

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

## PORIRUA HARBOUR ISRA

### New Zealand & Pacific Islands Region

#### SUMMARY

Porirua Harbour is located in the southwest coast of New Zealand's North Island. The area is a shallow estuary with extensive intertidal sandbars and mudflats that expose at low tide. It contains two arms, Pauatahanui inlet and Onepoto, and receives freshwater inputs from three streams. The area overlaps with the Cook Strait Key Biodiversity Area. Within this area there are: **range-restricted species** and **reproductive areas** (*Rig Mustelus lenticulatus*).

#### CRITERIA

**Criterion B - Range Restricted; Sub-criterion C1 - Reproductive Areas**

NEW ZEALAND

0-20 metres

18.91 km<sup>2</sup>





## DESCRIPTION OF HABITAT

Porirua Harbour is located on the southwest coast of New Zealand's North Island. It is a tidal estuary that does not empty at low tide, retaining >60% its water at low tide (Stevens & Robertson 2008). It is a very shallow area with extensive intertidal sandbars and mudflats that are exposed at low tide. The harbour comprises two arms, Pauatahanui inlet and Onepoto, that are linked by a channel connecting them to the open coast at the northern entrance to Cook Strait (Francis 2013). Both arms are ~3.5 km long, with Pauatahanui being wider (2 km) than Onepoto (1 km) with depths <3 m. The arms are joined by narrow channels with depths between 5–20 m, characterised by substrates of shells, pebbles, and coarse sand. Freshwater input to the area comes from three main streams: Porirua stream that flows into Onepoto arm from the south, and Pauatahanui and Horokiri streams, which flow into Pauatahanui inlet (Francis 2013). Salinity stratification occurs mainly during austral winter and spring with lower salinities at the surface and higher near the bottom. The maximum tidal range at the mouth of Porirua Harbour is ~1.3 m, occurring in spring. Water temperatures range from 10–20° C (Lyon 2021).

The area overlaps with the Cook Strait Key Biodiversity Area (KBA 2024).

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (0 m) to 20 m based on the bathymetry of the area.

## ISRA CRITERIA

### CRITERION B – RANGE RESTRICTED

This area holds the regular presence of the Rig as a range-restricted species. Rig have been recorded in the area for more than 30 years (Jones & Hadfield 1985; Francis & Francis 1992; Hendry 2004; Francis et al. 2012; Lyon 2021). Neonates and young-of-the-year (YOY) are commonly found in summer and autumn with this area reported as one of the main nursery habitats in New Zealand (Francis et al. 2012). In addition, adult males are common in spring when they enter the area to mate with females arriving to pup in the harbour (Jones & Hadfield 1985; Francis & Francis 1992; Hendry 2004; Francis et al. 2012; Lyon 2021). This area had the third largest number of Rig recorded in harbours and inlets along all New Zealand during 2011 and held the largest number of adult males recorded in those surveys (Francis et al. 2012). This species occurs only in the New Zealand Shelf Large Marine Ecosystem.

### SUB-CRITERION C1 – REPRODUCTIVE AREAS

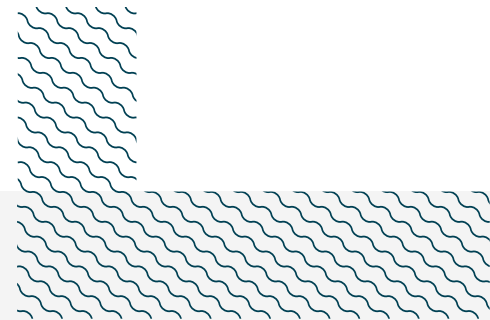
Porirua Harbour is an important reproductive area for one shark species.

The area is an important site for Rig YOY during the summer. Based on set net surveys (n = 132 nationwide; n = 12 in Porirua Harbour) conducted in summer (February and March) of 2011 in 14 major harbours and estuaries throughout New Zealand, Porirua Harbour was reported as a high-value nursery area for Rig based on the large number of YOY individuals recorded (Francis et al. 2012). Set nets were 60 m long, 2.2 m deep, and were deployed at 1.5–3 m depths at low tide. Of 163 Rig collected in Porirua Harbour, 51 (31%) were classified as YOY based on their body size as they measured <50 cm total length (TL). Size-at-birth for this species is 20–32 cm TL (Ebert et al. 2021) and YOY have been estimated as sharks <45 cm TL in the area (Francis & Francis 1992). Neonate and YOY Rig are most commonly found in muddy substrates in Onepoto and Pauatahanui inlets. On average, four YOY were caught per set with a maximum of 12 individuals per set (Francis et al. 2012).

In addition, between 2012–2017 set nets (n = 235) were deployed in the area (Lyon 2021). Of 406 Rig recorded, 91 were classified as immature and ~50 (12%) were <50 cm TL, confirming the continuous presence of YOY in Porirua Harbour (Lyon 2021). Additionally, in 2009 YOY Rig (n = 10, 36–58 cm TL) captured in both arms of Porirua Harbour (Onepoto and Pauatahanui Inlets) were acoustically tagged and tracked for up to four months during summer–autumn. Tagged Rig showed clear site preferences and spent most of their time in large basins and on shallow sand and mud flats around the margins and avoided deep channels. Persistent use of the same day and night sites indicates that diel movements are directed rather than random (Francis 2013). YOY depart Porirua Harbour to open water in ~April, when they are ~50 cm TL (Francis 2013).

Adult males (and a few pregnant females) have also been reported in the area (Jones & Hadfield 1985; Francis & Francis 1992; Francis et al. 2012). Mature males are present in the area mainly in spring (and to a lesser extent in summer) when adult female Rig migrate from the continental shelf into shallow coastal waters to give birth (October to December) and mate before returning to deeper waters offshore (Francis 2013). Seven adult male Rig tagged in the area were recaptured in consecutive years, highlighting that sharks return to the harbour on an annual basis (Lyon 2021).

Moreover, historical records show that Porirua Harbour has been an important habitat for Rig since, at least, the 1980s as it has been reported that large numbers of YOY (up to 40–60 sharks per 100 m nets) were captured there during summer and autumn and absent in winter and spring by multiple studies (Healy 1980; Jones & Hadfield 1985; Francis & Francis 1992; Hendry 2004) confirming the regular and predictable use of the area.



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## Suggested citation

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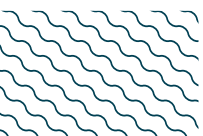
## QUALIFYING SPECIES

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
<b>SHARKS</b>												
<i>Mustelus lenticulatus</i>	Rig	LC	0-1,000		X	X						

## SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
<b>RAYS</b>		
<i>Bathytoshia brevicaudata</i>	Smooth Stingray	LC
<i>Myliobatis tenuicaudatus</i>	Southern Eagle Ray	LC
<b>CHIMAERAS</b>		
<i>Callorhinchus milii</i>	Elephant Fish	LC

*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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