Inhamitanga Forest

Floresta de Inhamitanga (Test version)

MOZTIPA034

Country: **Mozambique**
Administrative region: **Sofala (Province)**
Central co-ordinates: **-18.12590 N, 35.40260 E**
Area: **629km²**

Qualifying IPA criteria

A(i), C(iii)

IPA assessment rationale

Inhamitanga qualifies as an IPA under sub-criterion A(i), with ten Vulnerable species and one Endangered species recorded from this IPA meeting the A(i) threshold. Overall, there are ten endemic and range restricted species present at this site, however, as this total represents only 2% of endemic and range limited species and, as such, this site does not qualify as an IPA under criterion B at present. As much of this site has not been extensively inventoried, there may be more A(i) or B(ii) qualifying taxa found in the future.
An additional Vulnerable species, Khaya anthotheca, occurs within this IPA but does not meet the thresholds required to trigger sub-criterion A(i) due to its widespread distribution.
With an extensive and largely undisturbed area of Inhamitanga Sand Forest habitat, Inhamitanga also qualifies under IPA sub-criterion C(iii) and is the most important site both nationally and globally for this habitat type.

Site description

The Inhamitanga Important Plant Area is an area of forest and woodland that spans the border between the Cheringoma and Marromeu Districts of Sofala Province. The IPA covers an area of 622 km2, falling within the former Coutada 12 hunting concession. The northern boundary is 15 – 20 km south of the Zambezi River. To the west is the Catapú timber concession, a separate IPA [MOZTIPA033], while the southern boundary is just south of the Inhamitanga-Chupanga (R1002) road and the railway line running east from Inhamitanga village. To the east, the IPA is bounded by wetlands of the Zambezi Delta, including Lago Nharica, and Camacho village. East of this site (-18.124°, 35.612°), running south of the 215 road, is another area of high-quality Inhamitanga Sand Forest, as delineated by Lötter et al. (2021). Further investigation is recommended in this latter area as, if it proves to be of botanical significance, it may warrant inclusion in this IPA or delineation of a separate IPA.
Inhamitanga is dominated by the Cheringoma Forest-Woodland Mosaic, a highly restricted habitat type in Mozambique. It falls within the Zambezi River Delta Ramsar site and Important Bird Area, and the Gorongosa-Marromeu Key Biodiversity Area. The site has long been recognised for its biological importance, with the establishment of a forest reserve, Inhamitanga Forest Reserve (following the 213 road), over 60 years ago (Müller et al. 2005), while the forest and the entire of Coutada 12 is now managed by Gorongosa National Park (Parque Nacional da Gorongosa 2020).

Botanical significance

The Inhamitanga Forest is of high importance for the presence of a range of globally threatened species, with eleven recorded to date, including ten Vulnerable species and one Endangered species. This site is particularly important for Tarenna longipedicellata (VU) and Dorstenia zambesiaca (VU); both species are largely confined to the Cheringoma Plateau and the latter is restricted to a global range of only 50 km2. In addition, this IPA is one of only two locations from which Cephalophis lukei (EN) is known in Mozambique. One further Endangered species, Cola clavata, is endemic to Sofala and Zambezia Provinces and threatened by expansion of agriculture and

the burning of land associated with agriculture (Cheek & Lawrence 2019). Inhamitanga is a relatively secure area where threats from clearing of woodland are considerably less severe than in many neighbouring areas of Mozambique at present, with extensive areas of intact vegetation remaining (Darbyshire et al. 2019), and therefore it is an important site for the continued existence of these threatened species.
In addition to a number of threatened species occurring within this IPA, a query of the Flora of Mozambique database states that there have been 177 different plant species collected at this site (Hyde et al. 2020), and at least ten species are endemic to Mozambique. This includes the Near Threatened species Ochna angustata and one as yet undescribed species, Dicliptera sp. B of Flora Zambesiaca (Darbyshire et al. 2015). The latter has been recorded within Inhamitanga forest and is only known from the area between the villages of Inhamitanga and Lacérdonia, with much of the area between these two villages falling within this IPA.
The Inhamitanga Sand Forest that covers much of this IPA is of national importance, as this vegetation type is limited only to the Cheringoma Plateau. The IPA also falls within the wider Coastal Forests of East Africa biodiversity hotspot, so defined because of the combination of high biodiversity and high threat levels (Burgess et al. 2004). In particular, the forest community within this IPA is of note due to the unusual richness in woody plants, with a mixture of moist forest species and species more associated with drier habitats (Müller et al. 2005).

Habitat and geology

A survey of the Inhamitanga Forest Reserve within this IPA was carried out by Müller et al. (2005) and there has since been botanical collecting associated with the local TCT-Catapú Cheringoma Herbarium.
Inhamitanga Sand Forest is the dominant vegetation within this IPA. This forest type has a closed canopy and has variously been described as “dry deciduous forest” throughout (Lötter et al. 2021) to a mixture of “moist evergreen” and “dry deciduous” forest c. The forest within this IPA is a mosaic of different elements, although there is a long dry season and species composition is mostly deciduous, there are markedly evergreen components to this forest, for example the evergreen tree Celtis mildbraedii is common at this site (B. Wursten, pers. comm. 2020). The dry season occurs between May and October, with annual rainfall around 1,000 mm, while temperatures in the area peak at 21 – 36°C in November and drop to 15 – 26°C in July (Burrows et al. 2018; World Weather Online 2021).
The IPA has a broadly flat topography, and the geology varies between sands and clayey loams. It has been suggested that the spatial variation in clay content in the soils, resulting in varying moisture availability, may be partially responsible for the diversity of species at this site c, with more evergreen species found on soils with a higher clay content. In areas where soils retain more moisture, species such as Celtis mildbraedii and Drypetes gerrardii are common, while Khaya anthotheca (VU) occurs on the wettest patches of soil (Müller et al. 2005). In these areas, there is still a large contingent of deciduous species that dominate across all the forests in this area, including Millettia stuhlmannii and Terminalia (Pteleopsis) myrtifolia, while Afzelia quanzensis is common.
The Mozambican endemic Millettia mossambicensis (LC) is frequent within the shrub layer, while Monodora stenopetala (VU) also features. The shrub layer of this forest also varies in deciduous tendencies depending on moisture availability, with the semi-deciduous shrub Rinorea elliptica common in areas with higher moisture alongside lianas such as Tiliacora funifera and Landolphia kirkii c. What may be a defining character of Inhamitanga Sand Forest is the scarcity of herbaceous plants in the understory and epiphytes (B. Wursten, pers. comm. 2020). Groundcover is sparse with almost no grasses and, instead, leaf litter covers the substrate (Muller et al. 2005).
More open areas of woodland occur towards the eastern margin of the forest. This vegetation is dominated by similar tree species as the forest, including Millettia stuhlmannii and Afzelia quanzensis, with widely scattered scrubs and a dense grass layer of mostly Panicum species (Müller et al. 2005). Towards the south-west of the IPA and Inhamitanga village, there is around 50 km2 of degraded, open woodland with trees isolated by up to 100 m and some clusters of denser vegetation (Müller et al. 2005). It is likely that, before disturbance, the western-most section of woodland was formerly miombo, as suggested by the presence of occasional trees of Brachystegia spicifoirmis and the nearby miombo woodland in the south-eastern corner of the neighbouring Catapú concession (Coates Palgrave et al. 2007; Müller et al. 2005).
While this site falls within the Zambezi Delta Ramsar site, the wetlands are largely to the south and south-east of the site boundary.

Conservation issues

The Inhamitanga Forest Reserve was established over 50 years ago, covering only 18 km2 of this IPA, following the 213 road from Inhamitanga village. However, few people knew of its existence and little formal protection has been afforded to the site (Coates Palgrave et al. 2007). As a result, the south-western portion of the reserve and surrounding woodland have been heavily degraded through intense and frequent burning, with some trees isolated by up to 100 m (Müller et al. 2005). In neighbouring Catapú, there is an area of sensitive forest to the east of the concession that is reported to be fire-intolerant and so is protected within a firebreak (Coates Palgrave et al. 2007). There may, therefore, be similarities in ecology between the fire-intolerant vegetation within Catapú and the woodlands in the south-west of Inhamitanga which may explain the intense degradation in this part of the IPA.
Despite past disturbances from fire, there is low population pressure on the area as a whole, with anthropogenic activities mostly limited to Inhamitanga village, to the south-west corner, and agricultural land outside the north-west corner of the IPA. The forested areas within the centre of the reserve have been subjected to some logging while the Inhamitanga-Chupanga road, which runs through

the forest reserve in the south, may increase the risk of disturbance from fire, cyclones and extreme winds; however, the majority of the forest within the reserve is in good condition (Müller et al. 2005). It appears that much of the vegetation within the Inhamitanga IPA is largely undisturbed, as is suggested by satellite imagery from Google Earth and the general inaccessibility of much of the forest (Google Earth Pro 2020).

In 2017, Gorongosa National Park, in partnership with Entroposto, formally took on the former Coutada 12 hunting concession as a Gorongosa Project (Parque Nacional da Gorongosa 2020). These partners are undertaking ecological assessments, community engagement and analysis of tourism potential with a view to proposing to government that the site fall within Gorongosa National Park (Mozambique News Agency 2016). The entirety of this IPA falls within this project area and, although the focus appears to be upon protection of mammals that were once hunted in this area, the greater conservation attention here will likely provide greater security for the flora of this site.

Inhamitanga IPA also falls within the vast Gorongosa-Marromeu Key Biodiversity Area (KBA), with three trigger species for this KBA (Cordia stuhlmannii, Dorstenia zambesiaca and Tarenna longipedicellata) also recognised as priority species for this IPA.

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
Cordia stuhlmannii Gürke	A(i)	✓	✓	✓	–	–	Occasional
Cordia megiae J.E.Burrows	A(i)	✓	✓	✓	–	–	Scarce
Cola clavata Mast.	A(i)	✓	✓	✓	–	–	Frequent
Celosia pandurata Baker	A(i)	✓	✓	✓	–	–	Unknown
Dorstenia zambesiaca Hijman	A(i)	✓	✓	✓	–	–	Occasional
Tarenna longipedicellata (J.G.García) Bridson	A(i)	✓	✓	✓	–	–	Scarce
Pleioceras orientale Vollesen	A(i)	–	✓	✓	–	–	Unknown
Mildbraedia carpinifolia (Pax) Hutch.	A(i)	–	✓	✓	–	–	Common
Khaya anthotheca C.DC.	A(i)	–	–	–	–	✓	Unknown
Cephalophis lukei Vollesen	A(i)	✓	✓	✓	–	–	Unknown
Monodora stenopetala Oliv.	A(i)	✓	✓	✓	–	–	Unknown

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
Inhamitanga Sand Forest	C(iii)				350

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest	–	Major
Savanna - Moist Savanna	–	Major

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	100	Major

Threats

THREAT	SEVERITY	TIMING
Natural system modifications - Fire & fire suppression - Increase in fire frequency/intensity	Medium	Ongoing - trend unknown
Biological resource use - Logging & wood harvesting - Intentional use: subsistence/small scale (species being assessed is the target) [harvest]	Low	Ongoing - trend unknown

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Inhamitanga	Forest Reserve (conservation)	IPA encompasses protected/conservation area	18

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Zambezi Delta	Ramsar	protected/conservation area encompasses IPA	604
Zambezi Delta	Important Bird Area	protected/conservation area encompasses IPA	604
Gorongosa-Marromeu	Key Biodiversity Area	protected/conservation area encompasses IPA	604

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
No management plan in place	Management Plan is in development by Gorongosa National Park and Entreposto.	–	–

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