

Pristis pectinata (Smalltooth Sawfish)

Family: Pristidae (Sawfish)

Order: Rajiformes (Rays and Sawfish)

Class: Chondrichthyes (Cartilaginous Fish)

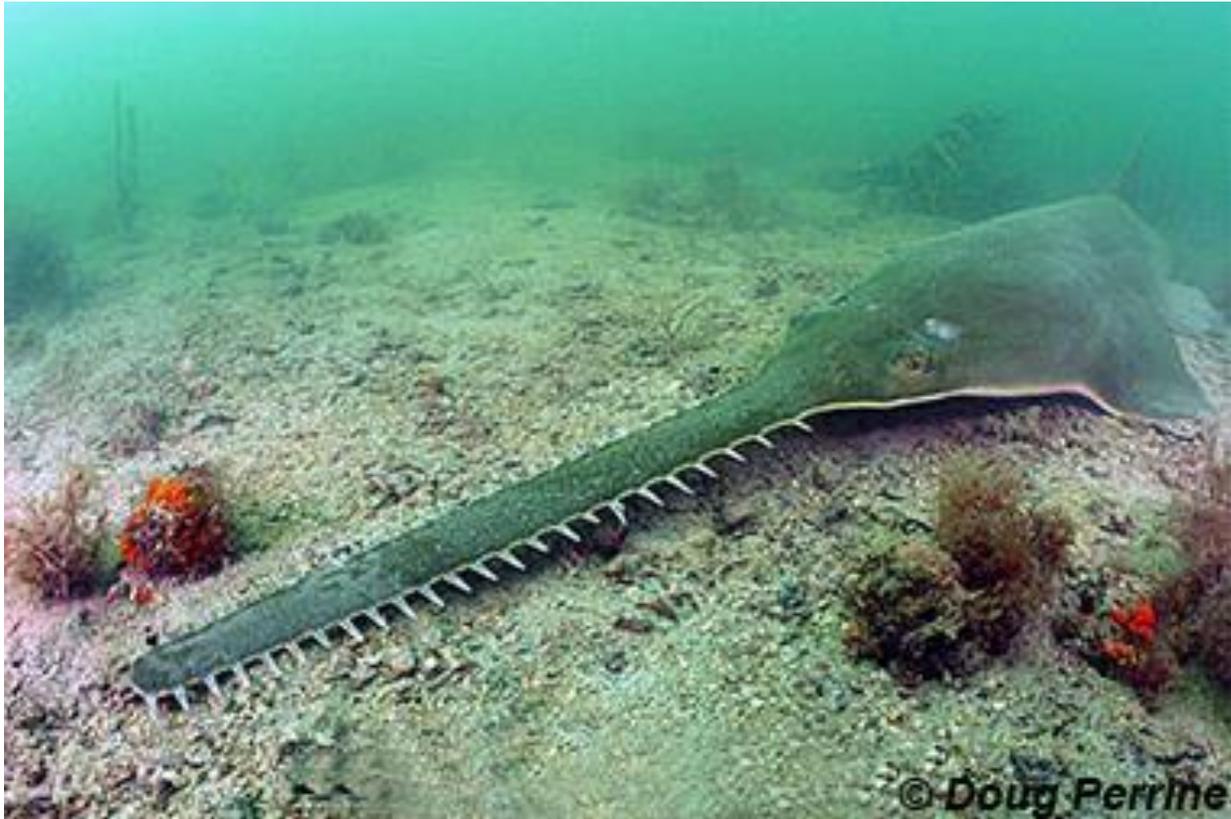


Fig. 1. Smalltooth sawfish, *Pristis pectinata*.

[<https://www.flmnh.ufl.edu/fish/discover/species-profiles/pristis-pectinata/>, downloaded 18 April 2016]

TRAITS. *Pristis pectinata*, also known as smalltooth sawfish and wide sawfish, is a cartilaginous fish with a flattened body and broad pectoral fins. It has a long flat rostrum (nose extension), bearing 24-32 unpaired teeth that are located throughout the rostrum's entire length (Fig. 1). Each tooth is slightly flattened to create anterior sharp edges along with a groove which creates two sharp cutting edges at the back. There are no teeth in the saw of newborns; however, at a length of 1.3m the saw is covered completely. The average length of a mature smalltooth sawfish is 5.5m, which include the rostrum which occupies 25% of the body length (National Wildlife Federation, 2016). The dorsal region has a brown colour and is where the tall pointed dorsal fins are located. The white underside of the body contains the gill slits.

DISTRIBUTION. Widespread over the western Atlantic Ocean (Fig. 2), in the tropical and subtropical regions including the Caribbean Sea, Gulf of Mexico, and the coast of the southern United States and northern South America (NOAA, 2015). Although previously considered to be distributed circumglobally in warm waters (NOAA, 2010), genetic studies suggest that *P.*

pectinata is restricted to the Atlantic, with records from other areas being misidentifications of other species of sawfish (NOAA, 2015).

HABITAT AND ACTIVITY. *Pristis pectinata* are found in marine and freshwater habitats ranging from coastal, shallow waters in tropical regions, which include estuaries, rivers and lagoons, to deep open-water and coral reefs. Habitats vary depending on the growth of the smalltooth sawfish, in which juveniles occupy a more diverse habitat compared to the adults. Small juveniles inhabit shallow mud banks (Fig. 3), the shoreline of mangroves, and waters situated under bridges, piers and docks (Poulakis et al. 2010). These habitats are selected due to warmer temperatures, in which growth rate is maximized, preference of salinity from 18-24 PPT (parts per thousand), and predator avoidance (Simpfendorfer, 2005). Adults above 3m in size usually inhabit open-water habitats that are greater than 5m deep since they are less subjected to predation. They are usually found near coral reefs which are habitats to many small fish which are preyed upon by the smalltooth sawfish (Fig. 4). They share their habitat with other small marine organisms, bull sharks which are predators, and the largetooth sawfish (*Pristis microdon*). Completely diurnal, smalltooth sawfish are protected against predators since they utilize narrower areas such as rivers, canals and creeks during the day and are present most frequently in open waters at night (Simpfendorfer, 2005).

FOOD AND FEEDING. Apart from protection, the rostrum is used for feeding to maintain a diet composed of mainly fish and crustaceans. The smalltooth sawfish's rostrum or saw holds thousands of sensory organs, which enables them to monitor and detect electric fields released from organisms which they prey upon (National Wildlife Federation, 2016). Swinging the saw from side to side enables them to swipe, impale and capture fish on the sharp rostral teeth. The rostrum is also used to scrape, dig and dislodge bottom-dwelling molluscs and crustaceans. Hidden food sources are therefore discovered by the disturbance and churning of the sea floor with their unique saw structure.

POPULATION ECOLOGY. Typically solitary. *Pristis pectinata* was once commonly abundant in the late 1800s and early 1900s throughout the Atlantic coast and Gulf of Mexico. However, at present, the abundance and population of this species has drastically declined by 90% and hence it is currently rare (Simpfendorfer, 2005). During the late 1800s, 300 smalltooth sawfish were captured in the Indian River Lagoon on the east coast of Florida by a fisherman, while there were other reported sightings of hundreds of the species, both small and large, on the west coast. This indicated its abundance at the time. Unfortunately, no detailed studies were conducted on the species before it became rare and hence little is known about its ecological and biological nature. Tagged and recaptured juveniles gathered from the coast in Florida indicated that they grow rapidly in size within 2 years after birth (Simpfendorfer, 2005). The life span is over 30 years.

REPRODUCTION. *Pristis pectinata* are ovoviviparous which carry out internal fertilization rather than laying their eggs in the external environment. Approximately 20 embryos are matured in the mother and nourishment is provided by a yolk sac. Females give birth in safe estuaries and mangroves during warm seasons, particularly between April and May (Poulakis et al., 2010). Prior to birth, the pups' saws are developed fully but covered with a shielding tissue that prevents damage to the mother during birth. Two weeks after birth, the protective shield is lost, exposing the rostral teeth. Up to 20 juveniles are born and are usually 60-80cm in length.

BEHAVIOUR. The juveniles usually maintain their mud-flat, mangrove-lined habitat after birth for two years. After their rostral teeth are fully exposed, they develop the ability to self-feed with their unique saw and sense organs which enable them to easily target and capture prey. To avoid predators, the juveniles limit themselves to shallow waters. Adult smalltooth sawfish use their rostrum containing sharp teeth as a weapon against predators.

APPLIED ECOLOGY. *Pristis pectinata* is listed as being Critically Endangered on the IUCN Red List. Threats to the population include loss of habitat, over-fishing and entanglement of the rostrum in nets (Fig. 5). Development and modification of coastal regions and loss of mangroves affect the habitat of juveniles. In order to conserve this species, both Florida and Louisiana have listed it as a protected species. Recovery has been put in place to reduce impacts of fishing, releasing the fish if caught, educating the public and protecting its habitats (Natural Wildlife Federation, 2016).

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Fig. 2. Smalltooth sawfish geographical distribution.

[<https://www.flmnh.ufl.edu/fish/discover/species-profiles/pristis-pectinata/>, downloaded 18 April 2016]



Fig. 3. Juvenile smalltooth sawfish at a shallow shore bank.

[<http://shark-references.com/post/588>, downloaded 9 March 2016]



Fig. 4. Smalltooth sawfish among prey.

[<http://www.sci-news.com/biology/science-virgin-birth-smalltooth-sawfish-02863.html>, downloaded 9 March 2016]



Fig. 5. Smalltooth sawfish entangled in fishing line.

[<http://www.fisheries.noaa.gov/pr/species/fish/smalltooth-sawfish.html>, downloaded 9 March 2016]

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