

Smalltooth Sawfish: 15 Years of Research to Promote Recovery of a Critically Endangered Species

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The sawfishes (Family Pristidae) include five species of large coastal rays that are among the most imperiled groups of marine fishes. All are listed as Critically Endangered in the IUCN Red List of Threatened Species and Appendix I of CITES (banning all international trade). The smalltooth sawfish (*Pristis pectinata*) is endemic to the Atlantic Ocean and historically was widely distributed in subtropical to tropical waters on the east and west sides of the basin. The species has been extirpated from much of its range due to overfishing and habitat loss with few viable populations remaining. Bycatch remains the largest source of direct mortality and continued habitat loss from urban development, agriculture, and freshwater diversion likely hinders recovery. The U.S. harbors the largest population of smalltooth sawfish, concentrated in Southwest Florida. The persistence and continued viability of this population reflects a number of conservation actions. Smalltooth sawfish have been protected in Florida since 1992 and commercial gillnets were banned in Florida in 1995, likely decreasing juvenile mortality. In 2003, smalltooth sawfish became the first native marine fish listed as *Endangered* under the United States Endangered Species Act. In addition, substantial habitats important to sawfish in Florida are under some level of conservation protection within areas such as Everglades National Park (ENP), Ten Thousand Islands National Wildlife Refuge, and Florida Keys National Marine Sanctuary (FKNMS). Since 2011, we have used fishery-independent longline surveys (>1,200 sets, >60,000 hooks) in these regions to assess community structure and relative abundances of smalltooth sawfish and sharks, study movements, migration and bycatch risk of large sawfish using acoustic and satellite telemetry, determine sawfish mating areas, and collect samples needed for assessing reproductive status, trophic ecology, and toxicological responses. Over 5,000 sharks and rays from 17 species have been captured, including 147 large smalltooth sawfish (48% in FKNMS, 50% in ENP, 2% outside of this region). Telemetry data highlighted areas of high use by adult smalltooth sawfish that may warrant designation of Critical Habitat as well as regions where sawfish are vulnerable to fishery interactions, including potential bycatch mortality in shrimp trawls. By 2023, Following 30 years of protection in Florida and 20 years since the ESA listing, the sawfish population appeared to be recovering. This recovery has been hindered by the “spinning fish” phenomenon in the Florida Keys that disproportionately affected sawfish, leading to more than 60 known sawfish mortalities to date. Our research is now focused on assessing what proportion of the sawfish population was affected by these mortality events, collecting samples needed for toxicological and pathological analyses, and determining the magnitude of the associated setback to sawfish population recovery.