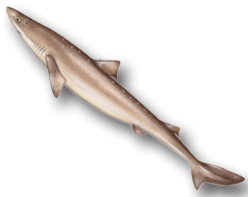


SPINY DOGFISH

Squalus acanthias



Life History and Habitat Needs

Geographic Range

Spiny dogfish are widely distributed in the inshore and offshore waters of both the Atlantic and Pacific Oceans. In the western Atlantic, spiny dogfish range from Labrador, Nova Scotia to Florida, but are most abundant from Nova Scotia to Cape Hatteras, North Carolina.

Movement/Migration

Spiny dogfish are a highly migratory species, prefer water temperatures from 45 – 55°F (7 – 12°C), and, in general, are found inshore in summer and in deeper offshore waters in winter. Seasonal migrations are associated with water temperature. Spiny dogfish migrate north in spring and summer and south in fall and winter when temperatures decrease. In summer, spiny dogfish are found throughout the Canadian Maritime Provinces (New Brunswick, Nova Scotia, and Prince Edward Island). From fall to winter, the range of spiny dogfish is concentrated in U.S. waters between Long Island, New York and Cape Hatteras, North Carolina. There may also be regional populations with separate migratory patterns.

Reproduction

Spiny dogfish are an ovoviviparous shark and mate during winter in the North Atlantic. Females are fertilized internally and have an 18 – 24 month gestation period. Females give birth to live young on offshore wintering grounds. The average litter size is 6.6 pups but range from 2 – 15 pups and the sex ratio at birth is typically 1:1. Pups are released live and fully formed at a length ranging from 20 – 33 cm with the majority ranging from 26 – 27 cm (10"). Juvenile spiny dogfish school by size until sexually mature and then aggregate by both size and sex. Female dogfish reach sexual maturity at 12 years (~29.5"), while males reach sexual maturity at six years (~23.6"). Spiny dogfish typically live up to 30 years of age and may reach a maximum size of 125 cm (50") and 10 kg (22 lbs.). Based on growth rings in dorsal spines, the maximum recorded age of males and females was 35 and 40 years, respectively.

Habitat Use

Juveniles are widespread across the continental shelf from North Carolina to the eastern edge of Georges Bank. Although juvenile spiny dogfish prefer bottom water temperatures from 46 – 55°F (8 – 13°C) and depths between 50 – 150 m, some are found in waters with slightly lower temperatures that range from 44 – 50°F (7 – 10°C) and at shallower depths of 10 – 44 m. In general, the distribution and abundance of adults are similar to juveniles. Adults are found in high numbers along the outer continental shelf from Georgia to the northeast tip of Georges Bank, but are primarily females south of Cape Hatteras.

In spring, adults are abundant on the south shores of Nantucket Island, northeast of Cape Cod, and in Cape Cod Bay. In fall, adults are abundant off Nantucket Shoals, the eastern edge of Cape Cod; Cape Cod and Massachusetts Bays; and southwest of Nova Scotia. In winter, adults are widespread across the shelf from the eastern edge of Georges Bank to Georgia. Adults prefer bottom temperatures ranging from 45 – 55°F (7 – 12°C) and depths of 10 – 49 m. In fall, spiny dogfish are found in deeper waters (50 – 149 m) with bottom temperatures between 48 – 59°F (9 – 15°C). Spiny dogfish are tolerant of a wide range of salinities and can be found seasonally in coastal estuaries. In trawl studies, spiny dogfish have been observed to undertake daily vertical migrations, possibly following prey items. Considering their prey, habitat inferences can be made based on prey distribution and availability and other biological components of the habitat such as predators and competitors. They are rapacious, opportunistic feeders and their diet composition ranges widely from mollusks and crustaceans to bony fishes. Fish, squid, and ctenophores dominated the stomach contents of spiny dogfish collected during northeast Atlantic trawl surveys.



Threats to Habitat

- Coastal development
- Water withdrawal
- Nonpoint source pollution
- Dredging and dredge spoil placement
- Beach nourishment and sand mining
- Wetlands loss and degradation
- Sewage disposal
- Mobile gear (such as trawls) that contacts the ocean bottom

ASMFC Fish Habitats of Concern

Spiny dogfish are a predominately epibenthic species and bottom habitat is important for all life stages. They may also rely heavily on estuarine areas for refuge, foraging, or both.

Recommendations to Improve Habitat Quality

- Prohibit dredging and filling of wetlands and shallow coastal waters.
- Regulate water withdrawals to provide adequate water volume and flow into important spiny dogfish habitat.
- Coordinate development and implementation of nonpoint source pollution control plans.
- Develop contaminated sediment remediation plans.

Habitat Research Needs

- Assess information from seabed videos of the activities and feeding behavior of spiny dogfish near various bottom types or features.
- Investigate how diet selection of young-of-year and recruits influences habitat choice.
- Identify how spiny dogfish abundance and movement affect other organisms.
- Compile information on seasonal use of estuaries by spiny dogfish.
- Determine whether or not there is an identifiable area used for pupping.
- Investigate the distribution of spiny dogfish beyond the depth range of current trawl surveys.
- Investigate distribution, movements, and abundance of spiny dogfish overwintering south of Cape Hatteras.
- Identify spiny dogfish habitats associated with different life stages and areas of higher density and use by spiny dogfish for protection and/or restoration.
- Model the potential impact of global temperature increase on the distribution of spiny dogfish.

Additional Information

Spiny dogfish are managed by the ASMFC under the Interstate Fishery Management Plan for Spiny Dogfish (2002) and its addenda I through V. The FMP can be obtained on the ASMFC website www.asmfc.org or by contacting the ASMFC Habitat Program Coordinator at 703.842.0740.