Other Sharks and Rays Guild

Cownose Ray *Rhinoptera bonasus* (Mitchell 1815)
Smooth Dogfish *Mustelus canis* (Mitchill 1815)

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DESCRIPTION

Taxonomy and Basic Description


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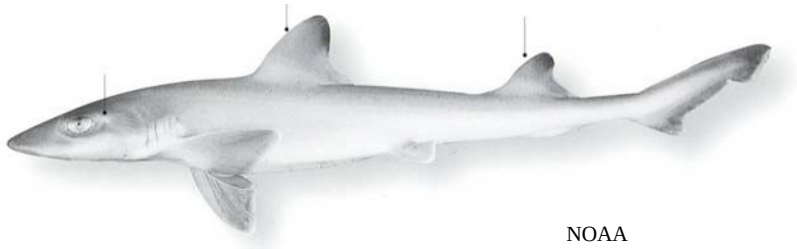
The cownose ray is a member of the family Myliobatidae and resides in the genus *Rhinoptera* (8 species). A relatively small ray, cownose rays reach a maximum disk width (DW) of 110 cm (43 in.). Cownose rays have a short snout with a concave forehead, dorsal coloring is dark brown, with ventral coloring white to creamy white. They are relatively slow to mature, with males maturing at 5 to 6 years old (75-85 cm or 30 to 33 in. DW) and females maturing at 7 to 8 years old at length of 85-90 cm (33 to 35 in.) DW (Smith and Merriner 1986). Cownose rays are viviparous (bear live young) and, once mature, give birth to 1 or 2 young annually (Poulakis 2013). The maximum reported age for cownose rays is 18 years old (Neer et al. 2005).

The smooth dogfish (also called smooth-hound) is a member of the family Trikidae and resides in the genus *Mustelus* (28 species). A relatively small shark, smooth dogfish reach a maximum total length (TL) of 150 cm (59 in.). Smooth dogfish are identifiable by nearly equal sized dorsal fins (second dorsal is slightly smaller), a tapering blunt snout with a spiracle behind each eye, and flat blunt dentition. Considered rapidly maturing for sharks, male smooth dogfish mature in 2 to 3 years (~85 cm or 33 in. TL), and females mature within 4 to 5 years at a length of around 102 cm (40 in.) TL (Conrath et al. 2002). Smooth dogfish are viviparous and, once mature, give birth to 4 to 20 pups annually. The maximum reported age for smooth dogfish is16 years old (Conrath et al. 2002).


NOAA

Status

The status of both cownose rays and smooth dogfish is currently unknown, and neither species has undergone a stock assessment. Smooth dogfish are currently scheduled to be assessed by the National Marine Fisheries Service (NMFS) in 2014. While smooth dogfish are occasionally captured in the SCDNR Adult Red Drum and Coastal Sharks Survey, they mostly migrate into SC waters after sampling has finished in December, so the survey does not provide a suitable index of abundance for the species. Commercial landings of smooth dogfish in SC have declined in recent years (Figure 1), although this decline is likely temporary, as the majority of landings prior to 2010 were from a single commercial fisherman who passed away.

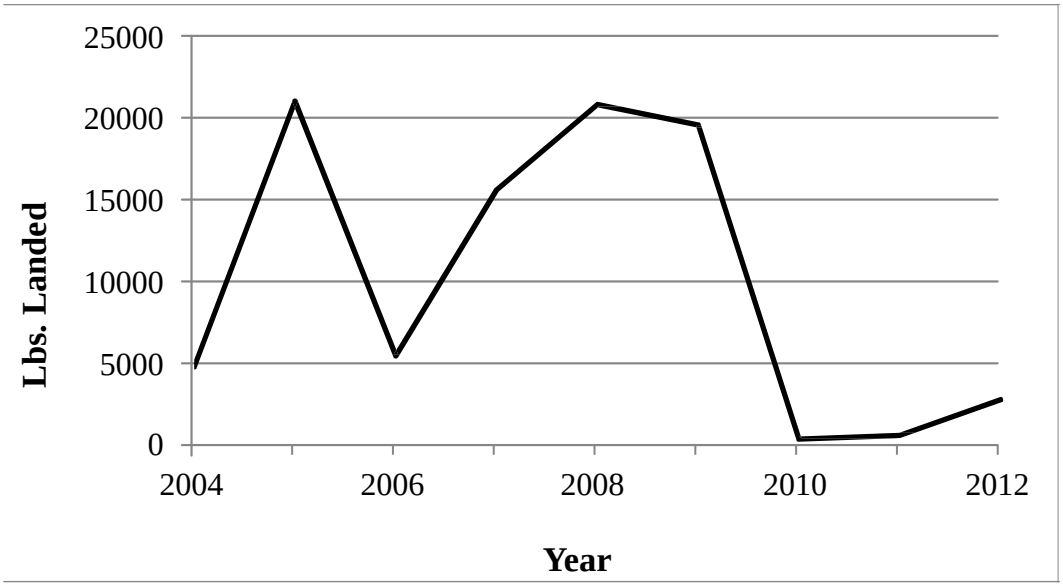


Figure 1. Commercial landings (lbs. per year) of smooth dogfish in South Carolina waters (SCDNR).

There are currently no plans to assess cownose ray populations. Data published by Meyers et al. (2007) suggests a large increase in populations of cownose rays in the western North Atlantic, prompting attempts to establish a commercial fishery. However, other data sources suggest that while the population appears to be increasing, it is not increasing at the rate suggested by Myers et al. (2007). Given that cownose rays are relatively slow to mature with a low fecundity, populations may be quite susceptible to overfishing. It will be important to monitor population levels as the commercial fishery matures. Fishery-independent data from the SC inshore fisheries trammel net survey suggest a general increase in cownose ray abundance over time in SC estuarine waters (Figure 2).

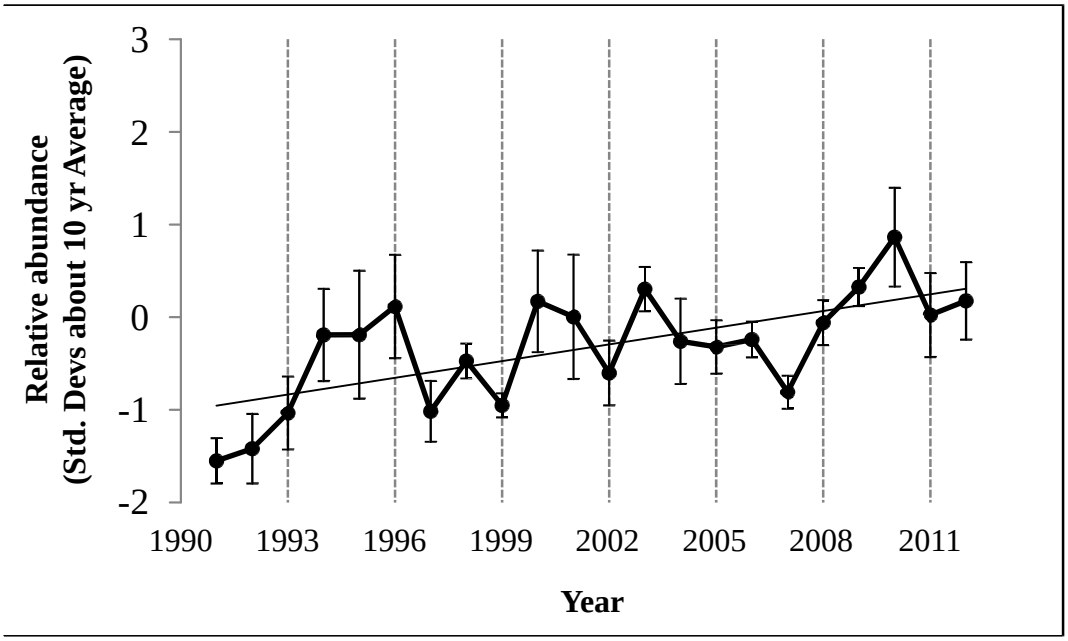


Figure 2. Relative abundance of cownose rays from the South Carolina Department of Natural Resources inshore fisheries trammel net survey.

POPULATION SIZE AND DISTRIBUTION

Cownose rays are primarily found in the western North Atlantic Ocean with populations documented in coastal waters from Maine south through the Gulf of Mexico (GOM) and as far as Brazil. Large numbers of cownose rays migrate north through SC coastal waters in late spring, with a portion maintaining residence in SC estuarine and coastal waters throughout the summer before migrating out in the fall. The summer population consists of young of the year and adult cownose rays with juveniles largely absent.

Smooth dogfish are restricted to the western Atlantic Ocean, and in the US Atlantic region are found in coastal waters from Maine south through the GOM. Three other similar dogfish species occur in the GOM, leading to some confusion in range of smooth dogfish (M. Giresi pers. comm.). In SC waters, the smooth dogfish are seasonally abundant in coastal waters when temperatures are below 18ºC (64ºF), and they migrate north when water temperatures rise (Ulrich et al. 2007). The majority of individuals present in SC are mature pregnant females, indicating that SC waters provide important overwintering grounds (Ulrich et al. 2007).

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Cownose rays are primarily found over muddy and sandy substrates in estuarine and coastal waters. They are known to feed on bivalves, in particular clams and scallops. They are also

thought to feed on oysters, although stomach content studies have found little evidence of oyster predation (D. Grubbs pers. comm.).

In South Carolina, smooth dogfish are dependent upon live bottom comprised of soft corals and sponges. While also captured in other areas, these live bottom areas are likely critical for foraging as smooth dogfish feed primarily on invertebrates associated with live bottom. They can be found in depths ranging from 5 to 40 m (16-131 ft.) off the coast of SC.

CHALLENGES

Fishery-independent surveys indicate that cownose ray populations are likely increasing. However, encouraging the development of a commercial fishery without first assessing the population could lead to a rapid decline in the abundance of cownose rays. Given the relatively long time to maturation and low litter size, the responsible approach is to first assess the population, then recommend harvest quotas based on maximum sustainable yield. Cownose rays have been blamed for declines in scallop and oyster fisheries along the East Coast, and as such, some see the harvest of cownose rays as a solution to these declines. In addition to the developing commercial fishery, cownose rays are commonly caught as by-catch in trawl fisheries.

Limited abundance data are available for smooth dogfish populations. A burgeoning commercial fishery has developed along the east coast of the US, primarily targeting the larger mature females. Currently, smooth dogfish are not federally managed, though federal management will begin in 2014. The Atlantic States Marine Fisheries Commission (ASMFC) only began managing them in 2008. Smooth dogfish are likely robust and a sustainable fishery should be feasible, but close monitoring is required for stock assessment purposes to insure overfishing does not occur.

CONSERVATION ACCOMPLISHMENTS

No conservation accomplishments specific to this species are reportable at this time.

CONSERVATION RECOMMENDATIONS

- Continue to monitor abundance of cownose rays and smooth dogfish within SC waters through fishery-independent methods, primarily COASTSPAN, the Adult Red Drum and Coastal Sharks Longline Survey, and Trammel Survey.
- Initiate a stock assessment of cownose rays.
- Initiate tagging of smooth dogfish to determine migration patterns.
- Investigate the genetics of smooth dogfish to determine if multiple populations are present along the Eastern US.
- Examine the diet of cownose rays in SC to determine food sources of summer residents.
- Investigate the genetics of cownose rays to examine population structure along the Eastern
- US and GOM.

- Examine the diet of smooth dogfish in SC coastal waters to determine impacts on invertebrate populations.
- Improve the public's understanding of the importance of sharks and rays in the ecosystem through outreach activities such as school programs, providing story opportunities for media, and educational brochures.

MEASURES OF SUCCESS

For cownose rays, a primary measure of success would be a robust assessment of the population as well as the establishment of quotas based on assessment results. In order for this to occur, a managing authority—likely ASMFC—will need to take on management of this species. While cownose rays are likely a species that could be sustainably fished, it will be important to be conservative in promoting the fishery until managers have a better idea of how much fishing pressure the population could withstand.

Smooth dogfish are just entering the umbrella of federal management, so measures of success will be the completion of the upcoming stock assessment as well as instituting quotas that allow for sustainable fishing of the population. It will also be important to increase our knowledge of the migratory patterns of female smooth dogfish using SC waters as overwintering grounds. An integral component of measuring success for both species will be the continued monitoring of sharks and rays through fishery-independent surveys.

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