

Coastal Sharks of New Jersey

By Russell Babb, Supervising Biologist

The Atlantic States Marine Fisheries Commission (ASMFC) recently developed an Interstate Fishery Management Plan (FMP) for Atlantic Coastal Sharks. Management authority for coastal sharks within 0-3 miles from shore falls under the authority of individual states, which develop regulations to meet the management objectives of the FMP. Shark management, like other highly migratory species, can be especially challenging. Sharks simply refuse to respect our state boundaries and authorities. They range up and down the coast, migrate inshore and offshore and mate and pup in areas that overlap both state and federal jurisdictions. Therefore, sound management is only possible through cooperation among federal and state governments in developing coordinated conservation measures. Furthermore, the brass tacks of shark biology (i.e., late maturity, low fecundity or potential reproductive capacity) make sharks especially susceptible to overfishing, which in turn make traditional fisheries management methods less effective. Today, populations of a number of large sharks are substantially reduced from what they were in the 1970s.

SHARK BIOLOGY AND BEHAVIOR

Sharks belong to the class Chondrichthyes (cartilaginous fishes), which also includes rays, skates, and ratfishes. Unlike the teleosts (bony fish), sharks have skeletons made of cartilage. The earliest known sharks swam our oceans over 400 million years ago.

There are approximately 350 species of sharks. The most commonly known sharks are the large apex predators like the white (*Carcharodon carcharias*), mako (*Isurus oxyrinchus*), tiger (*Galeocerdo cuvier*), bull (*Carcharhinus leucas*), and great hammerhead (*Sphyrna mokarran*). Some shark species reproduce by laying eggs (catshark, like the chain dogfish) while others deliver fully developed young or “pups” (blue shark, mako).

HABITAT

Shark habitat can be described in four basic categories: coastal, pelagic, coastal-pelagic, and deep-dwelling. Coastal species inhabit estuaries, the nearshore and waters of the continental shelves (e.g., bull shark). Pelagic species, on the other hand, range widely in the upper zones of the open ocean, often traveling over entire ocean basins (e.g., shortfin mako, blue sharks). Coastal-pelagic species are intermediate in that they occur both inshore and beyond the continental shelves. The sandbar shark is a local example of a coastal-pelagic species.

FEEDING HABITS

Sharks generally feed around dawn and dusk and often move into shallow waters following prey such as menhaden and other small forage fish. When schools of bait fish are observed near the shoreline,

sharks and other predators may also be near by. But fear not, as shark expert George Burgess (Director, Florida Program for Shark Research) once fittingly wrote, “Many more sutures are expended on sea shell lacerations of the feet than on shark bites!”

REPRODUCTION

Adults usually congregate in specific areas to mate; females travel to specific nursery areas to pup. Frequently, the nursery areas are in shallow, highly productive estuarine waters where abundant small fishes and crustaceans provide food for the growing pups. New Jersey’s coastal estuaries, particularly the mouth of Great Bay and the lower-middle portion of Delaware Bay, are heavily utilized as nursery or “pup” grounds. In our temperate zones, the young often leave the nurseries with the onset of winter.

LIFESPAN

The life span of many species is not fully known, but it is believed that many species may live 30 to 40 years or longer. When compared to the teleosts, sharks have very low reproductive potential. Several species, including the locally observed sandbar and bull sharks, do not reach maturity until 12 to 18 years of age. These combined biological factors leave many species of sharks at risk if not wisely managed.

MIGRATION

Along the Atlantic coast of the U.S., sharks generally move north in the spring with warming temperatures and south again in the fall as water temperatures become cooler.

Smooth Dogfish (*Mustelus canis*)

“I caught a sand shark!” Well, maybe not. It was probably a shark, but more likely you caught a smooth dogfish. This common bay and inshore inhabitant grows up to 60 inches, prefers shallow waters and is often caught by recreational anglers. It is a scavenger and opportunistic predator, feeding primarily on crustaceans, small fish and mollusks. The New Jersey state record “smoothie” was taken from Atlantic County waters weighing 19 pounds 8 ounces.



Kim Taggart

Spiny Dogfish (*Squalus acanthias*)

Many fishermen learn the difference between the two dogfish species the hard way—a cut to the palm of the hand. The species name (acanthias) translates to “a prickly thing,” which aptly describes the sharp spines found on the dorsal fins of this abundant and voracious predator. In the spring they begin their migration north, reaching New Jersey in March and April, continue northward to Canada, then return to the mid-Atlantic as water temperatures cool in the fall. They are voracious, opportunistic feeders, indulging on a number of commercially- and recreationally-important species such as Atlantic herring, Atlantic mackerel, squid—and to a lesser extent—cod and haddock. Interestingly, this predatory species is often a prey species itself—for larger predators such as goosefish, cod, red hake, larger sharks, whales, dolphins and other spiny dogfish. The state record, caught off Cape May, weighed nearly 16 pounds.



Andy Murch/easmodiver.com

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Shark Species Encountered by New Jersey Anglers



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Sandbar shark (*Carcharhinus plumbeus*)

The sandbar shark, also known as the brown shark, is a regular inhabitant of our coastal waters growing to approximately 6 to 7 feet. It is a slow-growing species that reaches maturity between 15 and 30 years of age. In New Jersey, the sandbar shark has primary nurseries in the shallow waters of Great Bay and in Delaware Bay. It is a preferred commercial species because of the high quality of its flesh and large fins. However, scientists have documented severe declines in catch per effort in the Chesapeake Bay area. Fishermen are currently prohibited from catching or landing sandbar sharks in federal waters. The New Jersey State Record sandbar shark was caught at Little Egg Inlet in 1987. The shark weighed 168 lbs, 8 oz.

Dusky shark (*Carcharhinus obscurus*)

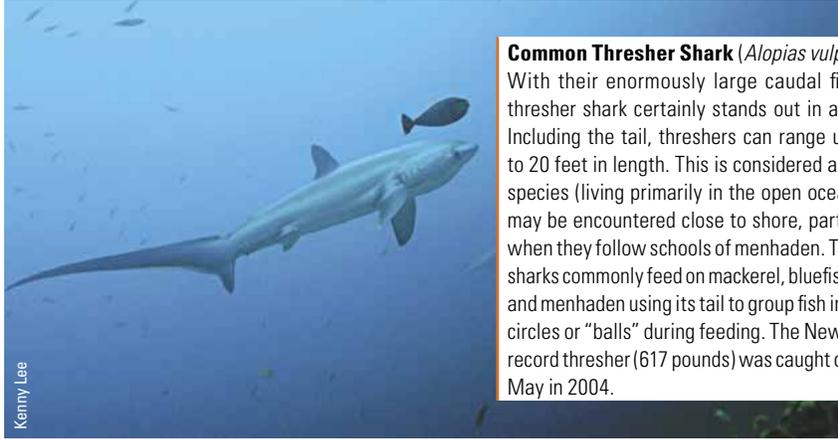
The dusky shark is a relatively common species. Fishing for dusky shark is currently prohibited in federal waters. The dusky shark is a slow-growing species that matures at about 17 years of age. The New Jersey State record was caught off Great Egg Inlet in 1987 and weighed in at an impressive 530 lbs. It was formerly important both as a commercial species and as a game fish prior to the fishing prohibition.



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Common Thresher Shark (*Alopias vulpinus*)

With their enormously large caudal fins, the thresher shark certainly stands out in a crowd. Including the tail, threshers can range up to 18 to 20 feet in length. This is considered a pelagic species (living primarily in the open ocean), but may be encountered close to shore, particularly when they follow schools of menhaden. Thresher sharks commonly feed on mackerel, bluefish, squid and menhaden using its tail to group fish into tight circles or "balls" during feeding. The New Jersey record thresher (617 pounds) was caught off Cape May in 2004.



Kenny Lee

Shortfin Mako Shark (*Isurus oxyrinchus*)

One of the most impressive-looking, foreboding creatures swimming the planet's oceans, the mako shark is also known as one of the ultimate gamefish of the world. Makos have a reputation for great speed, overall aggressiveness and tremendous leaping ability. The shortfin mako is the fastest shark, with recorded speeds of up to 20 m.p.h. Off the northeast coast of the United States, diet studies have shown the preferred prey species to be bluefish, but makos often feed on other fast-moving species such as tuna, swordfish and other sharks. Average adult size is 10 feet and 150-300 pounds. Shortfin makos are believed to live about 20 years. The New Jersey record is a whopping 856-pound specimen taken from the Wilmington Canyon in 1994.



Andy Murch

Blue Shark (*Prionace glauca*)

This meandering, wide-ranging shark is a common visitor to offshore fishermen. It is slender in build with exceptionally long pectoral fins. They typically grow to 8-10 feet in length but have been collected up to 12 feet and are believed to grow larger. This shark owes its name to its intensely blue upper body. It is interesting to note that blue sharks have gill rakers (tough projections within the gill pointing forward and inward), a rarity in most sharks. It is thought that this adaptation may thwart small prey species (like squid, anchovies, etc.) from slipping through the blue shark's gills. The New Jersey record blue was taken in 1996 from the "Mud Hole" offshore of Manasquan and Shark rivers. The shark weighed 366 pounds.



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Attention Saltwater Anglers!

By Jeff Brust, Research Scientist

New Jersey Division of Fish and Wildlife has implemented an angler survey to collect information on certain recreationally important marine finfish species. This voluntary survey is available online at <http://NJFishandWildlife.com/marinesurvey.htm>.

Since 1981, the Marine Recreational Fisheries Statistics Survey (MRFSS), conducted by the National Marine Fisheries Service (NMFS) has been the primary source of recreational fisheries data in New Jersey and other coastal states throughout the U.S. Unfortunately, the MRFSS is hindered by sampling only a small portion of the fishing public and by collecting only minimal data on released fish. Although NMFS is in the process of developing an improved sampling program (Marine Recreational Information Program or MRIP), details of the new sampling program are not yet available. It may be several years before fisheries scientists can determine the utility of the data collected through MRIP.

Information collected through Fish and Wildlife's new voluntary marine angler survey will provide much-needed data to increase our understanding of New Jersey's highly valued recreational fisheries. The focus of this voluntary survey is to learn *catch* and *effort* information from fishing trips in marine and estuarine waters of the state and surrounding areas. For catch information, Fish and Wildlife is interested in collecting statistics on the number and size of fish both kept and released.

The survey was implemented in June 2008 and by the end of the year had received more than 675 responses reporting catch and effort information on more than 1,850 angler trips. The majority of responses (521) identified summer flounder as either a primary or secondary target species, with striped bass (141), bluefish (130), weakfish (89) and black seabass (85) rounding out the top five most-targeted species.

One of the more valuable benefits of this survey is the collection of lengths from released fish. The MRFSS collected no length information from released fish until 2004 when it began measuring throwbacks from a limited number of party boat trips. New Jersey's online survey allows for collection of lengths of released fish from all fishing modes and species. This information is particularly useful in understanding the population size structure and for use in population models. The figure below shows the size distribution of recreationally caught summer flounder during the 2008 fishing season.

Your participation in the survey is both important and appreciated. Fish and Wildlife is confident that quality recreational fisheries data collected through the online survey will improve our ability to manage our important marine species for continued enjoyment by recreational anglers and all user groups. Go to NJFishandWildlife.com/marinesurvey.htm

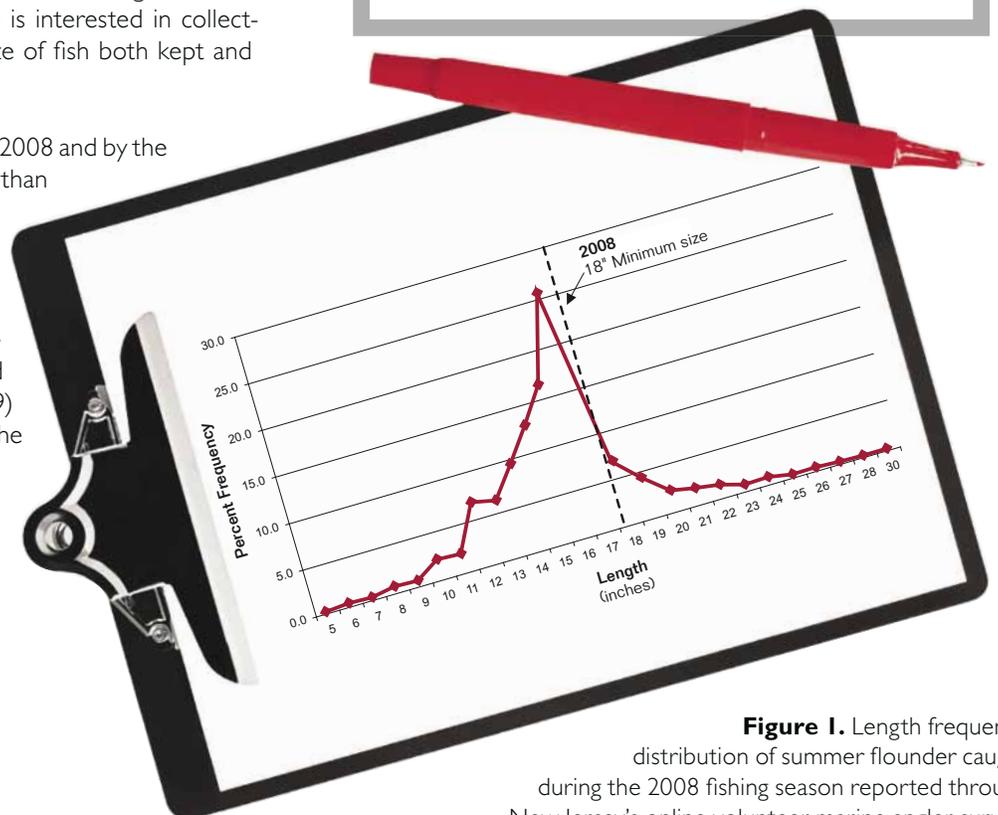


Figure 1. Length frequency distribution of summer flounder caught during the 2008 fishing season reported through New Jersey's online volunteer marine angler survey.

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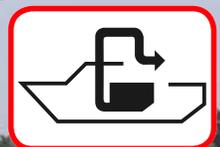
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