

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

## uTHUKELA ISRA

### Western Indian Ocean Region

#### SUMMARY

uThukela lies within the Natal Bight off the KwaZulu-Natal coast in South Africa. The area is known for its mosaic of habitats, including reefs, gravel fields, muddy seafloors, and extensive estuarine environments. This area overlaps with the uThukela Marine Protected Area and incorporates Critical Biodiversity Areas offshore and inshore in the south. uThukela also overlaps with the Natal Bight Ecologically and Biologically Significant Marine Area. Within this area there are: **threatened species** (e.g., Dusky Shark *Carcharhinus obscurus*); **range-restricted species** (e.g., Twineye Skate *Raja ocellifera*); **reproductive areas** (e.g., Spinner Shark *Carcharhinus brevipinna*); and **undefined aggregations** (e.g., Milk Shark *Rhizoprionodon acutus*).

#### CRITERIA

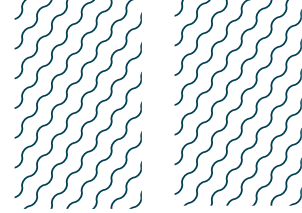
**Criterion A - Vulnerability; Criterion B - Range Restricted; Sub-criterion C1 - Reproductive Areas; Sub-criterion C5 - Undefined Aggregations**

## SOUTH AFRICA

0-250 metres

4,781.76 km<sup>2</sup>





## DESCRIPTION OF HABITAT

uThukela lies off the KwaZulu-Natal (KZN) coast in South Africa. It is located between Richards Bay and Umhloti, incorporating ~130 km of coastline and extending from the highwater mark to ~50 km offshore. This area is known for its mosaic of habitats, including reefs, unusual gravel fields, rich muddy seafloors, and extensive estuarine environments (Green et al. 2022). uThukela is in the Natal Bight, which is the widest shelf region of the subtropical east coast of South Africa. The area is a highly significant and unique biodiversity area, which is aptly reflected in its Zulu-derived name *uThukela* meaning ‘surprise’. The inshore area hosts 14 estuaries (Richards Bay, uMhlathuze, uMlalazi, aMatigulu, iNyoni, uThukela, iZinkwazi, iNonoti, uMdlotane, uMvoti, uMhlali, uThongati, iSetheni, iSiyaya) that result in large freshwater and sediment input into the coastal waters of the area, leading to more turbid waters than adjacent regions (Fennessy 1994). The area receives most rainfall between September–April, leading to a seasonal peak in freshwater and sediment discharge in the austral summer (Middleton & Oliff 1961). These estuaries also support mangroves, reed marshes, and seagrass meadows. The strong reliance on benthic productivity is a marked feature of the area (Fennessy et al. 2016), in contrast with systems which rely on upwelled nutrients.

The area overlaps with the uThukela Marine Protected Area (MPA) and incorporates Critical Biodiversity Areas (CBAs) offshore and to the north and south. CBAs are biodiversity priority areas that currently fall outside of protected areas but are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole (SANBI 2017). The area also overlaps with the Natal Bight Ecologically and Biologically Significant Marine Area (EBSA; CBD 2023).

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 250 m based on the distribution of Qualifying Species and the bathymetry of the area.

## ISRA CRITERIA

### CRITERION A – VULNERABILITY

Six Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species™ regularly occur in the area. Threatened sharks comprise one Critically Endangered species, one Endangered species, and three Vulnerable species; threatened rays comprise one Endangered species (IUCN 2023).

### CRITERION B – RANGE RESTRICTED

This area holds the regular presence of the Diamond Ray and Twineye Skate as resident range-restricted species. Historical and contemporary benthic trawl data (Fennessy 1994; S Fennessy unpubl. data 2023), long-term (40-year) catch data from the National Marine Linefish System (NMLS; Oceanographic Research Institute [ORI] 2023), and regular Baited Remote Underwater Video (BRUV) surveys (SAIAB 2023) support their regular occurrence in uThukela. The Diamond Ray is a southern African endemic species (southern Mozambique to central Namibia; Daly et al. 2022) and was the second-most captured shark and ray species in trawls in the area between 1989–1992 with a 66% frequency (Fennessy 1994). Catches have also been recorded in more recent research trawls in the area (S Fennessy unpubl. data 2023). The Twineye Skate is a South African endemic species and

uThukela is the only area in KZN where the species has been regularly and predictably captured (Ebert et al. 2021; Fennessy 1994; S Fennessy unpubl. data 2023).

Diamond Rays and Twineye Skates occur in the Agulhas Current Large Marine Ecosystem (LME) and the Benguela Current LME.

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

uThukela is an important reproductive area for three shark species.

Pregnant Spinner Sharks are regularly caught in the area with historical shark net catches of pregnant females (n = 290) in KZN. Near-term females, which made up 69% (n = 200) of the total catch of pregnant females, were taken mainly at Richards Bay and Zinkwazi, indicating a pupping ground inshore of the uThukela Banks (Bass et al. 1973; Allen & Cliff 2000). Pupping takes place between March and August with a peak in April and May (Bass et al. 1973; Allen & Cliff 2000). Shark net catches in this area between 2020–2022 confirm that uThukela is still an important reproductive area for Spinner Sharks. Catches included relatively high numbers of Spinner Sharks, comprising adults in mating condition and pregnant females with term pups (KwaZulu Natal Sharks Board [KZNSB] unpubl. data 2023). This species was also caught in the KZN inshore prawn trawl fishery on the uThukela Banks, with a size range of 60–160 cm TL (Fennessy 1994). Size-at-birth of the Spinner Shark is 65–75 cm TL (Bass et al. 1973) and therefore catches included neonates, which is additional evidence that the area may be a nursery ground (Fennessy 1994).

Pregnant and neonate Dusky Sharks are regularly caught in the area. Historical shark net catches of pregnant females in KZN were highest in the area, at Zinkwazi and Richards Bay (Dudley et al. 2005). Most embryos were at or near full term, indicating the presence of a pupping ground in this area. The size-at-birth for the species is 100 cm total length (TL) (converted from fork length; Natanson & Kohler 1996). A recent study of neonates (defined by an open umbilical scar) at Zinkwazi confirmed that they exhibit periods of residency in the area before dispersing (R Daly unpubl. data 2023). Although neonate Dusky Sharks can move large distances along the coast after pupping, coastal sites such as those in the area appear to be particularly important for them (Hussey et al. 2009). Long-term competitive angling catch data between 1977–2017 (40 years) confirms that the area, particularly north and south of the uThukela River, including Zinkwazi, is frequented by high numbers of neonates, with catches of >100 individuals by a team of eight anglers in eight hours not uncommon during late winter/spring (ORI unpubl. data 2023).

Pregnant Scalloped Hammerheads are regularly caught in the area. Term pregnant females with embryos ranging 40–55 cm TL were encountered in historical KZN shark net catches between October and March 1978–1998 (de Bruyn et al. 2005). They also had large ovarian follicles ( $\pm 30$  cm), suggesting that they mate soon after pupping. Size-at-birth of the species is 45–55 cm TL (Bass et al. 1975). Adults in mating condition, including many pregnant females, were caught in November and December, mostly in the shark nets of Richards Bay and Zinkwazi in the area. This was indicative of a pupping ground and possibly a mating ground in the area (de Bruyn et al. 2005). Catches of sexually active adults in these nets continues (KZNSB unpubl. data 2023). This species was caught in large numbers in the KZN inshore prawn trawl industry on the uThukela Banks (Fennessy 1994) and was the most frequently captured species (71%) in trawls between 2003–2005 (n = 181; S Fennessy unpubl. data 2023). Catches spanned a wide size range from 40–150 cm TL, but with a mean of 60 cm TL, indicating that a majority of neonates and young-of-the-year individuals were caught (Fennessy 1994).

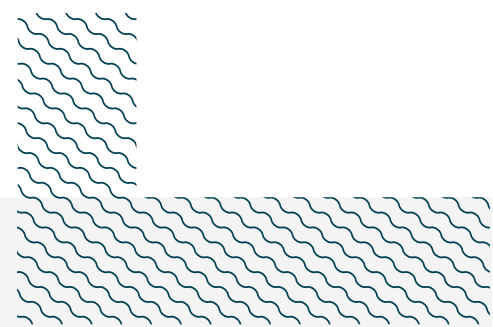
## SUB-CRITERION C5 - UNDEFINED AGGREGATIONS

uThukela is an important area for undefined aggregations of two shark and one ray species. Further information is required to define the nature and function of these aggregations.

A study of 34 White Sharks fitted with SPOT satellite tags showed that individuals spent more time in uThukela than any other MPA in South Africa, despite the fact that this area is >1,100 km away from the tagging site. At present, it is unclear why they had this activity hotspot in the area. Six of the tagged individuals showed resident behaviour in the area for several weeks (Kock et al. 2022). Recent data from the KZN shark nets shows that catches of this species are far higher in the area in nets at Richards Bay and Zinkwazi than anywhere else on the KZN coast, which highlights the importance of this area as an aggregation site for the species (KZNSB unpubl. data 2023).

The uThukela River mouth in the area is an important aggregation site for Milk Sharks. Competitive recreational angling data (1977–2017) from the National Marine Linefish System (NMLS) database shows peaks in catches of 51–80 sharks made in six hours by teams of eight anglers operating within a maximum of a few hundred metres of each other. These catches are confined to the summer months when rainfall is high, and the uThukela River creates a turbid nearshore environment (ORI unpubl. data 2023).

Diamond Rays aggregate close to shore in the area during summer. Competitive recreational angling data from the National Marine Linefish System and tag-and-release data from the ORI cooperative tagging project both show peaks in catches in summer in this area, with >100 individuals caught in an eight-hour period within a small area (usually ~50 m) by a team of eight anglers on several occasions (Daly et al. 2022). As the majority of these individuals are adults, it is suspected that such aggregations are driven by reproductive needs.



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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
<b>SHARKS</b>											
<i>Carcharhinus brevipinna</i>	Spinner Shark	VU	0-200	X		X					
<i>Carcharhinus obscurus</i>	Dusky Shark	EN	0-500	X		X					
<i>Carcharodon carcharias</i>	White Shark	VU	0-1,277	X						X	
<i>Rhizoprionodon acutus</i>	Milk Shark	VU	1-200	X						X	
<i>Sphyrna lewini</i>	Scalloped Hammerhead	CR	0-1,043	X		X					
<b>RAYS</b>											
<i>Gymnura natalensis</i>	Diamond Ray	LC	0-75		X					X	
<i>Raja ocellifera</i>	Twineye Skate	EN	15-105	X	X						

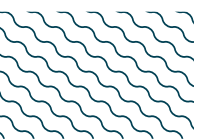
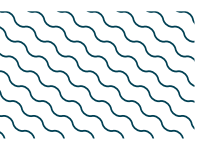
## SUPPORTING SPECIES



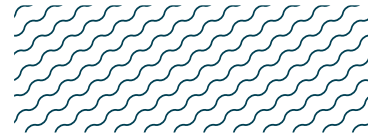
Scientific Name	Common Name	IUCN Red List Category
<b>SHARKS</b>		
<i>Carcharhinus amboinensis</i>	Pigeye Shark	VU
<i>Carcharhinus brachyurus</i>	Copper Shark	VU
<i>Carcharhinus humani</i>	Human's Whaler Shark	DD
<i>Carcharhinus leucas</i>	Bull Shark	VU
<i>Carcharhinus limbatus</i>	Blacktip Shark	VU
<i>Carcharhinus plumbeus</i>	Sandbar Shark	EN
<i>Carcharias taurus</i>	Sand Tiger Shark	CR
<i>Galeocerdo cuvier</i>	Tiger Shark	NT
<i>Halaaelurus lineatus</i>	Lined Catshark	LC
<i>Holohalaaelurus punctatus</i>	African Spotted Catshark	VU
<i>Holohalaaelurus regani</i>	Izak Catshark	LC
<i>Hexanchus griseus</i>	Bluntnose Sixgill Shark	NT
<i>Isurus oxyrinchus</i>	Shortfin Mako Shark	EN
<i>Mustelus mosis</i>	Arabian Smoothhound	NT
<i>Mustelus mustelus</i>	Common Smoothhound	EN
<i>Pliotrema warreni</i>	Warren's Sixgill Sawshark	LC
<i>Scylliogaleus queckettii</i>	Flapnose Houndshark	VU
<i>Sphyrna mokarran</i>	Great Hammerhead	CR
<i>Sphyrna zygaena</i>	Smooth Hammerhead	VU
<i>Squalus acutipinnis</i>	Bluntnose Spurdog	NT
<i>Squatina africana</i>	African Angelshark	NT
<i>Triaenodon obesus</i>	Whitetip Reef Shark	VU
<b>RAYS</b>		
<i>Acroteriobatus annulatus</i>	Lesser Guitarfish	VU
<i>Acroteriobatus leucospilus</i>	Greyspot Guitarfish	EN
<i>Aetobatus ocellatus</i>	Spotted Eagle Ray	EN
<i>Aetomylaeus bovinus</i>	Duckbill Eagle Ray	CR
<i>Bathytoshia brevicaudata</i>	Shorttail Stingray	LC
<i>Bathytoshia lata</i>	Brown Stingray	VU

<i>Cruriraja parcomaculata</i>	Triangular Legskate	LC
<i>Dasyatis chrysonota</i>	Blue Stingray	NT
<i>Himantura leoparda</i>	Leopard Whipray	EN
<i>Himantura uarnak</i>	Coach Whipray	EN
<i>Maculabatis ambigua</i>	Baraka's Whipray	NT
<i>Mobula alfredi</i>	Reef Manta Ray	VU
<i>Mobula birostris</i>	Oceanic Manta Ray	EN
<i>Mobula eregoodoo</i>	Longhorned Pygmy Devil Ray	EN
<i>Mobula kuhlii</i>	Shorthorned Pygmy Devil Ray	EN
<i>Myliobatis aquila</i>	Common Eagle Ray	CR
<i>Rhinobatos austini</i>	Austin's Guitarfish	DD
<i>Rhinoptera jayakari</i>	Oman Cownose Ray	EN
<i>Rhynchobatus djiddensis</i>	Whitespotted Wedgefish	CR
<i>Taeniurops meyeri</i>	Blotched Fantail Ray	VU
<i>Torpedo sinuspersici</i>	Gulf Torpedo	DD

*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.*







## SUPPORTING INFORMATION

There are indications that uThukela may be important for additional species.

In the historical KZN shark net catches 57% of the 78 mature female Sandbar Sharks examined were pregnant and 56% of these were caught off Richards Bay. Seven of the ten litters with the largest embryos (55–65 cm TL) were caught at Richards Bay, therefore pupping likely takes place inshore in this area (Cliff et al. 1988). Very small individuals are caught by shore anglers at Richards Bay (B Wareham, NCAU, cited by Cliff et al. 1988). Three of four females found with fresh mating scars were caught in the shark nets at Richards Bay (Cliff et al. 1988), but no further information about the possible location of mating areas is available. Recent catches in the KZN shark nets are extremely low (KZNSB unpubl. data 2023), making it difficult to confirm that the area is still important for the reproduction of this species.

There is evidence for a nursery area for Milk Shark close inshore of uThukela Banks, with pupping from November to January in shallow embayments (Bass et al. 1975). Catches of this species in the historical KZN inshore prawn trawl fishery on the uThukela Banks covered a wide size of 30–100 cm TL, with a mean of 50 cm TL. Size-at-birth of Milk Shark is 30–35 cm TL. These catches included neonates, which supports the existence of a nursery area there (Fennessy 1994).

Spotted Eagle Ray was caught in the KZN inshore prawn trawl fishery on the uThukela Banks. Size-at-birth of Spotted Eagle Ray is 33–36 cm disc width (DW; Kyne et al. 2016). Sizes of catches were 40–80 cm DW, with a mean of 50 cm DW. This included neonates, indicating that this location is an important reproductive area (Fennessy 1994). Catches in recent research trawls in the area have included this species, but no information of the sizes of the individuals is available (S Fennessy unpubl. data 2023).

Lesser Guitarfish is endemic to South Africa and was caught in the KZN inshore prawn trawl fishery on the uThukela Banks. Size-at-birth of Lesser Guitarfish is 20–25 cm TL (van der Elst 1993). The size range captured was 30–60 cm TL, with a mean of 40 cm TL. This included neonates, indicating that this area may be an important reproductive ground (Fennessy 1994). Catches in recent research trawls in the area have included this species, with high frequency of occurrence, but no information of the sizes of the individuals is available (S Fennessy unpubl. data 2023).

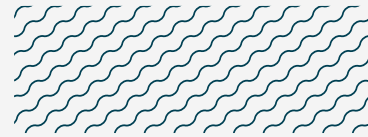
Greyspot Guitarfish was caught in the KZN inshore prawn trawl fishery on the uThukela Banks. Size-at-birth of Greyspot Guitarfish is 25 cm TL (van der Elst 1993). The size range captured was 20–50 cm TL, with a mean of 40 cm TL and included neonates, indicating that this area may be a reproductive ground (Fennessy 1994). Catches in recent research trawls in the area have included this species, but no information of the sizes of the individuals is available (S Fennessy unpubl. data 2023).

Coach Whipray was caught in the KZN inshore prawn trawl fishery on the uThukela Banks. Size-at-birth of Coach Whipray is 20–30 cm DW (van der Elst 1993; Heemstra & Heemstra 2004). The size range captured was 30–80 cm DW, with a mean of 50 cm DW and included neonates, indicating that this may be an important reproductive area (Fennessy 1994). Catches in recent research trawls in the area have included this species, but no information of the sizes of the individuals is available (S Fennessy unpubl. data 2023).

Common Eagle Ray was caught in the KZN inshore prawn trawl fishery on the uThukela Banks. Size-at-birth of Common Eagle Ray is 20 cm DW (Wallace 1967) and size range captured was 20–80 cm DW, with a mean of 50 cm DW and included neonates, indicating that this may be an important reproductive area (Fennessy 1994). Catches in recent research trawls in the area have included this species, but no information of the sizes of the individuals is available (S Fennessy unpubl. data 2023).

Twineye Skate was caught in the KZN inshore prawn trawl fishery on the uThukela Banks. The size range was 10–30 cm DW, with a mean of 20 cm DW (Fennessy 1994). Size-at-birth of is not known, however, given the small size of those caught it is assumed that these included neonates, in which case, the location could be an important reproductive area for this species. Catches in recent research trawls in the area have included this species, but no information of the sizes of the individuals is available (S Fennessy unpubl. data 2023).

The area includes several sites at which Whitespotted Wedgefish aggregate close inshore in summer. There are higher catches of the species reported in this area compared to other regions in KZN both in the competitive recreational shore angling fishery and in the KZN shark nets (Daly et al. 2020; Jordaan et al. 2021). Group catches of 10–13 individuals caught in six hours have regularly been recorded over the past 40 years in the National Marine Linefish System, with aggregations specifically occurring at certain beaches (e.g., Nonoti Beach) within the area, after periods of northeast wind in summer (ORI unpubl. data 2023). Further, this species was caught in the KZN inshore prawn trawl fishery on the uThukela Banks. The size range was 50–200 cm TL, with a mean of 90 cm TL and included neonates, indicating that this may be an important reproductive area (Fennessy 1994). Size-at-birth of the Whitespotted Wedgefish is ~65 cm TL (Wallace 1967). Catches in recent research trawls in the area have included this species, but no information of the sizes of the individuals is available (S Fennessy unpubl. data 2023). Catches of this species in the KZN shark nets comprised mainly adults, but there was little evidence to suggest that any of the individuals were reproductively active (Daly et al. 2020). Catches were high at Zinkwazi in the area (KZNSB unpubl. data 2023).



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