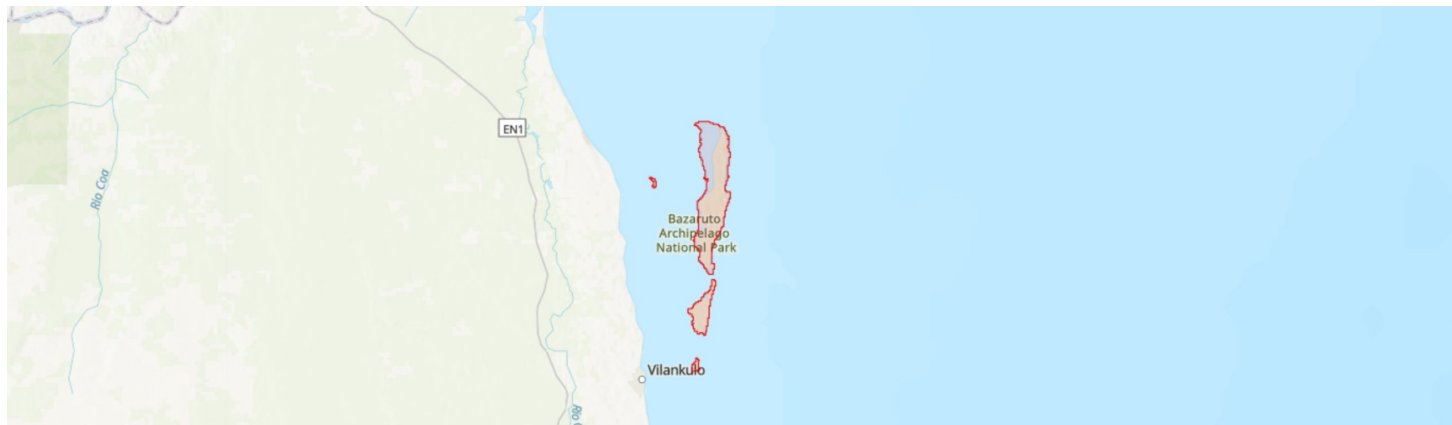


Bazaruto Archipelago

Arquipélago de Bazaruto (Test version)

MOZTIPA042



Country: **Mozambique**

Administrative region: **Inhambane (Province)**

Central co-ordinates: **-21.73061 N, 35.44182 E**

Area: **190km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

The Bazaruto Archipelago qualifies as an IPA under Criterion A(i), as these islands support populations of two, and potentially three endemic and globally threatened species. Bazaruto Island is considered likely to be the main global stronghold for the Vulnerable *Jatropha subaequiloba* and Magaruque Island is the only known locality globally for the Critically Endangered *Memecylon insulare*. Everett et al. (2008) documented the presence of the globally Endangered *Ochna beirensis* in scrub thickets in secondary dunes in this IPA, but this record requires confirmation. In addition, the seagrass communities surrounding the islands support a population of the globally Vulnerable *Zostera capensis*, which extends around the coast of southern Africa; the Bazaruto population is of national importance.

In General, this IPA supports populations of 18 species that are endemic or near-endemic to Mozambique, according to Darbyshire et al. (2019), although only seven of these qualify under sub-criterion B(ii) and so this site does not currently meet the threshold under that sub-criterion. However, further botanical surveys are required as it is considered likely that there may be further rare and threatened plant species present in under-explored habitats at this IPA.

Site description

The Bazaruto Archipelago is located between the latitudes 21°30' – 22°10' S and longitudes 35°22' – 35°30' E, off the Indian Ocean coast of northern Inhambane province, between Vilankulos and Inhassoro districts in southern Mozambique. It consists of five Islands, Bazaruto (120.5 km²), Benguérua (32.86 km²), Magaruque (2.96 km²), Santa Carolina (2.10 km²), and Bangué (0.66 km²) (Everett et al. 2008; Díaz-Pelegrín et al. 2016). This Archipelago forms an Important Plant Areas (IPA) located within the marine protected area of the Bazaruto Archipelago National Park (BANP), which spans 1,430 km² (African Parks 2021).

These islands contain a range of terrestrial and marine habitats and provide refuge for a great variety of plant and animal species (Everett et al. 2008), including a group of endemic and near-endemic species to Mozambique. Only four of the islands, Bazaruto, Benguérua, Magaruque, and Santa Carolina are included in the IPA, as according to Everett et al. (2008) Bangué Island comprises only beach and pioneer dune vegetation, and so is unlikely to be of high botanical importance.

Botanical significance

This site is of high botanical importance as it holds a number of range-restricted species of high conservation concern, of which three are globally threatened and endemic species to Mozambique: *Memecylon insulare* (CR; restricted to Magaruque Island), *Jatropha subaequiloba* (VU; found on Bazaruto Island and nearby São Sebastião Peninsula), and *Ochna beirensis* (EN; possibly found on these islands and also nearby Beira and Cheringoma). *Ochna beirensis* has been documented as present in BANP by Everett et al. (2008), but this record requires confirmation as no herbarium specimen has been seen from this site by the current authors. Although in BANP the botanical component is currently under-

explored, the islands are known so far to support eight national endemic plant taxa (plants that only occur in Mozambique) and 10 near-endemic plant taxa (plants that are restricted to Mozambique and neighbouring countries). The endemic consist of the three previous mentioned globally threatened species, plus four Least Concern species, *Chamaecrista paralias*, *Psydrax moggii*, *Triainolepis sancta* and *Zanthoxylum delagoense* P.G. Waterman, and one that has not yet been assessed but is considered likely to be of Least Concern, *Spermacoce kirkii*. To date, only the three islands Bazaruto, Magaruque, and Santa Carolina are known to hold range-restricted plant species of high conservation importance, but given that Benguerua Island holds a similar vegetation composition to Bazaruto Island, future surveys are likely to reveal that Benguerua also holds populations of some of these priority species. The seagrass communities around the islands are also of importance and contain a population of the globally Vulnerable *Zostera capensis*.

Habitat and geology

This IPA results from a dynamic process of stacking dunes, originating from coastal deposits from the Indian Ocean. Three dune forms can be recognised, namely ancient dunes, an ocean dune cord, and recent coastal formations (Díaz Pelegrín et al. 2016). The soils are sandy, rocky, and white and are poor for intensive agricultural activity due to the limiting factors of low water retention capacity and low fertility (Díaz Pelegrín et al. 2016). The climate is classified as Humid Tropical Coastal, which is biseasonal, with the peak dry season in June to August and the peak humid season in December to March. The islands have an annual rainfall of approximately 1,200 mm, and an annual temperature average ranging from 20° – 26°C according to the season. The geographical elevation ranges from 0 – 4 m at the sea line and inland wetlands up to 90 m on the highest dunes near the coast. The combination of these different physical elements has significant effects on the biotic composition and diversity of this IPA.

This IPA has been mapped and briefly classified into 11 natural terrestrial vegetation communities (Dutton & Drummond 2008): (1) savanna grassland, maintained principally by a perched water table and dominated by *Garcinia livingstonei* and *Ozoroa obovata*; (2) marsh or edaphic grassland, with a range of dominant grasses including *Sporobolus virginicus*, *Diplachne fusca* and *Andropogon eucomus*; (3) evergreen dune forest, which is highly degraded and only known from three small remnant patches on Benguérua and Magaruque, with occurrence of *Balanites maughamii* and *Ozoroa obovata*; (4) secondary dune forest, dominated by *Mimusops caffra*, *Olax dissitiflora* and *Bourreria petiolaris*; (5) scrub thicket, dominated by *Eugenia* spp. and *Euclea racemosa*; (6) swamp forest, severely damaged by agriculture; (7) woodland dominated by *Dialium schlechteri* and *Julbernardia globiflora*; (8) thicket associated with the perched water table at the base of west facing coastal sand dunes, dominated by *Olax dissitiflora*, *Bourreria petiolaris* and *Acacia karroo*; (9) pioneer dune flora, dominated by species such as *Ipomoea pes-caprae*, *Scaevola plumieri* and *Cyperus crassipes*; (10)

mangroves, only known from Bazaruto, Benguérua and Santa Carolina, dominated by *Rhizophora mucronata*, *Bruguiera cylindrica* and *Ceriops tagal*; and (11) salt marshes or salinas, also known only from Bazaruto, Benguérua and Santa Carolina, dominated by, *Sesuvium portulacastrum*, *Salicornia perennis* and *Salicornia perrieri*.

Bazaruto Island supports the largest areas of natural habitat, where nine of the 11 vegetation types occur, with only evergreen dune forest and *Dialium-Julbernardia* woodland absent. Four vegetation types can be found across Magaruque Island, namely evergreen dune forest, secondary dune forest, scrub thicket, and pioneer dune vegetation. The Santa Carolina Island holds a large mangrove community, secondary dune forest, and salt marsh (Dutton & Drummond 2008), whilst evergreen dune forest, and *Dialium-Julbernardia* woodland occur on Benguerua Island (Downs & Wirminghaus 1997; Dutton & Drummond 2008). From these 11 terrestrial vegetation assemblages in the BANP, three are of highest botanical significance, as they hold species of conservation importance: *Memecylon insulare* occurs in evergreen dune forest, whilst *Jatropha subaequiloba* is found in secondary dune forest and edaphic grassland. The secondary dune forests are also suitable for *Ochna beirensis*.

There is also a significant extent of seagrass communities within the IPA, associated with the sandy tidal flats and dominated by *Thalassodendron ciliatum*, *Cymodocea rotundata*, *Halodule uninervis* and *Zostera capensis* (Bandeira et al. 2008).

Conservation issues

The Bazaruto Archipelago National Park (BANP) was primarily designated to protect marine mammals (dugongs, dolphins, whales), sharks, sea turtles, corals, Echinoderms (Holoturians), molluscs, and fish species (Vaz et al. 2008). However, both marine and terrestrial ecosystems are now benefitting from conservation measures undertaken by African Parks (African Parks 2021).

Since 2017, the BANP has been managed by African Parks in partnership with the Mozambique government under a 25-year agreement. African Parks' stated priorities are to strengthen law enforcement in order to reduce threats to the biodiversity of the BANP and to build support for the conservation actions through community engagement, training, and local employment. 34 new rangers have been employed and trained as part of this process (African Parks 2021).

With regard to terrestrial biodiversity, birds are the most studied fauna group to date, which also benefit from international protection status since many are migratory (Díaz Pelegrín et al. 2016). Most of the key terrestrial habitats in the BANP, including mangroves forests and some lagoons and swamps, have been given the designation of Total Terrestrial Protection Zones (TTPZ) (Díaz Pelegrín et al. 2016). However, some of these areas are currently under pressure owing to unsustainable tourism and human population growth. Therefore, the integrity of the terrestrial biodiversity of this IPA is threatened by settlement expansion and tourism infrastructure and footfall, unsustainable subsistence and consumption activities such as

intensive firewood harvesting, agriculture, some livestock grazing (goats), and collection of medicinal plants (Dutton 1990; Downs & Wirminghaus 1997; Everett et al. 2008, Díaz Pelegrín et al. 2016).

There are also many cases of uncontrolled fire events reported in the forests, sometimes being set intentionally for small-scale shifting cultivation and pasture areas (Díaz Pelegrín et al. 2016).

These issues must be addressed if the botanical importance of these islands is to be maintained.

The seagrass communities are also protected, designated as Marine Total Protection Zones (MTPZ).

Site assessor(s)

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IPA criterion A species

SPECIES	QUALIFYING SUB-CRITERION	≥ 1% OF GLOBAL POPULATION	≥ 5% OF NATIONAL POPULATION	1 OF 5 BEST SITES NATIONALLY	ENTIRE GLOBAL POPULATION	SOCIO-ECONOMICALLY IMPORTANT	ABUNDANCE AT SITE
<i>Memecylon insulare</i> A.Fern. & R.Fern.	A(i)	✓	✓	✓	✓	—	Unknown
<i>Jatropha subaequiloba</i> Radcl.-Sm.	A(i)	✓	✓	✓	—	—	Unknown
<i>Ochna beirensis</i> N.Robson	A(i)	—	—	✓	—	—	Unknown
<i>Zostera capensis</i> Setch.	A(i)	—	✓	✓	—	—	Common

IPA criterion C qualifying habitats

HABITAT	QUALIFYING SUB-CRITERION	≥ 5% OF NATIONAL RESOURCE	≥ 10% OF NATIONAL RESOURCE	1 OF 5 BEST SITES NATIONALLY	AREAL COVERAGE AT SITE
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General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Mangrove Forest Vegetation Above High Tide Level	—	Major
Forest - Subtropical/Tropical Dry Forest	—	Minor
Forest - Subtropical/Tropical Swamp Forest	—	Minor
Shrubland - Subtropical/Tropical Dry Shrubland	—	Major
Grassland - Subtropical/Tropical Seasonally Wet/Flooded Lowland Grassland	—	Major
Wetlands (inland) - Permanent Freshwater Marshes/Pools [under 8 ha]	—	Minor
Marine Intertidal - Salt Marshes (Emergent Grasses)	—	Major
Marine Neritic (Submergent Nearshore Continental Shelf or Oceanic Island) - Seagrass (Submerged)	—	Major
Marine Coastal/Supratidal - Coastal Sand Dunes	—	Major

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	—	Major
Agriculture (arable)	—	Unknown
Agriculture (pastoral)	—	Minor

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Tourism / Recreation	—	Major
Residential / urban development	—	Major
Harvesting of wild resources	—	Unknown

Threats

THREAT	SEVERITY	TIMING
Residential & commercial development - Housing & urban areas	Medium	Ongoing - increasing
Residential & commercial development - Tourism & recreation areas	High	Ongoing - increasing
Human intrusions & disturbance - Recreational activities	High	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	Unknown	Ongoing - trend unknown
Agriculture & aquaculture - Livestock farming & ranching - Small-holder grazing, ranching or farming	Low	Ongoing - trend unknown
Transportation & service corridors - Roads & railroads	Medium	Ongoing - trend unknown
Biological resource use - Gathering terrestrial plants - Motivation Unknown/Unrecorded	Low	Ongoing - trend unknown
Biological resource use - Logging & wood harvesting - Motivation Unknown/Unrecorded	Low	Ongoing - trend unknown
Natural system modifications - Fire & fire suppression - Increase in fire frequency/intensity	Unknown	Ongoing - trend unknown

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Bazaruto Archipelago National Park	National Park	protected/conservation area encompasses IPA	190

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Grande Bazaruto	Key Biodiversity Area	protected/conservation area encompasses IPA	190
Greater Bazaruto	Important Bird Area	protected/conservation area encompasses IPA	190

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Protected Area management plan in place	The Bazaruto Archipelago National Park (BANP) is now under management by African Parks in partnership with the Mozambique government through the National	2017	2041

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
	Administration of Conservation Areas (ANAC), which directs the management of Mozambique's national parks and reserves. The signed memorandum between these institutions since 2017 is for 25 years, with the main objective to ensure the restoration, development, and management of the Park. African Parks' stated priorities are to strengthen law enforcement in order to reduce threats to the biodiversity of the BANP and to build support for the conservation actions through community engagement, training, and local employment. 34 new rangers have been employed and trained as part of this process (African Parks 2021).		

Bibliography

African Parks 2021. **Bazaruto**.

Bandeira, S., Muiocha, D. & Schleyer, M. 2008. **Seagrass beds**. In: Everett, B.I., van der Elst, R.P. & Schleyer, M.H. (eds.), **A Natural History of the Bazaruto Archipelago, Mozambique**..

Darbyshire I., Timberlake, J., Osborne, J., Rokni, S., Matimele, H., Langa, C., Datizua, C., de Sousa, C., Alves, T., Massingue, A., Hadj-Hammou, J., Dhanda, S., Shah, T. & Wursten, B. 2019. **The endemic plants of Mozambique: diversity and conservation status**. PhytoKeys, Vol 136, page(s) 45 - 96

Díaz Pelegrín, I., Luís, L.D., Mafambissa, M., Uetimane, A.E., Madeira, P.D., Chambal, E.M., Gubudo, F.S., Zibane, J.B. & Liberato, N.V.F. 2016. **Parque Nacional do Arquipélago de Bazaruto (PNAB). Plano de Maneio 2016 – 2025 de uma Área de Conservação Marinha, Província de Inhambane, Moçambique (2 volumes)**..

Downs, C. T. & Wirminghaus, J. O. 1997. **The terrestrial vertebrates of the Bazaruto Archipelago, Mozambique: a biogeographical perspective**.. Journal of Biogeography, Vol 24, page(s) 591- 602

Dutton, T.P. 1990. **Report to the Honourable Minister of Agriculture on a conservation master plan for sustainable development of the Bazaruto Archipelago**. People's Republic of Mozambique.

Everett, B.I., van der Elst, R.P. & Schleyer, M.H. 2008. **A Natural History of the Bazaruto Archipelago, Mozambique**.

Fourqurean, J.W., Duarte, C.M., Kennedy, H., Marba, N., Holmers, M., Mateo, M.A., Apostoloaki, E.T., Kendrick, G.A., Krause-Jensen, D., McGlathery, K.J. & Serrano, O 2012. **Seagrass ecosystems as a globally significant carbon stock**. Nature Geoscience

World Bank 2018. **Mozambique Country Forest Note. Report No: AUS0000336**.

Vaz, K., Norton, P., Avaloi, R., Chambal, H., Afonso, P.S., Falcão, M.P.,

Pereira, M. & Videira, E. 2008. **Plano de Maneio do Parque Nacional do Arquipélago do Bazaruto 2008-2012**.

Dutton, P. & Drummond, B. 2008. **Terrestrial habitats and vegetation**. In: Everett, B.I., van der Elst, R.P. & Schleyer, M.H. (eds.), **A Natural History of the Bazaruto Archipelago, Mozambique**..