Species of Concern
NOAA National Marine Fisheries Service

Sand tiger shark
Carcharius taurus

Photo credit: Paula Whitfield, NOAA.

KEY INFORMATION

Areas of Concern
Western Atlantic - south Atlantic, northern Gulf of Mexico, Caribbean.

Year Identified as "Species of Concern"
1997

Factors for Decline
- Fishing
- Low fecundity
- Bycatch

Conservation Designations
IUCN: Vulnerable
American Fisheries Society: Vulnerable

** While category names may be similar, it is important to note that scientific and conservation organizations use different criteria to classify species conservation status. We have not generally adopted any of the rankings used by these organizations, however we do review the information they present as part of our proactive approach to species conservation.*

Brief Species Description:
The sand tiger shark is a bulky shark with a flattened conical snout; the eyes are small and do not have nicitating eyelids, and the mouth is long – extending behind the eyes with three rows of large upper anterior teeth. The anal and both dorsal fins are equally large and broad based; first dorsal fin on back is closer to pelvic fins than pectorals. In coloring they are light brown, often with darker reddish or brownish spots scattered on body (Compagno 1984). Maximum length is about 10.4 feet (318 cm). Sand tiger sharks occur as solitary individuals, but may also occur in small to large schools (Compagno 1984). Their global distribution is all warm and temperate seas except the eastern Pacific. They are a species of concern in the Western Atlantic and northern Gulf of Mexico (Figure 1). Sand tiger sharks range from the surf zone, in shallow bays and around coral and rocky reefs down to depths as great as 626 feet (Compagno 1984). They are often found near the bottom, but have been found throughout the water column. Sexual maturity for males is reached at the size of 6 feet (1.9 m) or 6 to 7 years; females mature at 7 feet (2.2 m) or 9 to 10 years (Goldman et al. 2006). They live up to 17 years. The species is ovoviviparous (young develop as unattached embryos within the uterus, with energy supplied by large egg yolks) and exhibit intra-uterine cannibalism. The gestation period may be 8 to 9 months (Compagno 1984). Aggregations of individuals occur for feeding, courtship, mating, and birth (Compagno 1984). In North America, mating is thought to occur in alternate years between late March and April with an average litter of size of one to two pups. Sand tiger sharks are migratory within its region, moving poleward during the summer while making equatorial movements during the fall and winter months. Prey items include bony fishes, small sharks, rays, squid, crabs and lobsters.

Rationale for "Species of Concern" Listing:

Demographic and Genetic Diversity Concerns:
Sand tiger sharks have been fished throughout their range. The species is highly regarded as a food fish in Japan, but not in the Western Atlantic. Increased exploitation of sharks along the U.S. east coast in the 1980s and 1990s resulted in abundance declines of 90% from virgin conditions

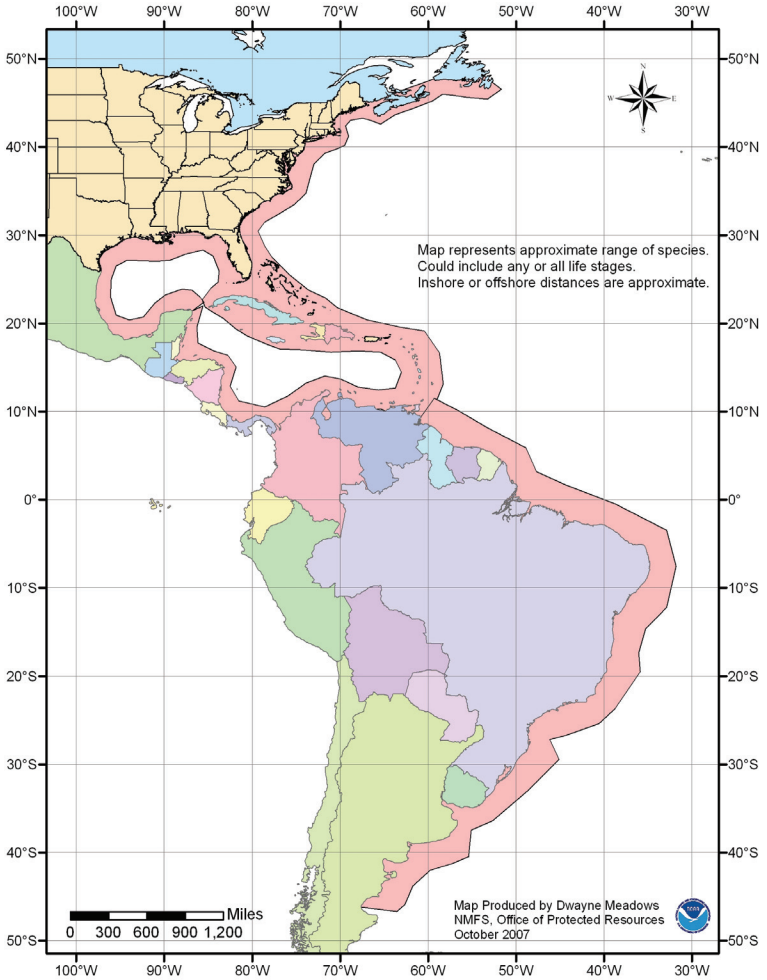
(Musick et al. 1993, Castro et al. 1999). Their aggregating behavior, slow growth, late maturity, and low productivity make them susceptible to exploitation. Unpublished analyses by Ken Goldman of the Alaska Department of Fish and Game (2007 ASIH meeting) show that the population continues to decline slightly. His analysis also showed that juveniles are the most vulnerable life history stage and that about 75% of the population is composed of immature individuals.

Factors for Decline:

As described above, the shark is known to be caught for food in Japan. They are of variable economic importance regionally. U.S. fishermen have not been authorized to retain sand tiger sharks since 1997. However, they are still caught primarily as bycatch with line fishing gear, but are also caught as bycatch in longlines, bottom-set gillnets, and in pelagic and bottom trawls. Sand tiger sharks are also used for fishmeal, oil (from its liver), and its fins are used in shark-fin trade. Sand tigers are very susceptible to fishery exploitation because they aggregate in large numbers during the mating season in specific coastal areas. These aggregations have been targeted by fisheries in the past.

In addition, juvenile sand tiger sharks are commonly found in **estuaries** of the eastern U.S. that are susceptible to non-point source pollution. Intra-uterine cannibalism is another factor that makes this species vulnerable, since it limits the litter size to one or two pups. The low fecundity (e.g., maturity at 10 years for females) in combination with other life history characteristics makes this species extremely vulnerable to overfishing.

Sand Tiger Shark SOC Range



Status Reviews/Research Underway: The Southeast Science Center of NMFS completed a status update in February 2009 (Carlson *et al*. 2009). While the decline found in this study was not as severe as previously reported, the authors concluded that the sand tiger shark should be retained as a Species of Concern because of the species low productivity and the high uncertainty in abundance trends.

Existing Protections and Conservation Actions:
The sand tiger shark is managed by the Highly Migratory Species Fishery Management Plan (FMP). Under this FMP, it has been illegal to land (both commercially and recreationally) this species or any parts (fins, meat, jaws, etc) on the Atlantic coast of the U.S. since 1997. Under the Shark Interstate Fisheries Management Plan for State waters, implemented in 2010, all states from Florida to Maine ban the retention or possess of sand tiger sharks.

Links:
Highly Migratory Species Management: **http://www.nmfs.noaa.gov/sfa/hms/**
Atlantic States Marine Fisheries Commission webpage: **http://www.asmfc.org**
Essential Fish Habitat (EFH) Mapper: **http://sharpfin.nmfs.gov/website/EFH_Mapper/map.aspx**
Delaware Bay Shark tracker

Video:
In North Carolina (1:01) http://www.youtube.com/watch?v=SbMJueC8C4w
In New England Aquarium (1:38) http://www.youtube.com/watch?v=igk8FiSIgNM
Male with remoras (0:30) http://www.arkive.org/sand-tiger-shark/carcharias-taurus/video-09.html

References:
Carlson, J.K., C. McCandless, E. Cortes, R. D. Grubbs, K. I. Andrews, M. A. MacNeil, and J. A. Musick. 2009. An Update on the Status of the Sand Tiger Shark, *Carcharias taurus,* in the Northwest Atlantic Ocean. NOAA Technical Memorandum NMFS-SEFSC-585.

Castro, J., C.M. Woodley, and R.L. Brudeck. 1999. A preliminary evaluation of the status of shark species. FAO Fisheries technical Paper #380. FAO, Rome, 72 p.

Compagno, L.J.V. 1984. An Annotated and Illustrated Catalogue of Shark Species Known to Date Part 1 - Hexanchiformes to Lamniformes Compagno, L.J.V. 1984. FAO Fish. Synop.(125) Vol.4, Part 1

Goldman, K.J., S. Branstetter, J.A. Musick. 2006. A re-examination of the age and growth of sand tiger sharks, *Carcharias taurus*, in the western North Atlantic: the importance of ageing protocols and the use of multiple back-calculation techniques. Environmental Biology of Fishes. 77:241-252.

Musick, J.A., S. Branstetter, and J.A. Colvocoresses. 1993. Trends in shark abundance from 1974 to 1991 for the Chesapeake Bight region of the U.S. Mid-Atlantic coast. Conservation Biology of Elasmobranchs. NOAA Technical Report NMFS 115:1-18.

Point(s) of contact for questions or further information:
For further information on this Species of Concern, or on the Species of Concern Program in general, please contact NMFS, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, (301) 713-1401, soc.list@noaa.gov; http://www.nmfs.noaa.gov/pr/species/concern/, or Calusa Horn, Species of Concern Coordinator, NMFS, Southeast Region, Protected Resources Division, 263 13th Avenue South, St. Petersburg, FL 33701, (727) 824-5312, Calusa.Horn@noaa.gov.