

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

TE WHAKA Ā TE WERA/PATERSON INLET ISRA

New Zealand & Pacific Islands Region

SUMMARY

Te Whaka ā Te Wera/Paterson Inlet is a harbour located in the east side of Stewart Island in New Zealand. The area has three main arms: North Arm, Southwest Arm, and Big Glory Bay. It includes multiple bays and islands and receives freshwater input from two rivers: Rakeāhua and Freshwater. The area is characterised by muddy and sandy gravel substrates, algal meadows, salt marshes, subtidal patch reefs, rocky reefs, and kelp forests. The area overlaps with the Rakiura (offshore) Key Biodiversity Area and with the Ulva Island - Te Wharawhara Marine Reserve. Within this area there are: **threatened species** and **undefined aggregations** (Broadnose Sevengill Shark *Notorynchus cepedianus*).

CRITERIA

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

—	—
NEW ZEALAND	—
—	—
0-45 metres	—
—	—
99.74 km²	—
—	—





DESCRIPTION OF HABITAT

Te Whaka ā Te Wera/Paterson Inlet is a harbour located in the east side of Stewart Island which is found 30 km south of New Zealand's South Island. The area has three main arms: North Arm and South West Arm on the north side and Big Glory Bay in the southeast (Willan 1981). It also includes multiple bays and islands with Ulva Island and Native Island being the largest (Willan 1981). The area receives freshwater input from two rivers: Rakeāhua and Freshwater.

Te Whaka ā Te Wera/Paterson Inlet is characterised by muddy and sandy gravel substrates, algal meadows, salt marshes, subtidal patch reefs, rocky reefs, and kelp forests (Willan 1981; Smith et al. 2005). Depths in the area are commonly 15–25 m with maximum depths reaching 45 m east of Ulva Island. Sea surface temperature during austral summer averages 14°C (Smith et al. 2005). The area is connected to the Foveaux Strait, a shallow water body (~50 m depth) that separates the Tasman Sea from the South Pacific Ocean and influenced by strong tidal flows (Carbines & Cole 2009).

The area overlaps with the Rakiura (offshore) Key Biodiversity Area (KBA 2024) and the Ulva Island - Te Wharawhara Marine Reserve (UNEP-WCMC & IUCN 2024).

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (0 m) to 45 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 Broadnose Sevengill Shark (Finucci et al. 2020).

SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

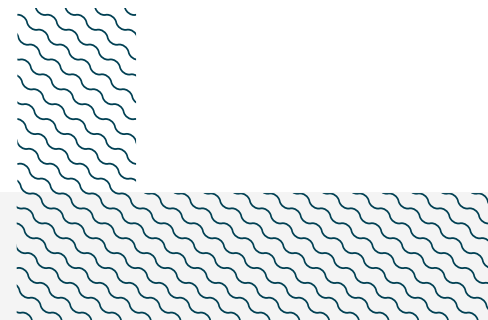
Te Whaka ā Te Wera/Paterson Inlet is an important area for undefined aggregations of one shark species.

Broadnose Sevengill Sharks aggregate in Te Whaka ā Te Wera/Paterson Inlet during summer (Housiaux et al. 2019; Lewis et al 2020, 2023). Between July 2013–May 2015, 45 boat surveys using chum were conducted in shallow areas (3–6 m depths) around Southwest Arm and Sawdust Bay to confirm anecdotal reports of Broadnose Sevengill Shark aggregations in this area (Housiaux et al. 2019). Animals measuring between 150–280 cm total length (TL) were recorded year-round in the area (Housiaux et al. 2019). This species was most frequently observed during spring and autumn (71–79% of surveys; mean = 3–3.3 sharks per survey), in comparison to winter (33% of surveys; mean = 2.9 sharks per survey; Housiaux et al. 2019). The surveys were also conducted in adjacent bays where Broadnose Sevengill Sharks were not observed. It is suspected that the sharks move south to Stewart Island in winter (B Finucci & CAJ Duffy pers. obs. 2024.).

Additionally, baited remote underwater video station (BRUVS) surveys (n = 133 deployments on 46 sampling days; mean = 22.2 deployments per season) were conducted in Sawdust Bay between June 2016–November 2017. BRUVS were deployed for 60 minutes and were set ~2m from the seabed. Broadnose Sevengill Sharks (n = 357 encounters) were recorded in all but one deployment with 149 individually identified sharks and 17 individuals encountered multiple times (Lewis et al. 2020). Up to

nine individuals were encountered per deployment (mean = 2.7). A larger number of sharks was observed in summer (mean = 4.30 encounters per deployment) compared to winter (mean = 1.34 encounters per deployment). Abundance estimates at Sawdust Bay were reported to be higher in spring and summer (84-93 individuals) than autumn and winter (35-43 individuals) (Lewis et al. 2020). Te Whaka ā Te Wera/Paterson Inlet is one of the few locations around New Zealand where this species regularly aggregates.

Observed sharks were estimated to measure 149-276 cm TL and there was a biased sex ratio, with females representing 95% and 73% of all sharks observed in winter and summer, respectively (Lewis et al. 2023). More females (63%) were estimated to be mature based on size, while males were equally estimated to be juvenile and mature (Lewis et al. 2023). This sexual bias for Broadnose Sevengill Sharks has been reported in other locations (e.g., in Argentina and Tasmania) during the same seasons as in Te Whaka ā Te Wera/Paterson Inlet (Lucifora et al. 2005; Barnett et al. 2010b). Broadnose Sevengill Sharks seasonally aggregate during summer in bays in other parts of the world for feeding or reproductive purposes (Ebert 1989; Lucifora et al. 2005; Barnett et al. 2010b; Abrantes & Barnett 2011; Williams et al. 2012; Stehfest et al. 2014; Hammerschlag et al. 2019). The nature and function of Broadnose Sevengill Shark aggregations in this area could be for feeding purposes. This is because their presence may be driven by a high abundance of potential demersal shark prey (e.g., Spiny Dogfish *Squalus acanthias* and Rig *Mustelus lenticulatus*) in the area (Lewis et al. 2020) as sharks and rays have been reported as important prey for the species in other locations (Ebert 1991, 2002; Barnett et al. 2010a). Further information is required to determine the nature and function of these aggregations.



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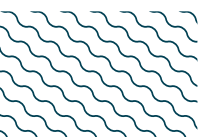
QUALIFYING SPECIES

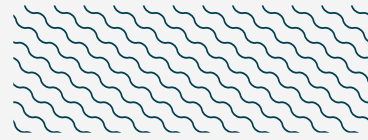
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met									
				A	B	C1	C2	C3	C4	C5	D1	D2	
SHARKS													
<i>Notorynchus cepedianus</i>	Broadnose Sevengill Shark	VU	0-570	X							X		

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Alopias vulpinus</i>	Common Thresher	VU
<i>Carcharodon carcharias</i>	White Shark	VU
<i>Cephaloscyllium isabellum</i>	New Zealand Carpet Shark	LC
<i>Galeorhinus galeus</i>	Tope	VU
<i>Isurus oxyrinchus</i>	Shortfin Mako	EN
<i>Lamna nasus</i>	Porbeagle	VU
<i>Mustelus lenticulatus</i>	Rig	LC
<i>Prionace glauca</i>	Blue Shark	NT
<i>Squalus acanthias</i>	Spiny Dogfish	VU

IUCN Red List of Threatened Species Categories are available by searching species names at 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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