

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

## iSIMANGALISO ISRA

### Western Indian Ocean Region

#### SUMMARY

iSimangaliso is a coastal area in northeastern South Africa. The area is characterised by several coastal reef systems including some of the highest latitude shallow-water hard coral reefs in the world. The area overlaps with the iSimangaliso marine protected area, two Ecologically or Biologically Significant Marine Areas, and a Key Biodiversity Area. Within this area there are: **threatened species** (e.g., Oman Cownose Ray *Rhinoptera jayakari*); **reproductive areas** (Sand Tiger Shark *Carcharias taurus*); **feeding areas** (Reef Manta Ray *Mobula alfredi*); and **undefined aggregations** (e.g., Spotted Eagle Ray *Aetobatus ocellatus*).

#### CRITERIA

**Criterion A - Vulnerability; Sub-criterion C1 - Reproductive Areas;**  
**Sub-criterion C2 - Feeding Areas; Sub-criterion C5 - Undefined Aggregations**

SOUTH AFRICA

0-85 metres

111.94 km<sup>2</sup>



## DESCRIPTION OF HABITAT

iSimangaliso is a coastal area in northeastern South Africa. The area lies within a unique biogeographic transitional region between the tropical coast of central Mozambique and the subtropical east coast of South Africa (Turpie et al. 2000), referred to as the Delagoa bioregion (Sink et al. 2004). The Agulhas Current is the dominant oceanographic feature along this coastline due to the relatively narrow continental shelf (Schumann 1988; Ramsay 1994; Lutjeharms 2006). There are also deep nearshore underwater canyons that break into the continental shelf.

Coral reef formations within the area are some of the highest latitude shallow-water hard coral reefs in the world (Riegl et al. 1995). These hard coral communities are typically dominated by *Acropora* and *Montipora* species that form a veneer on top of existing substrate (Ramsay 1994). Reef growth primarily takes place on fossilised coastal dunes running parallel to the coast consisting of late Pleistocene beach rock (Ramsay 1994). Hard coral coverage and colony size generally increases until 25 m depth, and thereafter, due to light limitation, is replaced by non-photosynthetic organisms such as sponges and ascidians (Riegl et al. 1995). The general sub-tidal reef habitat is diverse with a mix of sand dominated substrate, low profile sparse reef, alcyonarian coral dominated reef, or scleractinian coral dominated reef (Ramsey 1994; Pereira 2003). The main reefs in this area, from north to south, are Quarter Mile Reef closest to the town of Sodwana Bay, Red Sands Reef, and Raggie Reef.

The area overlaps with the iSimangaliso marine protected area (MPA) which is also a World Heritage Site. It overlaps with two Ecologically or Biologically Significant Marine Areas (EBSAs), the Delagoa Shelf Edge, Canyons and Slope; and the Mozambique Channel (CBD 2023a, 2023b), and with the iSimangaliso Wetland Park Key Biodiversity Area (KBA 2023).

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 85 m based on the bathymetry of the area.

## ISRA CRITERIA

### CRITERION A – VULNERABILITY

Four Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species™ regularly occur in the area. These are the Critically Endangered Sand Tiger Shark (Rigby et al. 2021), the Endangered Spotted Eagle Ray (Finucci et al. submitted) and Oman Cownose Ray (Sherman et al. 2021), and the Vulnerable Reef Manta Ray (Marshall et al. 2022).

### SUB-CRITERION C<sub>1</sub> – REPRODUCTIVE AREAS

iSimangaliso is an important reproductive area for one shark species.

Female Sand Tiger Sharks use the area to gestate in the austral summer at the two main known aggregation sites in the region: Quarter Mile and Raggie Reef located at the northern and southern boundaries of this area (Bass et al. 1975; Staiger 2020). Quarter Mile Reef has been surveyed most regularly, and it was used only by females (n = 157) between December and April 2019–2020 (Staiger 2020). Raggie Reef has been surveyed less frequently but had more individuals (n = 202) and the largest aggregations of up to 70 individuals (Staiger 2020). Most females (66.6%) had clear mating scars, and pregnancy was confirmed in some cases from video footage showing a pup moving inside the abdomen (Staiger 2020). Historical catches in the area support the hypothesis that pregnant

females use the relatively warm sub-tropical waters of the area to gestate as it is presumed to benefit foetal development before they return to the cooler temperate waters further south in South Africa to pup (Dicken et al. 2006). Females undertake biannual reproductive cycles and exhibit fidelity to specific reef and cave systems in the area that are critical for this part of their life history (Dicken et al. 2006).

## SUB-CRITERION C2 – FEEDING AREAS

iSimangaliso is an important feeding area for one ray species.

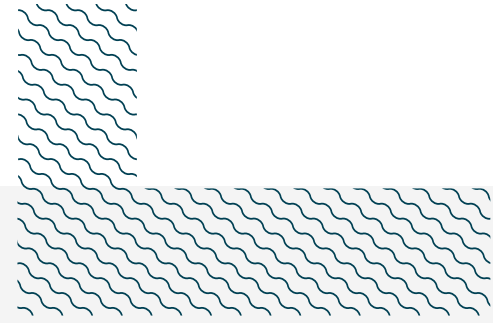
Reef Manta Rays form predictable feeding aggregations at Red Sands Reef located in the central-southern zone of iSimangaliso. Photo-identification surveys confirmed the consistent presence and surface feeding aggregations of up to 14 individuals associated with this reef during late summer. These feeding aggregations have been recorded consistently over three years (2020–2023; Parkes et al. 2023). Within this area, 105 individual Reef Manta Rays were photo-identified between 2020 and 2022 (M Carpenter unpubl. data 2023). Initial research aimed at tagging and tracking manta rays at this site confirmed the predictable presence of at least 22 individuals that exhibited daily site fidelity of up to six months (N Cullain & R Daly unpubl. data 2023).

## SUB-CRITERION C5 – UNDEFINED AGGREGATIONS

iSimangaliso is an important area for undefined aggregations of two ray species.

Spotted Eagle Rays aggregate on Quarter Mile Reef, accounting for 53% of the total occurrences (204 sightings) (Deane 2022). Aggregations of up to 18 individuals have been recorded (M Carpenter unpubl. data 2023). Spotted Eagle Rays also frequently occur on Raggie Reef, where 81 individuals were recorded between 2020–2023 (Parkes et al. 2023). Although they have been observed at a cleaning station on Quarter Mile Reef (M Carpenter unpubl. data 2023), the reasons for the aggregations are not yet understood.

Oman Cownose Ray aggregations of over 100 individuals have been recorded on multiple reef systems along the area (Parkes et al. 2023). Underwater visual census (UVC) surveys between 2020–2023 (363 hours in total) recorded three aggregations of 301 individuals in total, and 779 Baited Remote Underwater Video System (BRUV) deployments over the same period recorded two aggregations of 45 individuals (Parkes et al. 2023). The reason for their aggregations is not yet understood.



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## **Acknowledgments**

Ryan Daly (Oceanographic Research Institute), Jennifer M. Olbers (WILDTRUST; Nelson Mandela University), Leigh de Necker (WILDTRUST), Grant Smith (Sharklife), Geremy Cliff (WILDTRUST), Michelle Carpenter (University of Cape Town), and Christoph A Rohner (IUCN SSC Shark Specialist Group - ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2023 ISRA Region 7 - Western Indian Ocean 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. 2023.** iSimangaliso 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
<b>SHARKS</b>											
<i>Carcharias taurus</i>	Sand Tiger Shark	CR	0-232	X		X					
<b>RAYS</b>											
<i>Aetobatus ocellatus</i>	Spotted Eagle Ray	EN	0-40 m	X						X	
<i>Mobula alfredi</i>	Reef Manta Ray	VU	0-711 m	X			X				
<i>Rhinoptera jayakari</i>	Oman Cownose Ray	EN	0-50 m	X						X	

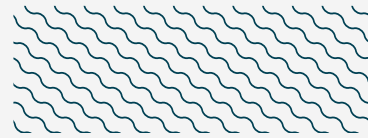
## SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
<b>SHARKS</b>		
<i>Carcharhinus albimarginatus</i>	Silvertip Shark	VU
<i>Carcharhinus amblyrhynchos</i>	Grey Reef Shark	EN
<i>Carcharhinus amboinensis</i>	Pigeye Shark	VU
<i>Carcharhinus brevipinna</i>	Spinner Shark	VU
<i>Carcharhinus humani</i>	Human's Whaler Shark	DD
<i>Carcharhinus leucas</i>	Bull Shark	VU
<i>Carcharhinus limbatus</i>	Blacktip Shark	VU
<i>Carcharhinus plumbeus</i>	Sandbar Shark	EN
<i>Galeocerdo cuvier</i>	Tiger Shark	NT
<i>Hemipristis elongata</i>	Snaggletooth Shark	EN
<i>Rhincodon typus</i>	Whale Shark	EN
<i>Triaenodon obesus</i>	Whitetip Reef Shark	VU
<i>Sphyrna mokarran</i>	Great Hammerhead	CR
<i>Sphyrna zygaena</i>	Smooth Hammerhead	VU
<i>Stegostoma tigrinum</i>	Indo-Pacific Leopard Shark	EN
<b>RAYS</b>		
<i>Acroteriobatus leucospilus</i>	Greyspot Guitarfish	EN
<i>Aetomylaeus bovinus</i>	Duckbill Eagle Ray	CR
<i>Bathytoshia brevicaudata</i>	Shorttail Stingray	LC
<i>Dasyatis chrysonota</i>	Blue Stingray	NT
<i>Gymnura natalensis</i>	Diamond Ray	LC
<i>Himantura leoparda</i>	Leopard Whipray	EN
<i>Himantura uarnak</i>	Coach Whipray	EN
<i>Megatrygon microps</i>	Smalleye Stingray	DD
<i>Mobula birostris</i>	Oceanic Manta Ray	EN
<i>Mobula kuhlii</i>	Shorthorned Pygmy Devil Ray	EN
<i>Neotrygon caeruleopunctata</i>	Bluespotted Maskray	LC
<i>Pateobatis fai</i>	Pink Whipray	VU

<i>Pateobatis jenkinsii</i>	Jenkins' Whipray	EN
<i>Rhina ancylostomus</i>	Bowmouth Guitarfish	CR
<i>Rhynchobatus djiddensis</i>	Whitespotted Wedgefish	CR
<i>Taeniura lymma</i>	Bluespotted Lagoon Ray	LC
<i>Taeniurops meyeri</i>	Blotched Fantail Ray	VU
<i>Torpedo sinuspersici</i>	Gulf Torpedo	DD
<i>Urogymnus asperrimus</i>	Porcupine Ray	EN

*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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