Species of Concern
NOAA National Marine Fisheries Service

Sand tiger shark
Carcharius taurus

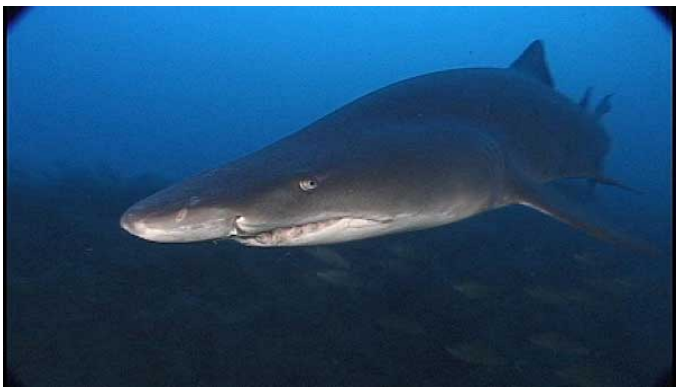

Photo credit: Paula Whitfield, NOAA.

KEY INFORMATION

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

Year Identified as "Species of Concern"
1997

Factors for Decline
- Fishing
- Pollution
- Low fecundity
- Bycatch

Conservation Designations
IUCN: Vulnerable
American Fisheries Society: Vulnerable

Brief Species Description:
The sand tiger shark is characterized by two dorsal fins of similar size (base of first dorsal just in front of pelvic fin); a short, asymmetric caudal fin with a pronounced subterminal notch and short but strong ventral lobe); 5 medium gill slits in front of the pectoral fin; no gill rakers; a very short snout; and small eyes without nicitating membranes. They are light grey-brown above in color, and whiter below with yellow/yellowish blotches. The teeth are long and pointed, with a small spine-like cusp on either side. Maximum length is about 10.4 feet (318 cm). Sand tiger sharks may occur singly or in small schools and are active mostly at night. Their global distribution is all warm and temperate seas except the eastern Pacific. They are a species of concern in the Western Atlantic (Figure 1). They are generally coastal, usually found from the surf zone down to depths around 75 feet (23 m). However, they may be found in shallow bays, around coral reefs and to depths of 600 feet (183 m) on the continental shelf. They usually live near the bottom, but have been found throughout the water column. Sexual maturity for males is reached at the size of 6 feet (2 m) or 6 to 7 years; females mature at 7 feet (2.2 m) or 9 to 10 years (Goldman et al. 2006). The species is ovoviviparous (young develop as unattached embryos within the uterus, with energy supplied by large egg yolks). The reproductive cycle is at least 2 years. 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. They move north along the coast in summer. Brad Wetherbee of the University of Rhode Island currently tracks them in Delaware Bay. 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. Recent 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 immatures.

Factors for Decline:

As described above, the shark is known to be caught for food in Japan. They are of variable economic importance regionally. Although not a preferred target of commercial or recreational fisheries, they are still taken primarily with line fishing gear, but also in bottom-set gillnets and in pelagic and bottom trawls. The sand tiger shark has also been used for fishmeal, oil (from its liver) and its fins are used for the Oriental sharkfin trade. Sand tigers are very susceptible to fishery exploitation because they aggregate in large numbers during the mating season at particular coastal spots. These aggregations have been targeted in the past by fisheries. In addition, juvenile sand tiger sharks are commonly found in **estuaries** of the eastern U.S. that are susceptible to runoff and pollution. In utero sibling cannibalism is another factor that makes this species vulnerable, since it limits the litter size to one or two pups. The low fecundity in combination with other life history characteristics makes this species extremely vulnerable to overfishing.

Status Reviews/Research Underway: The Southeast Science Center of NMFS completed a status update in February 2009 (Carlson & Cortes 2009). The authors concluded that the sand tiger shark should be retained as a species of concern because of the species low productivity.

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. Several states adopted similar regulations, though Maine, New Hampshire, Rhode Island, and Connecticut have not.

Links:
Delaware Bay Shark tracker

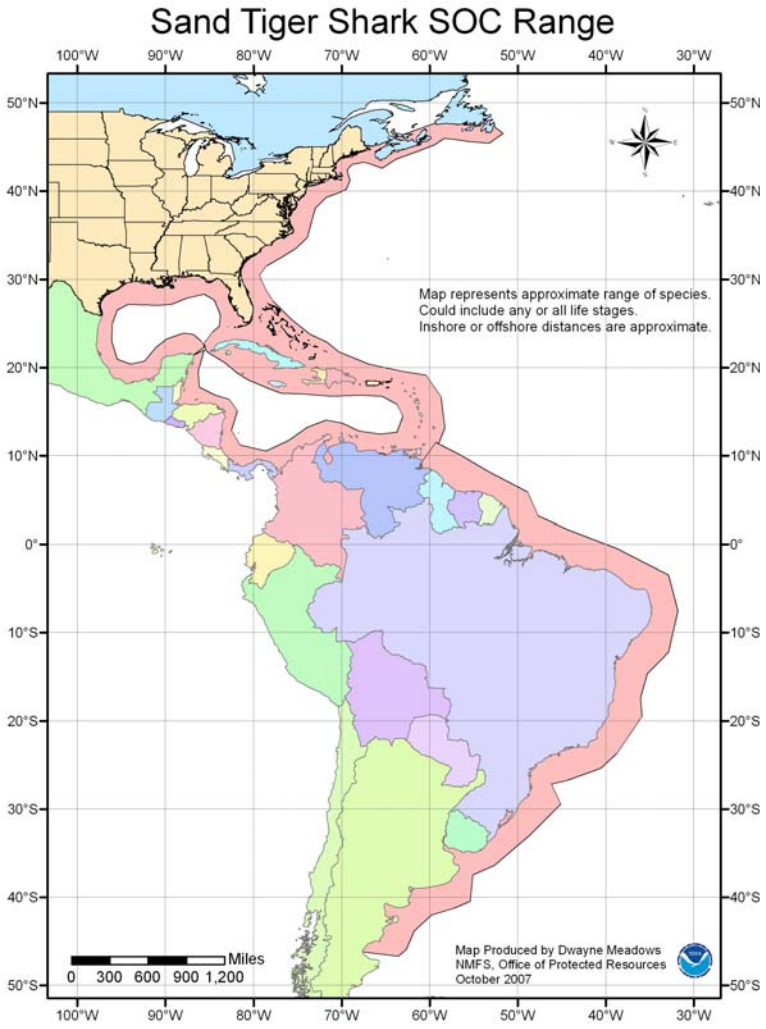

Figure 1. Western Atlantic range of the sand tiger shark species of concern.

References:

Branstetter, S. and J.A. Musick. 1994. Age and growth estimates for the sand tiger in the northwestern Atlantic ocean. Transactions of the American Fisheries Society 123:242-254.

Carlson, J.K. and E. Cortes. 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.

FAO Species Identification Guide for Fishery Purposes. 2002. p. 422 In: K.E. Carpenter (ed). Volume 1: Introduction, molluscs, crustaceans, hagfishes, sharks, batoid fishes and chimeras. Rome, FAO.

Gilmore, R.G., J.W. Dodrill, and P.A. Linley. 1983. Reproduction and embryonic development of the sandtiger shark, *Odontaspis taurus* (Rafinesque). Fishery Bulletin U.S. 81:201-225.

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 Dr. Stephania Bolden, NMFS, Southeast Region, Protected Resources Division, 263 13th Avenue South, St. Petersburg, FL 33701, (727) 824-5312, Stephania.Bolden@noaa.gov.