are discrete geographic areas, usually in waters shallower than those inhabited by the adults. Frequently, the nursery areas are in highly productive coastal or estuarine waters where abundant small fish and crustaceans provide food for the growing pups. These shallow areas have fewer large predators than deeper waters, thus enhancing the chances of survival of the young sharks.

Commercial & Recreational Fisheries

Commercial shark fishing effort is generally concentrated in the Southeastern U.S. and Gulf of Mexico. Commercial fishermen catch sharks using bottom longlines and gillnets. The Atlantic fishery targets both large coastal shark (LCS) and small coastal shark (SCS) species. Bottom longline is the primary commercial gear employed in the LCS and SCS fisheries in all regions. Gear characteristics vary by region, but in general an approximately ten-mile long bottom longline, containing about 600 hooks, is fished overnight. Skates, other sharks, or various finfish are used as bait. The gear typically consists of a heavy monofilament mainline with lighter weight monofilament gangions, or branch lines coming off the main line. The Southeast shark gillnet fishery is comprised of several vessels based primarily out of ports in northern Florida that use nets typically 456 to 2,280 meters long and 6.1 to 15.2 meters deep, with stretched mesh from 12.7 to 22.9 cm.

Recreational fishing for Atlantic sharks occurs in federal and state waters from New England to the Gulf of Mexico and Caribbean Sea. In the past, sharks were often called “the poor man's marlin.” Recreational shark fishing with rod and reel is now a popular sport at all social and economic levels, largely because of accessibility to the resource. Sharks can be caught virtually anywhere in salt water, with even large specimens available in

Table 1. Stock Status of Atlantic Coastal Shark Species and Species Groups

Species or Complex Name	Stock Status		References/Comments
	Overfished	Overfishing is Occurring	
Porbeagle	Y	N	Porbeagle Stock Assessment, ICCAT Standing Committee on Research and Statistics Report (2009)
Dusky	Y	Y	SEDAR 21 (2011) 'Prohibited' species
Large Coastal Sharks	Unknown	Unknown	SEDAR 11 (2006) Difficult to assess as a species complex due to various life history characteristics/ lack of available data
Blacktip	Unknown	Unknown	SEDAR 11 (2006)
Sandbar	Y	N	SEDAR 21 (2011)
Atlantic Sharpnose	N	N	SEDAR 13 (2007)
Blacknose	Y	Y	SEDAR 21 (2011)
Bonnethead	N	N	SEDAR 13 (2007)
Finetooth	N	N	SEDAR 13 (2007)
Smooth Dogfish	Unknown	Unknown	No Assessment

the nearshore area to surf angler or small boaters. Most recreational shark fishing takes place from small to medium-size vessels. Makos, white sharks, and large pelagic sharks are generally accessible only to those aboard ocean-going vessels. Recreational shark fisheries are exploited primarily by private vessels and charter/headboats although there are some shore-based fishermen active in the Florida Keys.

Stock Status

Stock status is assessed by species complex for most coastal shark species and by species group for species with enough data for an individual assessment (see Table 1). A 2011 benchmark assessment of dusky (*Carcharhinus obscurus*), sandbar (*Carcharhinus plumbeus*), and blacknose (*Carcharhinus acronotus*) sharks indicates that both sandbar and dusky sharks continue to be overfished with overfishing occurring for dusky sharks. Blacknose sharks, part of the SCS complex, are overfished with overfishing occurring. The Board approved the assessment for management use in February 2012, and NOAA Fisheries' Highly Migratory Species Division (HMS) is incorporating the results of the assessment as part of Amendment 5 to its FMP.

Porbeagle sharks were assessed by the ICCAT Standing Committee on Research and Statistics in 2009. The assessment found that while the Northwest Atlantic

stock is increasing in biomass, the stock is considered to be overfished with overfishing not occurring.

The 2007 SouthEast Data Assessment Review (SEDAR 13) assessed the SCS complex, finetooth, Atlantic sharpnose, and bonnethead sharks. 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.

SEDAR 11 (2006) assessed the LCS complex and blacktip sharks. 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.

There is no assessment for smooth dogfish on the Atlantic coast. The Commission's Coastal Sharks Technical Committee has identified a smooth dogfish assessment as a top research priority.

Atlantic Coastal Management

In August 2008, the Commission's Spiny Dogfish & Coastal Sharks Management Board approved the Interstate FMP for Atlantic Coastal Sharks. The FMP addresses the management of 40 species, including smooth dogfish, and establishes a suite of management measures for recreational and commercial shark fisheries in state waters (0 – 3 miles from shore). Prior to this plan, shark management in state waters consisted of disjointed state-specific regulations. The plan allowed for consistency across jurisdictions.

The complementary Interstate FMP also closed loopholes and allowed for joint specification setting throughout the entire Atlantic shark range. In addition, the FMP protects shark nurseries and pupping grounds that are found primarily in state waters. Interstate regulations provide protection to sharks during a particularly vulnerable stage in their life cycle in a location that federal jurisdiction cannot protect. Commercial and recreational fishermen are prohibited from possessing silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead sharks species from May 15 – July 15 from Virginia through New Jersey to protect pupping females. All fishermen are required to keep the fins attached to the carcass through landing as well, with the exception of smooth dogfish from March to June. This change in management occurred as part of Addendum I in 2009, which allowed processing at sea of smooth dogfish from March to June, when overlap with other shark species, mainly protected sandbar sharks, is extremely low.

Recreational fishermen are prohibited from harvesting any species that are illegal to land in federal waters. Recreational landings are controlled through possession limits with a 4.5' fork length size limit for all species except for Atlantic sharpnose, finetooth, blacknose, bonnethead and smooth dogfish that do not have a minimum size limit. Smooth dogfish do not have recreational possession limits. In addition, recreational anglers can only harvest sharks caught with a handline or rod & reel.

The commercial fishery is managed based on maximum sustainable yield using quotas and possession limits to control harvest level and effort. Sharks were split into six commercial species groups based on fisheries, biology, and stock status of the various species — prohibited, research, small coastal, non-sandbar large coastal, pelagic, and smooth dogfish (see Table 2 for a list of species by species groups). Fishermen are prohibited from catching or landing any species in either the prohibited or research species groups without a state display or research permit.

Table 2. List of Species and Species Groups within the Interstate FMP

Species Groups	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 sharks
Research	Sandbar sharks
Small coastal	Atlantic sharpnose, finetooth, blacknose, and bonnethead sharks
Non-sandbar large coastal	Silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead sharks
Pelagic	Shortfin mako, porbeagle, common thresher, oceanic whitetip, and blue sharks
Smooth dogfish	Smooth dogfish

The Commission does not set quotas for the SCS, LCS, or pelagic species groups but rather opens and closes the fishery in response to the federal fishery. The Board has the authority, but not the requirement, to set a quota and possession limits for smooth dogfish. Fishing effort for the allowed species groups is controlled through possession limits. Fishermen may harvest species contained in the smooth dogfish, SCS, LCS, and pelagic species groups as long as the fishery is open and all sharks are caught according to the regulations contained in the FMP.

Commercial fishermen must have a general state commercial fishing license or permit to harvest sharks. Dealers are required to hold a federal commercial shark dealer permit to buy and sell sharks in order to monitor the quota as efficiently as possible and reduce the chance of quota overages. Fishermen may use handlines, gillnets, trawl nets, shortlines, pound nets/fish traps, and weirs to harvest sharks commercially. Captains and vessel owners must use circle hooks and attend a NMFS Protected Species Safe Handling, Release, and Identification Workshop in order to harvest sharks using shortlines.

Addendum I, approved in 2009, modified recreational possession limits for smooth dogfish and other species, allowed at-sea processing of smooth dogfish from March – June, and removed the two-hour net check requirements, which was determined to be ineffective at reducing bycatch. Since 2010, consistent with the federal specifications, the Coastal Sharks Management Board has maintained the 33-fish LCS commercial possession limit based on the successful distribution of the quota throughout previous seasons. The Board also initiated an addendum to consider smooth dogfish state shares in response to a proposed federal smooth dogfish commercial quota, but postponed approving the document for public comment until the proposed federal quota is published. It is anticipated that HMS will implement a smooth dogfish quota for the 2013 fishery. For more information, please contact Danielle Chesky, FMP Coordinator, at dchesky@asmfc.org or 703.842.0740.

Reflections from the Past *Society for the Suppression of Man-eating Sharks*

The following article appeared in the July 26, 1911 edition of the Washington Post. To put it in context, two days earlier, Hiram Bingham had announced the discovery of Machu Pichu. We have certainly come a long way in our understanding of, and appreciation for, the role of sharks in the marine ecosystem.

Alexandria, Va., July 22.—Savage sharks, which have attempted to climb on board small boats and drag occupants into the water, have created widespread excitement among the rivermen of this city, and are responsible for the organization of the "society for the suppression of man-eating fish," of which Capt. Henry Simmons is president.

According to Capt. Simmons, who had an encounter with one of the fish, the sharks are desperate, hardened, and totally without fear of human beings. They are not even scared of motor-boats, he declares.

"Something must be done," said Capt. Simmons last night, "before it is too late. Positive measures must be resorted to if these sharks are to be shown where they get off. We cannot afford to have our leading citizens attacked. As soon as I learn the best way of killing a shark, I shall lead a party that will exterminate them; yes, suh, exterminate them."

Capt. Simmons' adventure occurred about 30 miles below here, last Wednesday. He was moving along in his gasoline boat, when, in the distance beheld a man in a batteau [sic], who seemed to be earnestly punching something. As Capt. Simmons drew nearer, his horrified eyes discerned a giant shark—a creature between 15 and 20

feet long—which was determinedly trying to climb into the small craft.

While he hurried to the batteau man's assistance, the fish made a vicious leap, and almost got over the gunwale. The man punched the shark on the nose, and it fell into the water.

This is the way Capt. Simmons tells the rest of it:

"I was astonished. Throwing on the high speed clutch of my boat, I hurried toward the man who stood panting as he nursed the bruised place where his hand had come in contact with the shark's face.

"Hurry," he yelled, or you may be too late. This shark is trying to find something. I don't know what it is, but I won't give it to him.

"I picked up a chunk of iron and cautiously went alongside. As I did, the enraged shark came to the surface, and, with gleaming eyes, again rushed toward the batteau. His mouth was open, and I could see his interior works as he lashed himself against the side of the batteau. Just as he poised himself for a spring, I struck. I hit him fairly behind the ears, and, with a roar, he disappeared under the water and made away, leaving a trail of foam behind him."

Returning to Alexandria, the captain spread the news, and, within a short time, plans were arranged for a shark hunt. Several other residents claim to have seen these creatures in the river. The "society for the suppression of man-eating fish" was formed late yesterday afternoon, and comprises the leading fishermen of this community.