

World Heritage

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Assessing Marine World Heritage from an Ecosystem Perspective

The Western Indian Ocean



United Nations
Educational, Scientific and
Cultural Organization



World
Heritage
Convention

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Potential marine sites of Outstanding Universal Value



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Bazaruto – Tofo, Inhambane

Location

The site is located in Inhambane Province in the southern part of Mozambique, stretching from the Bazaruto archipelago in the north, to the Tofo peninsula in the south.

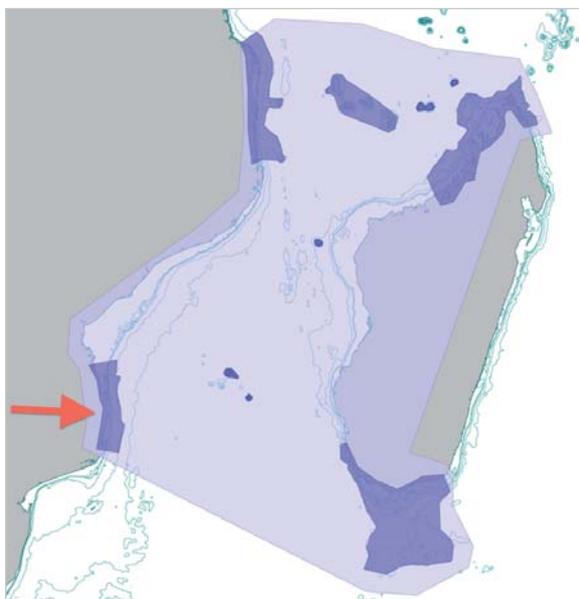
Description

The dominant ocean currents show a clear influence on the coastal morphology, the north-trending headlands a result of northward transport of sediment poured into the sea by rivers, to form headlands (Tofo, Cabo São Sebastião) and the string of islands forming the Bazaruto archipelago. While the dominant flow of water in the southern Mozambique channel is southwards, inshore processes result in northward flow.

The Bazaruto barrier island archipelago comprises a chain of five islands extending ~70 km north of the mainland peninsula of Cabo São Sebastião, and up to 20 km off the coast. The islands are separated by tidal inlets linking the 10-26 km wide back barrier lagoon with the Indian Ocean. The largest Island is Bazaruto (12,000 ha), followed by Benguérua (2,500 ha), Magaruque (600 ha), Santa Carolina (500 ha, previously called Paradise Island) and the minuscule Bangué (5 ha). The archipelago was formed from the present Cabo Sebastião Peninsula about 7000 years ago, forming the Bazaruto-Sao Sebastio complex of very high sand dunes and coastal barrier lakes found only in southern Mozambique in the Parabolic Dune subregion.

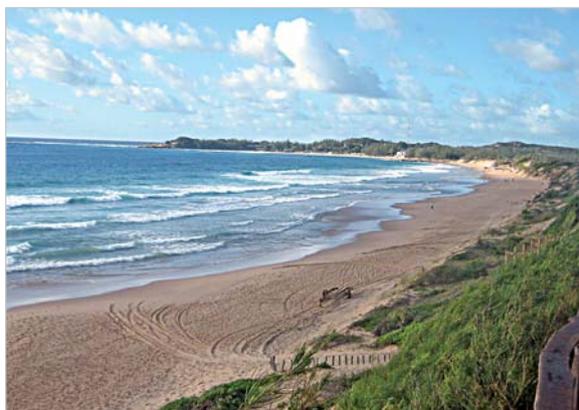
Bazaruto has a wide range of terrestrial and marine habitats including coastal sand dunes, rocky and sandy shores, coral reefs, mangrove forests and seagrass meadows. These habitats provide refuge for a great variety of plant and animal species. Over 180 species of birds, 45 species of reptiles, the dugong, four turtle species, five dolphin species, three whale species, four shark species and 2000 species of fish have been recorded here. Bazaruto also has the largest and possibly last viable dugong population in the WIO, dependent on the abundant seagrass meadows between the islands and the coast. The area has populations of six species of bird that exceed 1% of the global population for the species. It is also known for its complex of coral communities with six endemic gastropod mollusc species.

Jurisdiction – Mozambique



Locator map.

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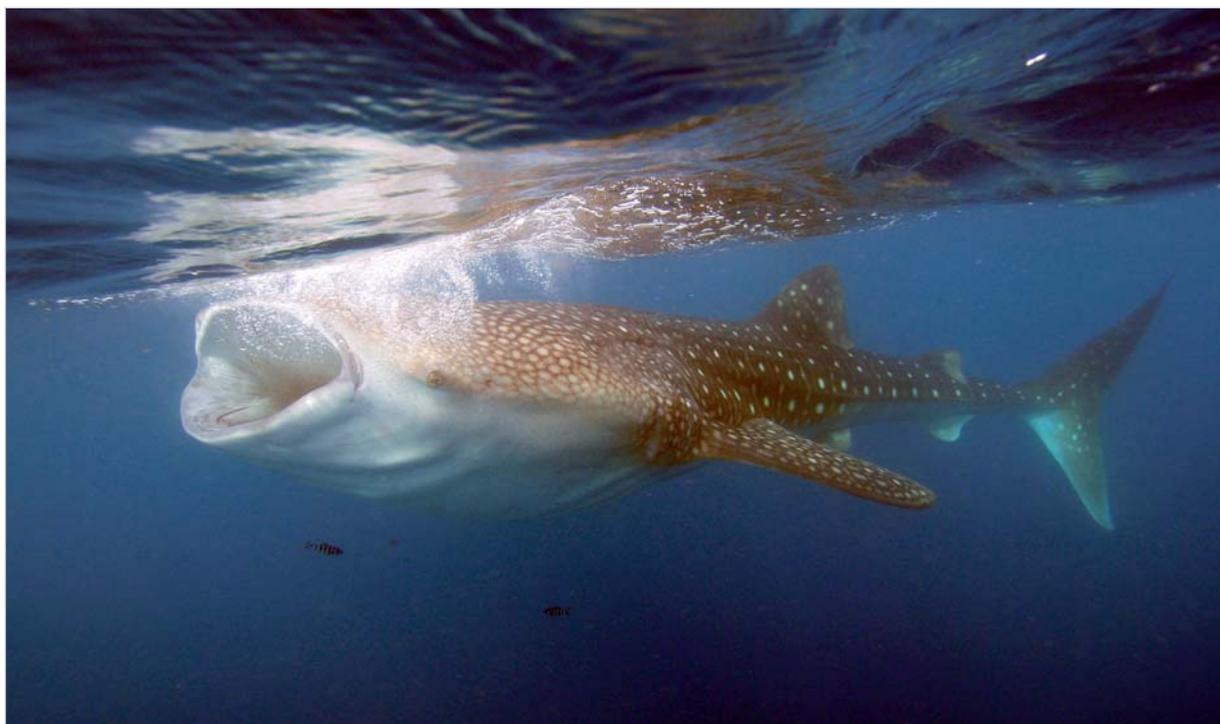
The dunes of Tofo and Bazaruto island are among the best developed along the East African coast.

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Dugong photographed from boat, Bazaruto.

©Almeida Guissamulo



Whale shark feeding on surface plankton, attracted by the high productivity created by eddies and their complex interactions with the continental shelf.

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Potential Outstanding Universal Value

Criterion viii – Geology and oceanography

Geology: the coastline has some of the largest parabolic sand dunes on the coast, in Bazaruto forming a unique mosaic with coastal lakes, coral reefs and seagrass beds that support a unique combination of terrestrial and marine fauna.

Oceanography: the region receives variable eddies from the north in the Mozambique Channel, and from the south from the East Madagascar Current-Agulhas Current region, resulting in high mixing and productivity attracting large aggregations of megafauna.

Criterion x – Habitats & conservation

Parabolic dunes and coastal lakes: these are of global importance and critical to the Bazaruto Archipelago's diversity and ecological wealth.

Coral reefs: there are three main coral reef types: submerged sandstone reefs, submerged fringing reefs and patch reefs. There are also some sedimented rocky shelves and isolated rocky massifs. The over 30 species of soft corals (Alcyonacea) and 70 species of hard corals (Scleractinia) represent a transition between northern and southern regions.

Seagrasses: a critical habitat in the archipelago, supporting the large turtle and dugong populations.

Mangroves and salinas (salt marshes): three of the five islands (Bazaruto, Benguérua and Santa Carolina) support mangrove communities and Salinas.

Criterion ix – Ecology, species and evolution

Ecology: wide range of ecosystems from terrestrial and marine habitats including coastal sand dunes, rocky and sandy shores, mangrove forests, seagrass beds, coral reefs and open ocean.

Diversity: there are over 2000 species of fish, over 500 species of mollusks.

Dugong: the most significant and well known population of dugong (300 – 350 individuals) in the WIO, with possibly the last remaining viable population in the region.

Turtles: five species known to nest and feed in Bazaruto, including the green, hawksbill, loggerhead, olive ridley and leatherback.

Birds: more than 180 species have been recorded in the Archipelago and 6 species exceed 1% of the global population for the species.

Sharks and Rays: major manta ray (*M. alfredi*) aggregations estimates range from 150 to 450 individuals in Bazaruto and the largest aggregation of 800 individuals at Tofo.

Whale sharks: Tofo represents one of the largest aggregations of whalesharks in the WIO.

Humpback whales: new discoveries suggest Bazaruto may have one of the largest wintering populations of humpback whales.

Threats

The continental shelf off Mozambique holds considerable mineral resources such as oil, gas and heavy metals, posing significant threats to biodiversity when extraction occurs. Overexploitation occurs of many marine resources, including fish, holothurians, and molluscs, as well as sea turtles, dugongs, sharks and birds eggs. A significant net fishery is based on the mainland coastline, targeting the extensive shallow waters that also host the main seagrass beds and dugong habitat. Of particular concern is that a large proportion of the dugong population occurs outside of protected areas, where they face a high risk of net entanglement. Habitat destruction, particularly of seagrass beds is a huge concern for the dugong population. Tourism developments, if not well managed could be a serious threat to the ecosystems and habitats, particularly the sensitive sand dune and Salinas terrestrial habitats. Natural events such as storms and cyclones, and climate change, have also had negative impacts on habitats.

Management status

Bazaruto Archipelago was first formally gazetted as a MPA in 1971, by the colonial government, with the aim of protecting species of high conservation value, such as dugongs, dolphins, and sea turtles. The three southern islands of Bangué, Magaruque and Benguérua were proclaimed National Parks, including waters to 100 m deep east of the islands and 5 km to the west. Bazaruto and Santa Carolina islands were defined as areas designated for “special monitoring activities” (Zonas de Vigilância). In 2001, a much larger Bazaruto Archipelago National Park was proclaimed, including more extensive marine areas and adjusting the boundaries to include all the islands to promote an integrated management approach. Two years later, the Cabo de São Sebastião peninsula was given statutory protection that now protects the natural resources of the nearby peninsula and adjacent waters.

Around Tofo, efforts are underway to establish protected areas following participatory models, involving the dive and local tourism industry and local authorities, to protect the charismatic species and habitats that sustain the local economy.



Dugong are particularly vulnerable to capture in nets. This juvenile dugong was released alive from a net in the Kiunga Marine Reserve, Kenya.

© WWF Kiunga Marine Reserve Project

Geographic scale, integrity and site type

Both the Bazaruto Archipelago and Tofo are distinct headlands, the former with a string of islands, defined by the interactions between the land and ocean currents. As such, they are each well defined units, though separated by 200 km of open coastline. They might exist as distinct sites, or a serial site.

Other sites in the region – there is no similar headland/archipelago systems in the region, nor with a similar complement of fauna such as dugong or whale sharks and manta rays.