ISRA
IMPORTANT SHARK AND RAY AREAS

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

CHRISTIES BEACH ISRA

Australia and Southeast Indian Ocean Region

AUSTRALIA

0–15 metres

7.92 km²

SUMMARY

Christies Beach is located on the eastern coast of the Gulf St Vincent, South Australia, Australia. The habitat is characterised by sand substrates, seagrass, and rocky reefs with high macroalgae coverage. The area is bordered by Port Noarlunga reef to the south and contains a circular rocky reef (Horseshoe Reef) ~500 m from shore. It is influenced by freshwater input from Christies Creek and the Onkaparinga River. The area overlaps with Encounter Marine Park. Within this area there are: **reproductive areas** (Port Jackson Shark *Heterodontus portusjacksoni*) and **undefined aggregations** (Southern Eagle Ray *Myliobatis tenuicaudatus*).

CRITERIA

Sub-criterion C1 – Reproductive Areas; Sub-criterion C5 – Undefined Aggregations

DESCRIPTION OF HABITAT

Christies Beach is located in South Australia, Australia. It is situated on the eastern coast of the Gulf St Vincent, ~30 km south of Adelaide. The area is a heterogeneous environment characterised by sand substrates, seagrass (e.g., *Posidonia*, Zosteraceae, *Amphibolis* spp.), and rocky reefs with high macroalgae coverage. Nearby is a small river, Christies Creek, and to the south is the Onkaparinga River, which delivers terrestrial nutrients to the surrounding environment. Horseshoe Reef is a ~0.12 km^2 shallow reef, ~500 m from shore, which becomes exposed at low tide. At the southern end of Christies Beach is a shallow rocky reef extending from Witton Bluff, which loosely connects with Port Noarlunga reef.

The area is influenced by the dynamics of the Gulf St Vincent, which is a shallow gulf environment (maximum depth ~40 m) that supports an abundance of tidal wetlands, seagrass meadows, mangroves, rocky reefs, and saltmarshes (Edyvane 1999). This is an inverse estuary system, with salinity increasing with distance from the open ocean because of the evaporative processes occurring at the top of the gulf (Bye 1976). Water is transported into the gulf via Investigator Strait and Backstairs Passage, but Kangaroo Island blocks most of the gulf mouth from the open ocean, limiting water exchange and sheltering the gulf from high wave energy (Tanner 2002). At Christies Beach, the sea surface temperature ranges ~11.7–21.3°C from August to March (Rodda 2000).

This area overlaps with Encounter Marine Park (NPWS SA 2025).

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (0 m) to 15 m based on the bathymetry of the area.

ISRA CRITERIA

SUB-CRITERION C1 – REPRODUCTIVE AREAS

Christies Beach is an important reproductive area for one shark species.

Underwater visual census (UVC) surveys and observations from divers and snorkelers have revealed the regular and predictable observations of egg cases and neonate/young-of-the-year (YOY) Port Jackson Sharks and mating events in the area (Rodda 2000; Rodda & Seymour 2008; Adelaide Freedive Tribe 2021, 2022; Gervais et al. 2021; iNaturalist 2025; RLS 2025; C Huveneers unpubl. data 2025; CN Roberts unpubl. data 2025).

Historically, this area has been reported as an area with high abundance of egg cases of Port Jackson Sharks (Rodda 2000; Rodda & Seymour 2008; RLS 2025). Between 1988–1991, egg cases were collected by diving at Christies Beach for physiologic studies. This area was chosen due to the highest abundance of egg case across the whole Gulf St Vincent (Rodda 2000; Rodda & Seymour 2008). Egg cases were collected at a specific site in this area (7 m^2 of reef), which was surveyed every 7–14 days for nine months each year. A total of 305 fresh egg cases were collected, with an average of four per dive. In addition, older egg cases were observed but not quantified nor collected. Egg cases were collected mostly between August–November (Rodda 2000). In addition, 29 egg cases were collected in the area in November 2016 (Gervais et al. 2021). Egg cases of Port Jackson Shark are regularly observed by divers and snorkellers in this area, mostly around nearshore rocky reefs (e.g., Horseshoe Reef), with >100 egg cases sighted during a 1-hr snorkel (iNaturalist; C Huveneers pers. obs. 2025). In addition, egg cases are regularly observed washed on the beach in this area by citizen scientists (iNaturalist 2025). From observations of egg cases reported between 2012–2024 across the whole Gulf St Vincent (n = 113), Christies Beach was the location with the largest number of egg cases recorded (n = 35, 30.9%; iNaturalist 2025). In addition, a large number of egg cases were

recorded in 2025 (n = 110) after the impacts of an algal bloom in the Adelaide region, with a large proportion (n = 45, 40.9%) being recorded in this area. Records comprise mostly single or pairs of egg cases with observation of more than five egg cases being rare. While stranded egg cases are observed across all the Gulf St Vincent, Christies Beach is the only location where these are observed in large numbers and across multiple years (iNaturalist 2025).

Anecdotal observations by snorkellers and citizen scientists have confirmed the presence of neonate/YOY Port Jackson Sharks in 2015, 2021, and 2022 (Adelaide Freedive Tribe 2021, 2022; iNaturalist 2025). Christies Beach is the only confirmed location where neonate/YOY have been recorded alive across the Gulf St Vincent (Adelaide Freedive Tribe 2021, 2022; iNaturalist 2025). While individuals were not directly measured, estimated sizes from photographs clearly indicate that they measured <30 cm total length (TL) which is close to the reported size-at-birth (23–24 cm TL; Ebert et al. 2021) and to the YOY size in Australia (30 cm TL) according to growth rates (Izzo & Rodda 2012). In addition, after the impacts of an algal bloom in Adelaide in 2025, a large number of neonate/YOY Port Jackson Sharks (n = 61) were observed stranded on the beaches across the whole gulf, with most of them (n = 39; 63.9%) recorded at Christies Beach (iNaturalist 2025).

Aggregations of ~6–20 Port Jackson Sharks (juvenile and adults) are regularly observed in the area by divers and snorkellers with Christies Beach being the main location to observe the species in the whole Gulf St Vincent (iNaturalist 2025; Snorkelspots 2025; C Huveneers unpubl. data 2025). Between 2019–2025, 89 Port Jackson Sharks (70 females, 19 males) were caught in the area for tagging purposes. During these activities, up to 30 individuals were sighted at one time under rock ledges. Forty-two of the Port Jackson Sharks caught were tagged with acoustic transmitters (CN Roberts unpubl. data 2025). Tagged Port Jackson Sharks displayed both resident and transient movement patterns, with the majority (n = 25; 60%) being detected between November–March (when waters are warmer). Six individuals were recorded year-round, and the rest were sporadically detected throughout the monitoring period (CN Roberts unpubl. data 2025). Of the 70 females sampled at Christies Beach, 66 measured >65 cm total length (TL) and 54 measured >75 cm TL. In South Australia, female Port Jackson Sharks reach maturity between 65–75 cm TL (Izzo & Rodda 2012; Rodda & Svane 2007), indicating that aggregations at Christies Beach are largely composed of mature females for reproductive purposes. Residency of females predictably peaks between November–March each year, which coincides with the increased presence of males, and with the anecdotal observation of mating and courtship events recorded in 2019 and 2021 by scientists, divers, and snorkellers in the south corner of Christies Beach (C Huveneers unpubl. data 2025; CN Roberts unpubl. data 2025). Acoustic receivers deployed at Christies Beach detected the most Port Jackson Sharks, and most often, compared to an array of 47 receivers deployed along a 60 km stretch of the Adelaide metropolitan coastline, highlighting the importance of this area (CN Roberts unpubl. data 2025). Christies Beach is the only location in South Australia where mating events are regularly recorded (C Huveneers unpubl. data 2025).

The high abundance of egg cases, the regular presence of neonate/YOY, and observations of mating and courtship events highlights the reproductive importance of the area. It has been hypothesised that the rocky reefs that characterise Christies Beach provide suitable areas for egg deposition (e.g., in rocks and crevices) and retention during the 10–11 months of incubation (Rodda & Seymour 2008).

SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

Christies Beach is an important area for undefined aggregations of one ray species.

Southern Eagle Rays regularly aggregate at Christies Beach. Between 2019–2021, 10 Southern Eagle Rays were tagged with acoustic transmitters and detected in the area (Davey et al. 2023). In 2020–

2021, Southern Eagle Rays had high site fidelity to the area, with residency indices of ~85%, and 30% of individuals occupying the area year-round (Davey et al. 2023). In addition, Seven Southern Eagle rays were tagged and monitored in the area between 2022–2024 (CN Roberts unpubl. data 2025). Individuals had a mix of high and low residency, with 25% occupying the area year-round, but others having sparse detections (CN Roberts unpubl. data 2025). However, Southern Eagle Rays were tagged externally, and the reduced number of detections for some individuals could be related to tag shedding. Both sets of data indicate that this species use the area more frequently than adjacent locations.

Southern Eagle Rays aggregate in the area year-round in groups of 3–5 individuals. This many individuals were detected on the same receiver within the same hour on 128 days (in a 457-day period between 2020–2021) (CN Roberts unpubl. data 2025). Individuals tagged at Christies Beach measured >140 cm disc width (DW) indicating that these were mature females, as the size-at-maturity is 80–100 cm DW (Last et al. 2016). These aggregations potentially use the warm, productive areas of the nearshore rocky reefs to rest or aid in embryonic development. There are additional opportunistic observations by snorkelers and divers of multiple rays aggregating at the shoreline of Christies Beach (C Huveneers unpubl. data 2025). Sporadic snorkel surveys conducted in the area since 2019 have recorded a group of 3–4 Southern Eagle Rays regularly with no observations of the species during surveys conducted in adjacent areas (C Huveneers et al. unpubl. data 2025). Additional information is required to understand the nature and function of these aggregations.

Acknowledgments

Charlie Huveneers (Flinders University), Lauren Meyer (Flinders University), Chloe N Roberts (Flinders University), and Emiliano García-Rodríguez (IUCN SSC Shark Specialist Group – ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2025 ISRA Region 08 – Australia and Southeast Indian Ocean workshop for their contributions to this process.

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.

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. 2025. Christies Beach 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
SHARKS												
Heterodontus portusjacksoni	Port Jackson Shark	LC	0–275			X						
RAYS												
Myliobatis tenuicaudatus	Southern Eagle Ray	LC	0–422							X		

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
Notorynchus cepedianus	Broadnose Sevengill Shark	VU
RAYS		
Bathytoshia brevicaudata	Smooth Stingray	LC
Trygonoptera mucosa	Western Shovelnose Stingaree	LC
Trygonorrhina dumerilii	Southern Fiddler 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.

There are additional indications that this area may be important for undefined aggregations of one ray species.

An ongoing study (started in October 2024) assessing Southern Fiddler Ray movements and residency along the Adelaide metropolitan coast revealed the presence of aggregations for this species in the area. Up to nine Southern Fiddler Rays were caught by a ~500 m, 50-hook demersal longline with a 2-hr soak time in October 2024 and January 2025 suggesting the presence of aggregations (CN Roberts et al. unpubl. data 2025). Fifty-eight Southern Fiddler Rays (20 at Christies Beach, 16 at Seacliff [~15 km north], and 22 in Port River [55 km north]) were tagged with acoustic transmitters. The acoustic monitoring showed that almost half of the individuals tagged (n = 27; 46.5%) visited Christies Beach (CN Roberts et al. unpubl. data 2025). Longer time-at-liberty is required to assess movement and residency of this species along the metropolitan coastline but preliminary results showed the detection of multiple individuals (up to eight) on the same receiver in a one-hour period confirming the presence of aggregations. Additional information is required to confirm the importance of the area for this species.

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