

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

## PEMBA CHANNEL ISRA

### Western Indian Ocean Region

#### SUMMARY

Pemba Channel is located in the Zanzibar Archipelago in Tanzania. The area includes the western side of Pemba Island and is characterised by the presence of coral reefs, mangroves, sandy substrates, and the Pemba Channel. It is mainly influenced by the East African Coastal Current and southern monsoon winds that produces upwellings and increases productivity. The area overlaps with an Ecologically or Biologically Significant Marine Area, two Key Biodiversity Areas, and one protected area. Within the area there are: **threatened species** (e.g., Pelagic Thresher *Alopias pelagicus*) and **reproductive areas** (e.g., Silky Shark *Carcharhinus falciformis*).

#### CRITERIA

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

— —  
**UNITED  
 REPUBLIC OF  
 TANZANIA**  
 — —

**0-800 metres**  
 — —

**3,242.79 km<sup>2</sup>**  
 — —





## DESCRIPTION OF HABITAT

Pemba Channel is located to the west of Pemba Island which is the main northern island in the Zanzibar Archipelago in Tanzania. The island is separated from the mainland by the Pemba Channel (~800 m depth) which brings nutrient-rich midwater to the area (Semba et al. 2019). The area is characterised by the presence of coral reefs, mangroves, and sandy substrates. The channel is directly connected to the open ocean and is characterised by a deep oceanic setting (Sekadende et al. 2020). Pemba Channel is mainly influenced by the East African Coastal Current and southern monsoon winds (May–September) that produces upwellings and increases in productivity around the island (Painter et al. 2021). Mean sea surface temperature ranges from 22°C (June–August) to 30°C (December–February). Long periods of rains occur from March–June, when the Pangani River has a higher discharge into the area (Painter 2020).

The area overlaps with the Pemba-Shimoni-Kisite Ecologically or Biologically Significant Marine Area (EBSA; CBD 2023) and two Key Biodiversity Areas (KBA), Makongwe Island and Panza Island (KBA 2023a, 2023b). In addition, it overlaps with the Pemba Channel Conservation Area.

This Important Shark and Ray Area is benthopelagic and is delineated from inshore and surface waters (0 m) to 800 m based on the bathymetry of the area and the distribution of the Qualifying Species.

## ISRA CRITERIA

### CRITERION A – VULNERABILITY

Three 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 Bottlenose Wedgefish (Kyne et al. 2019), the Endangered Pelagic Thresher (Rigby et al. 2019), and the Vulnerable Silky Shark (Rigby et al. 2021).

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

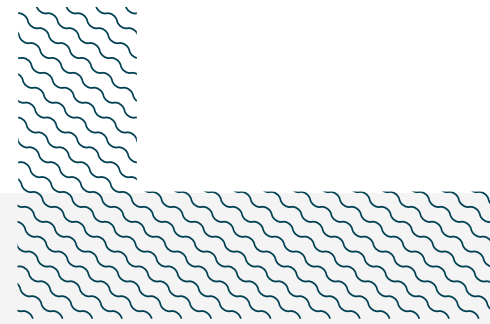
Pemba Channel is an important reproductive area for two shark and one ray species. These species are caught in the area mainly with gillnets and hook-and-line and were recorded regularly during artisanal fishery landing surveys on the west and south coasts of Pemba Island between 2019–2023 (Wildlife Conservation Society unpubl. data 2023).

Pelagic Threshers (n = 67) were recorded ranging from 100–360 cm total length (TL). Reported size-at-birth for this species is 158–190 cm TL (Ebert et al. 2021) and size-at-one-year is 187–204 cm TL (Drew et al. 2015). Of the individuals recorded, 39% (n = 26) were <200 cm TL, indicating that these individuals were neonates or young-of-the-year. Furthermore, one pregnant female was landed with two near-term embryos, suggesting that this area is important not only for early life stage individuals, but also pregnant females. During the same period, no Pelagic Threshers were recorded at any of the landing sites in mainland Tanzania, and only three individuals were recorded from neighbouring Unguja Island, suggesting that the waters off Pemba Island serve as an important reproductive area and possible parturition ground in the region.

Silky Sharks (n = 576) ranging from 70–270 cm TL were recorded with 62% (n = 355) measuring 70–116 cm TL. Size-at-birth for this species is between 55–87 cm TL (Clarke et al. 2015; Ebert et al. 2021) and size-at-one-year is ~116 cm TL (Branstetter 1987). Therefore, 13% (n = 77) of individuals can be

considered neonates and an additional 48% (n = 278) young-of-the-year. During the same period, only 17 Silky Sharks were recorded in similar fisheries landing site surveys in neighbouring Unguja Island, located to the south of Pemba Island, and only 17 Silky Sharks were recorded across eight landing sites on mainland Tanzania, with none recorded at Tanga landing site on mainland Tanzania which is situated directly across from Pemba Island. This evidence suggests that the waters off Pemba serve as an important reproductive area for this species compared to others in the region.

From 78 Bottlenose Wedgefishes recorded (60–300 cm TL), 12 (17%) measured 40–65 cm TL. Reported size-at-birth for the species is ~46–50 cm TL and size-at-one-year is ~65 cm TL (Iskandar et al. 2023), which confirms that these 12 individuals can be considered neonates and/or young-of-the-year. Furthermore, one pregnant female (300 cm TL) with seven near-term embryos (~40 cm TL each) was landed in May 2019. In comparison, during this same period, 112 Bottlenose Wedgefish were landed in neighbouring Unguja Island, of which only two individuals (2%) were <65 cm TL. In the eight mainland landing sites, 55 Bottlenose Wedgefish were landed, of which only one (2%) was < 65 cm TL. This information highlights the regional importance of the waters off Pemba for reproduction.



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David van Beuningen (Wildlife Conservation Society), Rhett Bennett (Wildlife Conservation Society), 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 2023 ISRA Region 7 – Western Indian Ocean workshop for their contributions to this process.

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### **Suggested citation**

**IUCN SSC Shark Specialist Group. 2023.** Pemba Channel ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

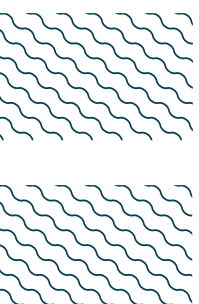
## QUALIFYING SPECIES

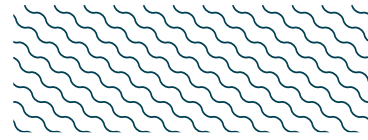
| Scientific Name                 | Common Name          | IUCN Red List Category | Global Depth Range (m) | ISRA Criteria/Sub-criteria Met |   |    |    |    |    |    |    |    |  |
|---------------------------------|----------------------|------------------------|------------------------|--------------------------------|---|----|----|----|----|----|----|----|--|
|                                 |                      |                        |                        | A                              | B | C1 | C2 | C3 | C4 | C5 | D1 | D2 |  |
| <b>SHARKS</b>                   |                      |                        |                        |                                |   |    |    |    |    |    |    |    |  |
| <i>Alopias pelagicus</i>        | Pelagic Thresher     | EN                     | 0-584                  | X                              |   | X  |    |    |    |    |    |    |  |
| <i>Carcharhinus falciformis</i> | Silky Shark          | VU                     | 0-1,112                | X                              |   | X  |    |    |    |    |    |    |  |
| <b>RAYS</b>                     |                      |                        |                        |                                |   |    |    |    |    |    |    |    |  |
| <i>Rhynchobatus australiae</i>  | Bottlenose Wedgefish | CR                     | 0-60                   | X                              |   | X  |    |    |    |    |    |    |  |

## SUPPORTING SPECIES

| Scientific Name                   | Common Name                 | IUCN Red List Category |
|-----------------------------------|-----------------------------|------------------------|
| <b>SHARKS</b>                     |                             |                        |
| <i>Carcharhinus leucas</i>        | Bull Shark                  | VU                     |
| <i>Carcharhinus longimanus</i>    | Oceanic Whitetip Shark      | CR                     |
| <i>Carcharhinus sorrah</i>        | Spottail Shark              | NT                     |
| <i>Galeocerdo cuvier</i>          | Tiger Shark                 | NT                     |
| <i>Hemipristis elongata</i>       | Snaggletooth Shark          | VU                     |
| <i>Hexanchus nakamurai</i>        | Bigeyed Sixgill Shark       | NT                     |
| <i>Isurus oxyrinchus</i>          | Shortfin Mako               | EN                     |
| <i>Sphyrna zygaena</i>            | Smooth Hammerhead           | VU                     |
| <i>Triaenodon obesus</i>          | Whitetip Reef Shark         | VU                     |
| <b>RAYS</b>                       |                             |                        |
| <i>Aetobatus ocellatus</i>        | Spotted Eagle Ray           | EN                     |
| <i>Himantura leoparda</i>         | Leopard Whipray             | VU                     |
| <i>Himantura uarnak</i>           | Coach Whipray               | EN                     |
| <i>Maculabatis ambigua</i>        | Baraka's Whipray            | NT                     |
| <i>Mobula kuhlii</i>              | Shorthorned Pygmy Devil Ray | EN                     |
| <i>Mobula mobular</i>             | Spinetail Devil Ray         | EN                     |
| <i>Mobula tarapacana</i>          | Sicklefin Devil Ray         | EN                     |
| <i>Mobula thurstoni</i>           | Bentfin Devil Ray           | EN                     |
| <i>Neotrygon caeruleopunctata</i> | Bluespotted Maskray         | LC                     |
| <i>Pastinachus ater</i>           | Broad Cowtail Ray           | VU                     |
| <i>Pateobatis fai</i>             | Pink Whipray                | VU                     |
| <i>Rhina ancylostomus</i>         | Bowmouth Guitarfish         | CR                     |
| <i>Taeniurops meyeri</i>          | Blotched Fantail Ray        | VU                     |

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

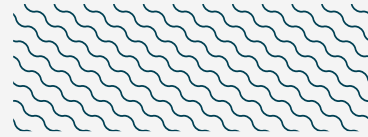
There are additional indications that Pemba Channel is an important reproductive area for one shark and three ray species.

Nineteen Oceanic Whitetip Sharks were recorded between 2019–2023, ranging from 70–250 cm TL (Wildlife Conservation Society unpubl. data 2023). Of these, two (16%) individuals measured 70–90 cm TL. Size-at-birth is 55–75 cm TL (Seki et al. 1998) and size-at-one-year is ~94 cm TL (Joung et al. 2016) confirming the presence of a neonate and a young-of-the-year. During the period only one individual was recorded in similar fisheries landing site surveys in neighbouring Unguja Island, and none from mainland Tanzania, which suggests that the waters off Pemba Island could be an important reproductive area for this species. Further information is needed to confirm this.

From 318 Spotted Eagle Rays (50–205 cm disc width [DW]) recorded between 2019–2023, 22 (5.6%) measured 50–76 cm DW (Wildlife Conservation Society unpubl. data 2023). Reported size-at-birth is ~33 cm DW and size-at-one-year is ~76 cm DW (Boggio-Pasqua et al. 2022), so these 22 individuals can be considered young-of-the-year. More evidence is needed to confirm the reproductive importance of the area compared to others in the region.

From 484 Baraka's Whiprays recorded (20–107 cm DW) between 2019–2023, nine animals (2.1%) measured 20–35 cm DW (Wildlife Conservation Society unpubl. data 2023). With size-at-birth being ~20 cm DW and size-at-one-year being ~36 cm DW (Temple et al. 2020), these nine individuals can be considered young-of-the-year. More evidence is needed to confirm the reproductive importance of the area compared to others in the region.

From 43 Blotched Fantail Rays (30–140 cm DW) recorded between 2019–2023, one individual was 30 cm DW (Wildlife Conservation Society unpubl. data 2023), which is within the reported size-at-birth for this species (30–35 cm DW; Last et al. 2016) suggesting that this area could be an important reproductive area for the species. More information is needed to confirm the regular presence of this life stage in the area.



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