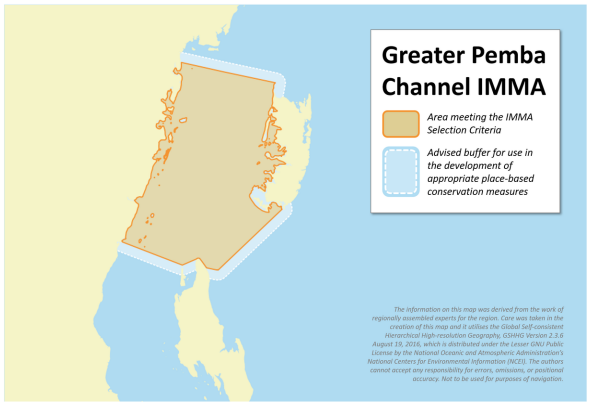

Area Size

6,647 km^2

Qualifying Species and Criteria

Indo-pacific bottlenose dolphin
Tursiops aduncus
Criterion B1

Indian Ocean humpback dolphin
Sousa plumbea
Criterion A; B1

Marine Mammal Diversity

Criterion D2

Delphinus delphis tropicalis, Globicephala macrocephalus, Grampus griseus, Kogia breviceps, Lagenodelphis hosei, Megaptera novaeangliae, Mesoplodon densirostris, Pseudorca crassidens, Sousa plumbea, Stenella attenuata, Stenella longirostris, Tursiops aduncus, Tursiops truncatus

Summary

The Pemba Channel is located in northern Tanzania in the Western Indian Ocean. It is a 50 km wide, but 1000m deep channel that separates the island of Pemba from mainland Africa. The channel has steep bathymetry and a north flowing current that provides productive conditions for fisheries and cetaceans. A rapid assessment of cetaceans along the 800km coast of Tanzania showed that the Pemba Channel had by far the highest cetacean diversity and relative abundance in the country. Currently, 13 cetacean species are recorded in the Greater Pemba Channel IMMA. Endangered Indian Ocean humpback dolphins are found in shallow waters on both sides of the channel and the population around Pemba is small and assumed to be resident. The most commonly encountered cetacean within the area is the spinner dolphin. Many deep-water species (e.g. Blainville's beaked whale, Dwarf sperm whale, False killer whale, Short-finned pilot whale) are also frequently sighted.

Greater Pemba Channel IMMA

Description

The Pemba Channel is located in northern Tanzania in the Western Indian Ocean. The channel has steep drop offs in bathymetry and a rapid north flowing current that appears to provide excellent conditions for cetaceans. An assessment of cetaceans along the entire 800km coast of Tanzania showed the Pemba Channel had by far the highest indices of cetacean diversity and relative abundance in the country (Braulik et al. 2017a). Subsequently intensive surveys in the Pemba Channel have confirmed this high diversity; currently 13 cetacean species are recorded in the cIMMA, however survey effort has been limited and this total is likely to rise (Braulik et al. 2017b). Many oceanic species have been recorded in the Channel often within sight of land, including Blainville's beaked whale, Dwarf sperm whale, False killer whale, Short-finned pilot whale, Risso's dolphin and Fraser's dolphin. Spinner dolphins are extremely common in waters of the upper shelf, and sometimes occur in groups of over 800 individuals. Other species recorded include Humpback whales, Pan-tropical spotted dolphin, Common bottlenose dolphin, Indo-pacific bottlenose dolphin and Indian Ocean humpback dolphin. .

Pemba Island is surrounded by deep water, and there are small, likely resident populations of Indo-pacific bottlenose dolphin and Indian Ocean humpback dolphins that occur in the shallow waters on the west of the island. Photo identification studies of Indo-Pacific bottlenose dolphins estimated 83 individuals (CV 7.8%, 95% CI 72-97) (Kasuga et al. in review). Similarly, Indian Ocean humpback dolphins are assumed to be an isolated population. The humpback dolphin photo-identification catalogue has only 54 unique fins, and this population is expected to number well under 100 animals (Braulik, unpublished).

Indian Ocean humpback dolphins in the Greater Pemba Channel IMMA. Photo Credit: Gill Braulik

The most common species in the IMMA is the spinner dolphin (Stenella longirostris) ; they occur in large numbers during the day close to shore where they may be resting (Braulik 2017a; b).

The southern boundary of the cIMMA is defined by the 200m bathymetric line, as the majority of the cetacean diversity is in deeper water. The northern IMMA boundary is the Tanzania-Kenya international border which also aligns with a change in habitat, shallower depths, and the limit of survey data.

Criterion A: Species or Population Vulnerability

The Greater Pemba Channel IMMA contains habitat that is important for supporting a population of Indian Ocean humpback dolphin (Sousa plumbea), which is listed as Endangered on the IUCN Red List (Braulik et al. 2015).

Criterion B: Distribution and Abundance Sub-criterion B2: Small and Resident Populations

Based on field surveys conducted west of Pemba island from 2014-2016 abundance of Indo-Pacific bottlenose dolphins was estimated using photo-identification and closed population mark-recapture models, as 83 (CV 7.8%, 95% CI 72-97) individuals (Kasuga et al., in review). The discovery curve had plateaued suggesting that the majority of the population had been identified. A photo-identification catalogue of Indian Ocean humpback dolphins generated from the same surveys has created an even smaller photo-identification catalogue of 54 unique dorsal fins (including left and right side) and abundance of this endangered species is expected to be well under 100 individuals (Braulik unpublished). Both species are present in the shallow waters inside the Pemba Channel Conservation Area along the west coast of Pemba Island and because they are shallow water species, and Pemba is surrounded by deep water, and the same photo-identified individuals were sighted in multiple years, it is likely that both of these populations are small, isolated and resident. Matching of photo-ID catalogues with those in neighbouring areas that is ongoing will support this conclusion.

Criterion D: Special Attributes Sub-criterion D2: Diversity

Thirteen cetacean species have been recorded in the Pemba Channel, including Delphinus delphis tropicalis, Globicephala macrocephalus, Grampus griseus, Kogia breviceps, Lagenodelphis hosei, Megaptera novaeangliae, Mesoplodon densirostris, Pseudorca crassidens, Sousa plumbea, Stenella attenuata, Stenella longirostris, Tursiops aduncus and Tursiops truncatus. In an evaluation of the entire coast of Tanzania, the Pemba Channel had the highest cetacean relative abundance and relative diversity of any other location in Tanzania (Braulik et al. 2017).

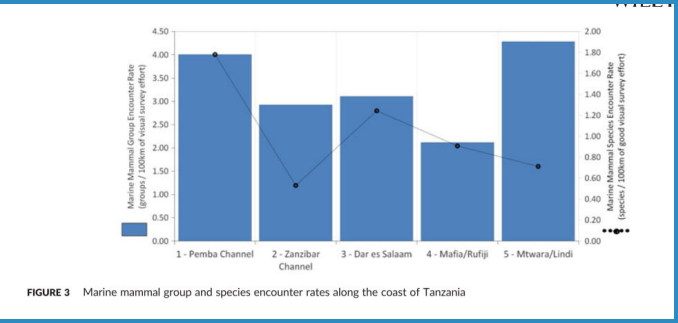

FIGURE 3 Marine mammal group and species encounter rates along the coast of Tanzania

Figure 1 - Marine mammal group and species encounter rates along the coast of Tanzania (replicated from Braulik et al. 2017a.

Supporting Information

Braulik, G. T., K. Findlay, S. Cerchio and R. Baldwin. 2015. Chapter Five - Assessment of the Conservation Status of the Indian Ocean Humpback Dolphin (Sousa plumbea) Using the IUCN Red List Criteria. Advances in Marine Biology. T. A. Jefferson and B. E. Curry, Academic Press. 72: 119-141.

Braulik, G.T., Kasuga, M., Wittich, A., Kiszka, J.J., Macaulay, J., Gillespie, D., Gordon, J., Said, S.S. & Hammond, P.S. 2017a. 'Cetacean rapid assessment: An approach to fill knowledge gaps and target conservation across large data deficient areas'. Aquatic Conservation: Marine and Freshwater Ecosystems, DOI: 10.1002/aqc.2833.

Braulik, G. T. 2017b. Evaluating the distribution and conservation status of a new coastal dolphin species, the Indian Ocean humpback dolphin (Sousa plumbea) in Pemba Island, Tanzania. Final Report from the Wildlife Conservation Society Tanzania to the People's Trust for Endangered Species.

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Aknowledgements

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