

Blue lines indicate the area meeting the ISRA Criteria; dashed lines indicate the suggested buffer for use in the development of appropriate place-based conservation measures

## KANGIQ&UARJUK ISRA

### Polar Waters Region

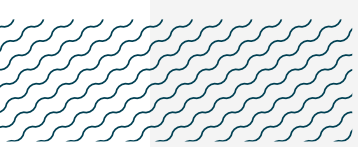
#### SUMMARY

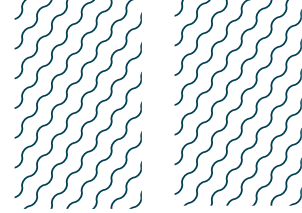
Kangiq&uarjuk, also known as Tremblay Sound, is located on Baffin Island, Nunavut, Canada. The area is within a narrow fjord situated in the western region of the larger Eclipse Sound, south of Lancaster Sound, and west of Baffin Bay. The benthic substrates are composed of mud and rock. In the boreal summer, the open water period increases when upwelling and nutrient inputs from glacial and terrestrial runoff stimulate primary productivity in the area. Within the area there are: **threatened species** and **undefined aggregations** (Greenland Shark *Somniosus microcephalus*).

#### CRITERIA

**Criterion A - Vulnerability; Sub-criterion C5 - Undefined Aggregations**

—	—
<b>CANADA</b>	—
—	—
<b>0-800 metres</b>	—
—	—
<b>156.8 km<sup>2</sup></b>	—
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## DESCRIPTION OF HABITAT

Kangiq&uarjuk, also known as Tremblay Sound, is located on Baffin Island, Nunavut, Canada. The area is within a narrow fjord situated in the western region of larger Eclipse Sound, south of Lancaster Sound, and west of Baffin Bay. The benthic substrate is composed of mud and rock (N Hussey pers. obs. 2024). The shoreline drops off steeply to reach 800 m in the centre of the fjord.

The region is characterised by strong seasonality in atmospheric conditions, resulting in alternating periods of open water (mid-August to early October) and complete coverage by land-fast sea ice (mid-October to early August) (Oksman et al. 2017). Productivity is high in the boreal summer open water period when increased upwelling and nutrient inputs from glacial and terrestrial runoff stimulate primary productivity in these coastal systems (Tremblay et al. 2012).

The area overlaps with the Tallurutiup Imanga National Marine Conservation Area (UNEP-WCMC & IUCN 2024).

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 800 m based on the bathymetry of the area.

## ISRA CRITERIA

### CRITERION A - VULNERABILITY

One Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occurs in the area. This is the Vulnerable Greenland Shark (Kulka et al. 2020).

### SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

Kangiq&uarjuk is an important area for undefined aggregations of one shark species.

Greenland Sharks aggregate in this area during the summer. Between 2016 and 2018, 71 Greenland Sharks were tagged with acoustic transmitters within Kangiq&uarjuk, and acoustic receivers within the area were deployed in 2017. Across these receivers, 62 sharks were detected in the area except during the ice-covered period from December to June, when 14 of the sharks tagged were detected by offshore acoustic receivers near Davis Strait (Edwards et al. 2022). Biologgers on Greenland Sharks in Kangiq&uarjuk equipped with acoustic receivers (VMTs) have shown that these sharks regularly interact with, or are in close proximity to, conspecifics (Barkley et al. 2019; N Hussey unpubl. data 2024). In 2019, a 320 cm total length male Greenland Shark interacted with other tagged sharks (n = 9), including multiple interactions with the same individual over a 3.6-day period (Barkley et al. 2019).

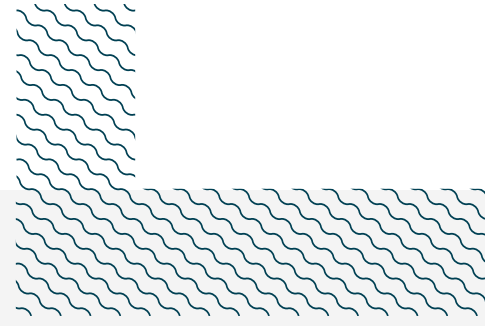
During a pilot expedition in 2016, there were extremely high catch rates of Greenland Sharks, and cannibalism of sharks on longline gear was observed. Therefore, reduced fishing effort and reduced soak times were required to survey this area. In comparison, Greenland Sharks within Baffin Bay are usually captured between 700–1,200 m depth, with 50 or more hooks per set and 12–24 h soak time. Within Kangiq&uarjuk, fishing depth is much shallower at ~100–150m and only 5–10 hooks are used per longline set with a short 3–5 h soak time (N Hussey pers. obs. 2024), suggesting habitat use for specific purposes. Local ecological knowledge (Qaujimajatuqangit) has also repeatedly documented the occurrence of Greenland Sharks in shallow coastal surface waters within this area.

Research on Greenland Sharks has been conducted in conjunction with the Department of Fisheries and Oceans (DFO) Narwhal Monitoring Program and an ecosystem study focused on this region between 2017 and 2019 (Marcoux 2018; 2019). In 2018, a total of 34 sharks were captured on 45 longline sets, with an average of 6.1 hooks per set and a 5.9-hour soak time. On one set, four Greenland Sharks were caught on a six-hook longline set for five hours. Additionally, two Greenland Sharks were caught by casting from a boat off the shoreline in shallow water (~2 m depth). In 2019, 24 sharks were caught on 19 longline sets, with an average of 6.6 hooks per set and a 4.5-hour soak time. On one set, six sharks were caught on an eight-hook longline set for four hours (N Hussey unpubl. data 2024). All these longline sets were in water depths of 80-120 m.

Ongoing research is using high-resolution biologgers equipped with sonar (generating 60 images per second of the prey field 6 m in front of the shark's head). These data show that Greenland Sharks are encountering and actively interacting with prey on a regular basis within this area. The interactions were associated with spikes in jerk (i.e., burst activity events) when the prey was directly in front of the animal. The echogram traces from the sonar tag indicate the Greenland Shark encounter rates with prey items, although it is not possible to definitively determine if they were consumed (E Ste Marie & N Hussey unpubl. data 2024).

Two initial deployments of camera-linked acceleration tags on Greenland Sharks in 2019 revealed that sharks were actively orientating (i.e., the shark switched course based on heading) and then occurring within schools of Narwhal *Monodon monoceros* for a short duration afterwards. The high abundance of Greenland Sharks in this area is often associated with subsistence hunting for Narwhal by Inuit people, as there are several key traditional hunting sites for Narwhal in Kangiq&uarjuk. After capture, Narwhals are flensed on the beach, and their carcasses are discarded. The co-occurrence of these two species in summering areas in Baffin Bay suggests that Greenland Shark aggregations could be related to feeding strategies, not solely scavenging (N Hussey pers. obs. 2024). Additional research is required to determine the nature of the interaction between Greenland Sharks and Narwhal and whether they are both predators feeding off the same prey resource (both Arctic Cod *Boreogadus saida* and Greenland Halibut *Reinhardtius hippoglossoides* occur in high density within the area; N Hussey pers. obs. 2024) or if sharks are preying on Narwhals.

The aggregation of Greenland Sharks within the area and multiple deployments of animal-borne hydrophone-linked bilogger tags on Greenland Sharks suggest that they are feeding during the summer ice-free period in Kangiq&uarjuk. However, more information is needed to confirm the nature and function of these aggregations.



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## **Acknowledgments**

Nigel Hussey (University of Windsor), Eric Ste Marie (University of Windsor), Amanda Barkley (University of Windsor), Marianne Marcoux (Fisheries and Oceans Canada), Asia O Armstrong (IUCN SSC Shark Specialist Group - ISRA Project), and Vanessa Bettcher Brito (IUCN SSC Shark Specialist Group - ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2024 ISRA Region 1 - Polar Waters workshop for their contributions to this process.

This factsheet has undergone review by the ISRA Independent Review Panel prior to its publication.

This project was funded by the Shark Conservation Fund, a philanthropic collaborative pooling expertise and resources to meet the threats facing the world's sharks and rays. The Shark Conservation Fund is a project of Rockefeller Philanthropy Advisors.

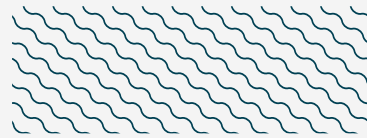
## **Suggested citation**

**IUCN SSC Shark Specialist Group. 2024.** Kangiq&uarjuk ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

## QUALIFYING SPECIES

Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
<b>SHARKS</b>												
<i>Somniosus microcephalus</i>	Greenland Shark	VU	0-2,992	X						X		

IUCN Red List of Threatened Species Categories are available by searching species names at [www.iucnredlist.org](http://www.iucnredlist.org) Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.



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