Available from https://tipas.kew.org/site/sao-sebastiao-peninsula/
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São Sebastião Peninsula

Península de São Sebastião (Test version)

MOZTIPA045

Country: **Mozambique**
Administrative region: **Inhambane (Province)**
Central co-ordinates: **-22.13190 N, 35.47420 E**
Area: **227km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

São Sebastião Pennisula qualifies as an IPA under sub-criterion A(i). One Endangered species, Ecbolium hastatum, and three Vulnerable species, Jatropha subaequiloba, Millettia ebenifera and Elaeodendron fruticosum, have been recorded from this site. Jatropha subaequiloba is of particular importance as the range of this species is limited to only this IPA and neighbouring Bazaruto Archipelago [MOZTIPA042].
Nine species meet sub-criterion B(ii), representing fewer than 3% of endemic and range restricted plant species of Mozambique required for this site to qualify under this sub-criterion.

Site description

The São Sebastião Peninsula Important Plant Area is located in coastal Vilanculos District, south-east of Vilanculos (or Vilankulos) town. The IPA covers a total area of 227 km2 and consists of the terrestrial zones of the São Sebastião Total Protection Area, including the islands Luene and Chilonzuíne. This site is situated just south of the Bazaruto Archipelago IPA [MOZTIPA042].
The São Sebastião Peninsula contains a number of important coastal habitats, including mangroves, saltmarshes, miombo and dune thicket, which support a range of rare and threatened species.

Although the entire IPA falls within a protected area, only the north-west of the peninsula appears to be under conservation management. The Santuario Bravio de Vilanculos ("Vilanculos Sanctuary"), which covers 105km2 of this IPA, was granted private reserve status in 2003 (SBV 2017a). Habitat restoration is being undertaken within Vilanculos Sanctuary and, following this work, there is now a marked difference between vegetation cover either side of the private reserve boundary (Google Earth 2021). Although many of the habitats outside Vilanculos Sanctuary are degraded, they have been included within this IPA as they are also part of the Total Protection Area. Restoration work and the introduction of sustainable development initiatives in this part of the IPA could enable the conservation of species and habitats while providing secure livelihoods for local communities.

Botanical significance

The São Sebastião Peninsula hosts a number of plant species of conservation importance, including four globally threatened species. Of particular note is Ecbolium hastatum (EN), known only from coastal areas of southern Mozambique and threatened elsewhere by habitat clearance for tourism and subsistence agriculture. E. hastatum is locally common where it occurs in this IPA (Jacobsen # 6082) but is generally scarce across the site as a whole (Massingue et al. 2021), known from only a couple of localities. São Sebastião represents the most secure site for E. hastatum and is therefore crucial in preventing the extinction of this species.
In addition to this Endangered species, a further three Vulnerable species occur at this site: Elaeodendron fruticosum, Jatropha subaequiloba and Millettia ebenifera. Jatropha subaequiloba is particularly important as it is known only from this site and Bazaruto Island, covering a range of just 75 km2. Although more widespread, occurring throughout southern coastal Mozambique, M. ebenifera and E. fruticosum face threats such as expansion of urban areas,

tourism and conversion of land to agriculture throughout their respective ranges. For M. ebenifera, São Sebastião represents the only protected area within its range and so is of great importance for conservation of this species.
An additional Vulnerable taxon, Psychotria amboniana subsp. mosambicensis, may well occur within this IPA. A specimen that is highly likely to be this sub-species was collected at this site, however, further investigation is needed to confirm its presence at São Sebastião (Massingue et al. 2021). P. amboniana subsp. mosambicensis is restricted to southern coastal Mozambique and so its presence would also represent an additional endemic species within this IPA.
Overall, there are nine endemic species known from this IPA, including the three threatened species alongside Carpolobia suaveolens, Chamaecrista paralias, Triainolepis sancta, Tritonia moggii and Zanthoxylum delagoense (all LC). Although not endemic, or thought to be threatened with extinction, the saltmarsh species Caryoxylon littoralis is also of interest. C. littoralis has a limited distribution, restricted to the coastlines across the Mozambique Channel with an area of occupancy of around 48 km2 (Friis & Holt 2017). Previously, material of this species from São Sebastião was thought to be an undescribed species, Salsola sp. A. However, Friis and Holt (2017) found this population to be conspecific with C. littoralis, a species then thought limited to Madagascar and Île Europe. São Sebastião represents one of only three locations for this species in Mozambique.
The presence Pavetta uniflora may also be of conservation importance. Despite the wide range of this species, from Inhambane Province in Mozambique to Somalia in the north, P. uniflora is scarce along the east African coastline and has not yet been assessed for the IUCN Red List but may well be a threatened species.
The Near Threatened species, Encephalartos ferox, occurs within this IPA (Read 2020), likely the subspecies ferox which occurs in sheltered coastal dunes. Another Near Threatened species, Coffea racemosa, is known from this site (Read 2020). Also known as Inhambane coffee, this species is a tertiary relative of, and may be a useful gene donor to, commercial coffee species, while seeds of C. racemosa itself can also be roasted and used to make coffee. (O'Sullivan et al. 2017).
Although not associated with rare or threatened species, the mangroves at this site are of great importance as an ecological community for the habitats they provide for marine life and for coastal protection, particularly during cyclone season.

Habitat and geology

São Sebastião hosts a range of coastal habitats underlain by sandy soils (Massingue et al. 2021). Average temperatures in summer (October to March) are 28 – 33°C and in winter (April to September) 22 – 27°C. Rainfall within this IPA averages around 750 mm per annum, most of which falls between December and March, coinciding largely with the cyclone season (January to March), where spring tides are particularly high (SBV 2017b).
Previously, limited botanical collecting was undertaken at this site in 1958 (A.O.D. Mogg) and in 2002 (A.H.G. Jacobsen). However, as part of the conservation work undertaken at Vilanculos Sanctuary, a checklist was compiled by Mark Read (2020), a resident of Vilanculos Sanctuary, and a botanical survey is now underway by Instituto de Investigação Agrária de Moçambique, Eduardo Mondlane University and Royal Botanic Gardens, Kew to build on the knowledge of the terrestrial habitats and associated plant diversity (Massingue et al. 2021).
Due to the annual tidal surges during cyclone season, the mangroves are of great importance in preventing inundation of the peninsula. The most extensive patch of mangrove forest is found along the eastern coast of the peninsula, while there are smaller patches on Ilha Lunene and in the wetlands on the western coast (Google Earth 2021). Common mangrove species such as Avicennia marina, Ceriops tagal, Rhizophora mucronata and Sonneratia alba are present in these habitats (Read 2020). Associated with these mangrove habitats and tidal inlets are numerous saltmarshes. These areas have sandy white soils and feature Caryoxylon littoralis, which was described in the 1950s as "very prevalent" at this site (Mogg #29153). Other saltmarsh species recorded by Read (2020) include Salicornia perrieri and Sarcocornia perennis, while Sesuvium portulacastrum likely occurs across both the mangroves and marshes.
Littoral dunes vegetation, towards the coastline, includes small trees and shrubs such as Barleria delagoensis, Diospyros rotundifolia, Ochna natalita and Tricalysia delagoensis and larger trees such as Hyphaene coriacea and Mimosops caffra. Lötter et al. (2021) categorises much of the habitat at this site as part of the wider Inhambane Dune Thicket type, a semi-deciduous to evergreen vegetation type found throughout the coastal dunes of this province. Coastal thickets occur inland of the littoral dunes but include many of the same species. Endemic and Vulnerable species Elaeodendron fruticosum and Millettia ebenifera have been recorded from these thickets, as has Grewia occidentalis, which is highly likely to be the endemic variety, littoralis, typical of coastal dunes in this part of Mozambique (Read 2020; Lötter et al., in prep.). Monotypic patches of Ecbolium hastatum (EN) are known to occur in the shade of this thicket (Jacobsen #6082), while Encephalartos ferox (VU) has also been recorded from this site, likely occurring within the sheltered areas of the dunes.
Miombo occurs interspersed with thicket vegetation, varying from dense patches up to 10 m high to open patches with a canopy around 2 m (Massingue et al. 2021). Despite the varying structure of miombo woodland in this IPA, Julbernadia globiflora dominates throughout, followed by Brachystegia spiciformis and B. torrei. Coffea racemosa likely occurs in the understorey, alongside endemic species such as Chamaecrista paralias, Elaeodendron fruticosum and Triainolepis sancta (Massingue et al. 2021). A grassy understorey sparsely populates the ground layer of open miombo, with grass species recorded at this site including Andropogon schirensis, Eragrostis inamoena, Panicum maximum and Tricholaena monachme (Read 2020).
Of particular conservation interest are the areas of miombo on primary dunes that occur within this IPA. First identified by Massingue (2019), this habitat type has a low canopy and is often

associated with wetlands. Restricted to the coastlines of Inhassoro and Vilanculos Districts, miombo on primary dunes is unusual as, nationally, coastal miombo is typically confined to older dunes. This habitat type was identified within this IPA in recent survey work (Massingue et al. 2021) and is dominated by Brachystegia spiciformis, while the endemic species Chamaecrista paralias (LC) occurs in large populations within the understorey (Massingue et al. 2021).

Along the south-western boundary of Vilanculos Sanctuary are a number of brackish lagoons with associated Cyperaceae species at the margins.

Outside the boundary of Vilanculos Sanctuary much of the land within this protected area has been fragmented by agriculture, although some intact habitat remains, particularly in the east of the peninsula. Little botanical collecting has been conducted in this area of the IPA and so it is not clear whether species of conservation importance remain. Crops grown in these areas include cassava, maize, wheat, beans and peanuts (SBV 2017b). Previous to the establishment of Vilanculos Sanctuary in 2000, the northern and western parts of this peninsula were also cultivated for subsistence agriculture. Evidence of this remains today with cashew, coconut and mangos tree still growing within the Sanctuary (Massingue et al. 2021).

Conservation issues

While the entirety of this IPA falls within São Sebastião Total Protection Area (TPA), some areas of the peninsula are not well protected and have been subject to habitat degradation. The north and east of the peninsula, covering around 105 km2 of terrestrial and marine areas, is fenced off as a privately managed by Santuario Bravio de Vilanculos ("Vilanculos Sanctuary"), while the remainder of the TPA is heavily degraded by subsistence agriculture, collecting of firewood and timber. The only high-quality areas of habitat that remain outside Vilanculos Sanctuary are cemeteries, where local customs permit only limited collection of firewood (Massingue et al. 2021).

Vilanculos Sanctuary is a concession that was granted by the Mozambican government to a private consortium of developers in 2000 (Ashley & Wolmer 2003). The three stated core functions of the Sanctuary are conservation, community upliftment and eco-tourism development. To limit the population density of the area, there are limits on residential and tourism accommodation capacity and Vilanculos Sanctuary is currently below these thresholds (SBV 2017b). While there is inevitably some habitat disturbance through development, the limited number of visitors and emphasis on nature and conservation within the tourist experience minimise threats such as clearance and disturbance of habitats which are faced in tourist centres elsewhere in Mozambique.

In 2003 the area was granted private reserve status. Previously the area was farmed for subsistence agriculture, and habitats were degraded as a result (SBV 2017b). Alongside restricting agriculture, fishing and the extraction of other resources, conservation work at Vilanculos Sanctuary also includes habitat restoration activities such as control of bush encroachment, regulation of fire regime and reintroduction of herbivores (SBV 2017a). Control of problematic plant species, such as the parasitic Cassytha filiformis, is also undertaken within the reserve through selective eradication (Massingue et al. 2021).

There is a stark contrast between the vegetation cover within Vilanculos Sanctuary compared to neighbouring areas (Google Earth 2021). Outside the reserve boundary, the remaining area of the São Sebastião TPA continues to be degraded, with a reported 33% decrease in tree cover since 2000 (World Resources Institute 2021). Massingue et al. (2021) also observed some signs of continued wood collecting and extraction of fibres within Vilanculos Sanctuary boundary and conclude that there is still some dependence of local people on resources within this area, possibly because resources are scarcer in the degraded habitats elsewhere. While there have been many conservation and restoration successes within Vilanculos Sanctuary, a strategy across the entire São Sebastião TPA is desirable for balancing nature conservation while meeting needs of local people, namely the ability to produce sufficient food and access to fuel.

Some progress has already been made in economic development opportunities for local people, with the creation of jobs in tourism and support for healthcare, water security and education. A compensation scheme has also been established for lost crops or fishing opportunities due to conservation (SBV 2017a). While large investments have been made in local communities, with over $3.5 million of investment reported by 2017 (SBV 2017a), and conservation efforts are seeing successes, inevitably some have lost out on livelihood opportunities and object to the restrictions associated with the establishment of the Vilanculos Sanctuary (Ashley & Wolmer 2003; O'Connor 2006). It is of critical importance, therefore, that any further conservation initiatives within the TPA are done in collaboration with local communities.

This IPA falls within the wider Grande Bazaruto Key Biodiversity Area which spans São Sebastião Pennisula, the Bazaruto Archipelago and the coastal waters northwards to the Save estuary. Most of this KBA covers marine areas and is triggered by marine species. However, Jatropha subaequiloba (VU) is also a trigger for this KBA site, with the entirety of this species' distribution falling within this KBA (in terms of IPAs, this species is split between this site and Bazaruto Archipelago [MOZTIPA042]). In addition, this KBA contains the entire known global population of two reptile species Lygosoma lanceolatum (LC) and Scelotes insularis (LC). Both species have been recorded on São Sebastião within the dune thicket of this IPA (Jacobsen et al. 2010), and so protection of these habitats is crucial to conservation of these reptile taxa.

Bird species of conservation interest include Southern-banded snake eagle (Circaetus fasciolatus- NT) and Olive bee-eater (Merops superciliosus- LC). For the lattermost species, the north-west of Vilanculos Sanctuary hosts the second largest breeding occurrence in Africa (SBV 2017b). Inventorying of avian taxa by Vilanculos Sanctuary has so far recorded 300 species (SBV 2017a). This includes new records of avian taxa for Mozambique at this site, including Saunder's Tern (Sternula saundersi- LC) and Damara Tern (Sternula balaenarum- VU); the latter species breeds mostly in

Namibia and was effectively unknown from the east coast of Africa but over 100 individuals were observed within this IPA between 2019 and 2020 (C. Read pers. comm. 2020).

Site assessor(s)

Sophie Richards, Royal Botanic Gardens, Kew

Iain Darbyshire, Royal Botanic Gardens, Kew

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
Ecbolium hastatum Vollesen	A(i)	✓	✓	✓	–	–	Scarce
Jatropha subaequiloba Radcl.-Sm.	A(i)	✓	✓	✓	–	–	Scarce
Millettia ebenifera (Bertol.) J.E.Burrows & Lötter	A(i)	✓	✓	✓	–	–	Frequent
Elaeodendron fruti cosum N.Robson	A(i)	✓	✓	✓	–	–	Frequent

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

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Savanna - Moist Savanna	–	Major
Marine Coastal/Supratidal - Coastal Sand Dunes	–	Major
Artificial - Terrestrial - Arable Land	–	Major
Marine Intertidal - Salt Marshes (Emergent Grasses)	–	Minor
Marine Intertidal - Mangrove Submerged Roots	–	Minor

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	–	Major
Agriculture (arable)	–	Major

Threats

THREAT	SEVERITY	TIMING
Residential & commercial development - Tourism & recreation areas	Low	Ongoing - trend unknown
Agriculture & aquaculture - Annual & perennial non-timber crops - Small-holder farming	Medium	Ongoing - trend unknown
Biological resource use - Logging & wood harvesting	Low	Ongoing - trend unknown
Invasive & other problematic species, genes & diseases	Low	Ongoing - declining

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
São Sebastião Total Protection Area	Total Protection Area	protected/conservation area encompasses IPA	239
Santuario Bravio de Vilanculos	Wildlife Sanctuary	protected/conservation area overlaps with IPA	105

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Grande Bazaruto	Key Biodiversity Area	protected/conservation area encompasses IPA	239

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Protected Area management plan in place	Santuario Bravio de Vilanculos is undertaking an ongoing management plan aim at delivering conservation, community and development outcomes.	2003	–

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