

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

GREAT AUSTRALIAN BIGHT SHELF ISRA

Australia and Southeast Indian Ocean Region

SUMMARY

Great Australian Bight Shelf is located in South Australia, Australia. The area is a large oceanic bight with multiple bays and islands and is characterised by a wide continental shelf with sandy, muddy, and gravel substrates. This area overlaps with two protected areas. Within this area there are: **threatened species** and **reproductive areas** (*Tope Galeorhinus galeus*).

CRITERIA

Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas

— AUSTRALIA —

— 0-100 metres —

— 44,629 km² —





DESCRIPTION OF HABITAT

Great Australian Bight Shelf is located in South Australia, Australia. It extends from the South Australia/Western Australia border in the west to Streaky Bay in the east. The area is a large oceanic bight with multiple bays and islands with minimum freshwater input as no rivers flow into the area. It is characterised by a wide continental shelf with sandy, muddy, and gravel substrates (Edyvane 2000).

Oceanographically, inshore areas are dominated by a southwest swell produced by westerly low-pressure cyclones coming from the south of the Australian mainland. The broader area is dominated by an anti-cyclonic gyre that produces strong upwelling in the east side that, along with the influence of the Leeuwin Current, brings warm, nutrient poor, and low salinity waters between April-May, contributing to a high marine biodiversity and productivity of the region (Edyvane 2000).

The area overlaps with the Murat Marine Park and the Great Australian Bight Marine Park (Parks Australia 2025).

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (0 m) to 100 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 Critically Endangered Tope (Walker et al. 2020).

SUB-CRITERION C1 - REPRODUCTIVE AREAS

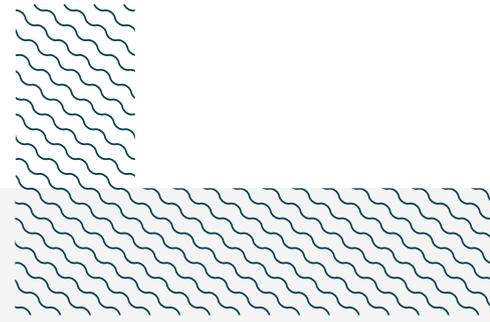
Great Australian Bight Shelf is an important reproductive area for one shark species.

Fishing surveys, catch data, and tagging experiments have revealed the regular presence of pregnant Tope in the area since the 1940s (Olsen 1954, 1959; West & Stevens 2001; Walker 2005; Walker et al. 2008; Braccini et al. 2009; Rogers et al. 2017; McMillan et al. 2019). It has been hypothesised that pregnant females aggregate on the continental shelf, and that they remain there during the gestation period before moving to Bass Strait and Tasmania to give birth (Olsen 1954, 1959; Walker 2005). Between 1941–1956, large catches of pregnant females in the Great Australian Bight reportedly produced declines in the population. After those studies, the presence of pregnant females in the Great Australian Bight was reported from catch data and tagging experiments between the 1970s and 1990s (Walker et al. 1997; Walker 1999; Braccini et al. 2009).

Between 2007–2008, fishing surveys and monitoring of commercial fisheries conducted across southern Australia confirmed the presence of pregnant females in this area (Braccini et al. 2009). In October–November 2007, an aggregation of 291 females was caught in the area in a single set. Of these, 13% (n = 38) were pregnant with uterine eggs and 1% (n = 3) had near-term embryos. During this study, 583 individuals were recorded in the area, the largest number of individuals caught in southern Australia along with Bass Strait (n = 481). Catch rates for Tope >140 cm total length (TL) increased since the 1980s in the area compared to other sites. In Australia, size-at-maternity is reported at 142 cm TL (Walker 2005) indicating that mostly breeding females were caught in the area. Catch rate was higher for larger individuals in this area (mostly females; 2,957 individuals/1,000

km lift hours) compared to offshore areas of the Great Australian Bight and the rest of South Australian waters (27 individuals/1,000 km lift hours; Braccini et al. 2009). Given that parturition occurs every three years (Walker 2005), the low number of pregnant females with near-term embryos at this time is consistent with about a third of the pregnant females having departed for the nursery areas in Victoria, Bass Strait, and Tasmania by the end of November.

More recent tagging experiments showed the contemporary presence of pregnant females in the area (Rogers et al. 2017; McMillan et al. 2019). In January 2012, 32 Tope were tagged with satellite tags in the area (Rogers et al. 2017). Of these, ten were females measuring 147-170 cm TL caught at depths of 40-49 m. Another two females were dead when landed and dissection showed that they were pregnant (Knuckey et al. 2014). Sizes of pregnant females were similar to those of tagged individuals, suggesting that those were potentially pregnant. In addition, one neonate Tope with an open umbilical scar was caught. Five of the ten tagged females stayed in mid-shelf waters (50-100 m) inside the area while another four moved outside the area to the outer shelf in the Great Australian Bight (100-150 m depths). The largest tracking duration was 44 days and some of the sharks moved to eastern locations which coincides with the hypothesis that pregnant Tope move to parturition sites in Bass Strait and Tasmania (Rogers et al. 2017). In December 2015 and 2017, eight pregnant females were tagged with satellite transmitters in the area. Pregnancy was determined visually based on the triangular shape of late-term pregnant females and in-utero movements of embryos that could be felt externally. In addition, in 2017 pregnancy was validated with ultrasound. All pregnant females stayed in the area up to one year after tagging (McMillan et al. 2018) which coincides with the 12-month gestation reported for the species (Walker 2005). Both studies suggest that some pregnant female may pup in the area while most of them move to the known pupping areas in the states of Victoria and Tasmania (McMillan et al. 2018, 2019).



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We acknowledge the Traditional Owners of Country throughout Australia and recognise the continuing connection to land, waters, and culture. We pay our respects to Elders past, present, and emerging.

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QUALIFYING SPECIES

Scientific Name	Common Name	IUCN Red List Category/ EPBC Act	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met								
				A	B	C1	C2	C3	C4	C5	D1	D2
SHARKS												
<i>Galeorhinus galeus</i>	Tope (School Shark)	CR/CD	0-826	X		X						

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Carcharhinus brachyurus</i>	Copper Shark (Bronze Whaler)	VU
<i>Carcharhinus obscurus</i>	Dusky Shark	EN
<i>Carcharodon carcharias</i>	White Shark	VU
<i>Cephaloscyllium albigladium</i>	Whitfin Swellshark	CR
<i>Furgaleus macki</i>	Whiskery Shark	LC
<i>Isurus paucus</i>	Shortfin Mako	EN
<i>Mustelus antarcticus</i>	Gummy Shark	LC
<i>Pristiophorus cirratus</i>	Common Sawshark	LC
<i>Pristiophorus nudipinnis</i>	Southern Sawshark	LC
RAYS		
<i>Myliobatis tenuicaudatus</i>	Southern Eagle Ray	LC

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.

Australian Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) categories are available at: <https://www.dcceew.gov.au/environment/epbc/our-role/approved-lists>. Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; CD, Conservation Dependent.





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