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# First Estimates of Greenland Shark (*Somniosus microcephalus*) Abundances in Arctic Waters

Analyses of an elusive shark species reveals ubiquity in the Arctic waters of eastern Canada.

SOURCE: Marine Policy

By Taryn Szalay      April 5, 2020

With a lifespan of over 272 years, the Greenland shark (*Somniosus microcephalus*) has the longest lifespan of any known vertebrate. The Greenland shark is one of the world's largest predatory sharks, yet it spends most of its life at depth and is rarely seen. This species' elusive lifestyle means little is known about both its biology and ecology.

In a recent study, Devine and colleagues looked to address these knowledge gaps by generating the first estimates of Greenland shark abundances in Canadian Arctic waters. Local extinction risks are high in some populations of sharks, so understanding local populations is critical to their conservation. Greenland sharks are particularly vulnerable due to their slow growth and late age of maturation. The authors sought to better understand the abundance of this rarely seen species.

The authors made population estimates without using fishing and bycatch estimates, a first for Greenland sharks. To obtain estimates, the authors used 31 baited camera deployments between depths of 112 to 850 meters in five regions of Nunavut, Canada (Arctic Bay, Lancaster Sound; Resolute, Jones Sound, and Scott Inlet). The cameras were mounted onto a weighed aluminum frame and then placed 1.6 meters off of the sea floor.

Arrival time, sex, length, and swimming speed were observed for each shark. Individuals were identified by unique body markings such as scar patterns or coloration differences. After the footage was analyzed, abundance estimates were calculated for each region. Researchers also examined length differences between sexes, the relationship between arrival time and the number of sharks observed, and average swimming speed. General linear models were used to analyze length differences as well as number of sharks versus arrival time.

Population estimates were found to be highest in Scott Inlet followed by Arctic Bay, Jones Sound, Lancaster Sound, and finally Resolute. This showed that Greenland shark density changed between different regions of the Canadian Arctic. There were no significant length differences between sexes, but there was a significant difference between number of sharks observed and set duration. Overall, the sharks swam at an average speed of  $0.27 \text{ m s}^{-1}$ , which is considerably slow when compared to a great white shark (average speed:  $0.9 \text{ m s}^{-1}$ ) and likely correlates with their extreme longevity.

The analyses of population estimates helped shed light on the densities of these sharks in five different regions of Canada. Greenland sharks occupied a wide depth range from 450 to 800 meters and are more widespread than previously thought. One added advantage of video camera deployments is the ability to analyze behavior characteristics such as swimming speed. This ability to monitor population sizes without using fishing and bycatch estimates is particularly useful for future management of this near-threatened shark species.

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