Mulimone Forest

Floresta de Mulimone (Test version)

MOZTIPA031

Country: **Mozambique**
Administrative region: **Nampula (Province)**
Central co-ordinates: **-16.49840 N, 39.67120 E**
Area: **3.24km²**

Qualifying IPA criteria

A(i), C(iii)

IPA assessment rationale

The Mulimone Forest qualifies as an Important Plant Area under criterion A(i) in view of its important populations of Icuria dunensis (EN), Brachystegia oblonga (CR) and Scorodophloeus torrei (EN). This site also qualifies under criterion C(iii) as the Icuria coastal dry forest is a nationally threatened and range-restricted habitat, and the Mulimone IPA is estimated to contain approximately 10% of the total area of remaining Icuria forest and is one of the best five sites globally.

Site description

Mulimone Forest is situated in coastal Larde District of Nampula Province, approximately 55 km ENE of the town of Moma and 40 km SW of the town of Angoche. This small site of 3.24 km2 is situated immediately adjacent to the Namalope heavy mineral sand operation of the Moma Titanium Minerals Mine owned by Kenmare Resources plc, one of the world's largest titanium mines. The IPA encompasses a patch of coastal dry forest of the proposed Rovuma Centre of Plant Endemism (Burrows & Timberlake 2011; Darbyshire et al. 2019a). It was identified as of biodiversity importance during the Environmental Impact Assessment ahead of commercial exploitation of the Namalope deposit, and has subsequently been protected from development by Kenmare.

Botanical significance

This site contains a globally important stand of Icuria-dominated coastal dry forest. Icuria dunensis ('icuri' or 'ncuri') is a leguminous tree endemic to Mozambique which forms mono-dominant or co-dominant stands in small and isolated patches along a ca. 360 km stretch of the Mozambique coastline and is assessed as globally Endangered (Darbyshire et al. 2019b). The area of Icuria-dominated forest at Mulimone is approximately 2.38 km2. It is one of only five sites identified globally as being of high importance for Icuria forest. A recent vegetation survey of this site (J. Timóteo, unpubl. data) has also revealed the presence of two further globally threatened tree species endemic to Mozambique: Brachystegia oblonga (EN) and Scorodophloeus torrei (EN) both of which are locally frequent here. This site is of high importance for both these species given that most of the few other known sites are highly threatened. Brachystegia oblonga, in particular, is otherwise known only from highly disturbed woodland and dry forest remnants at Moma and at Gobene near Bajone, where it is severely threatened (Alves et al. 2014).
The understorey of the Icuria forest has previously been reported to support a population of Warneckea sessilicarpa (Alves & Sousa 2007), but the recent surveys have not found that species here (C. de Sousa & J. Timóteo, pers. obs. 2021) and so that record requires confirmation before being included in the IPA assessment. This species is noted to be locally common in Icuria stands at nearby Pilivili (A. Massingue, pers. comm. 2021).

Habitat and geology

In the areas of closed forest, Icuria dunensis forms dominant

stands, with Haplocoelum foliolosum subsp. mombasense, Brachystegia oblonga and Scorodophloeus torrei also being frequent, and with occasional Hymenaea verrucosa amongst other species. Mature Icuria trees up to 30 m tall are recorded and substantial regeneration is observed in both Icuria and Brachystegia oblonga (Alves & Sousa 2007; J. Timóteo, unpubl. data). In areas of more open, disturbed forest, Icuria and Haplocoeleum are still present but with other species including Mimusops obtusifolia and Olax dissitiflora with Strynchnos sp. abundant (J. Timóteo, unpubl. data).
As elsewhere within its range, the Icuria forests are associated with low-lying ancient sand-dune deposits; at Mulimone the forest is on a slightly raised area of white sands. These dunes are rich in heavy minerals including high-grade ilmenite (titanium ore) (Kenmare Resources 2018). A layer of ca. 5 cm with leaf-litter covers the soil surface which improves soil humidity and decreases soil temperature allowing for forest regeneration. Immediately beyond the forest boundary, most of the vegetation has been substantially transformed, particularly to the west where the extensive mining operations are surrounded by infrastructure and settlements.
The climate at this site is highly seasonal, with ca. 90% of the rainfall occurring in December to March; the average annual precipitation is approximately 1,050 mm, but ca. 1,521 mm evapotranspiration (Kassam et al. 1981).

Conservation issues

Kenmare Resources acquired the Congolone heavy mineral sand deposit concession in the late 1980s, and began construction on the Moma Titanium Mineral Mine on the Namalope deposit in 2004, with production from 2007 until the present day. Even prior to the development of the Namalope operation, the Icuria forest patch in Mulimone was small and clearly demarcated from the surrounding vegetation. Historical satellite imagery available on Google Earth shows that the forest extent in late 1984 was approximately 2.42 km2. A portion of the northwest portion of the forest was destroyed in the early 1990s and this patch (“o buraco”) expanded through that decade, destroying approximately 0.17 km2 of forest. Some natural regeneration can now be observed in this area, although some mashambas of cassava have been established there. Since the survey of this forest during the EIA of the Namalope deposit, and the formal description of Icuria dunensis in the late 1990s (Wieringa 1999), this site has been protected by Kenmare as part of their programme of environmental and social responsibilities at the Moma Mine site. However, the forest is increasingly threatened by agricultural encroachment from local communities, with areas in the south of the forest in particular having been opened up using fire to clear the land for cassava and cowpea cultivation. Although some of the larger trees are left standing, they are often killed by the fires. This encroachment has accelerated since 2017. Other threats include pit-sawing for timber, cutting of poles and the stripping of Icuria bark for use in boat-making (C. Sousa, pers. obs. 2018). It is estimated that ca. 30% of Mulimone Forest has been lost through these activities within the recent past (J. Timóteo et al., unpubl. data). If protected against uncontrolled fires and agriculture encroachment, the forest may recover; enrichment planting in gaps may accelerate this natural regeneration process.
Approximately half of the area of this IPA falls within the extensive (>8,000 km2) Primeiras & Segundas Environmental Protection Area (APAIPS), gazetted in 2012, which extends along the coast south to Pebane and north to Angoche. The Icuria forests of the area between Moma and Angoche were highlighted as of high importance in the preliminary assessment of the coastal vegetation within the proposed reserve (Alves & Sousa 2007), but the northern part of the Mulimone Forest falls outside of the boundary. This whole area has also recently been recognised as a Key Biodiversity Area (WCS et al. 2021).

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
Icuria dunensis Wieringa	A(i)	✓	✓	✓	–	–	Abundant
Brachystegia oblonga Sim	A(i)	✓	✓	✓	–	–	Frequent
Scorodophloeus torrei Lock	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
Rovuma Icuria Coastal Dry Forest	C(iii)	–			2.38

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Dry Forest	70	Major
Marine Coastal/Supratidal - Coastal Sand Dunes	–	Minor
Artificial - Terrestrial - Arable Land	–	Minor
Artificial - Terrestrial - Subtropical/Tropical Heavily Degraded Former Forest	–	Minor

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	–	Major
Harvesting of wild resources	–	Minor
Agriculture (arable)	–	Minor

Threats

THREAT	SEVERITY	TIMING
Residential & commercial development - Commercial & industrial areas	High	Ongoing - stable
Residential & commercial development - Housing & urban areas	Medium	Ongoing - stable
Energy production & mining - Mining & quarrying	High	Ongoing - stable

THREAT	SEVERITY	TIMING
Biological resource use - Gathering terrestrial plants	Medium	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Small-holder farming	High	Ongoing - increasing

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Primeiras & Segundas Environmental Protection Area (APAIPS)	Environmental Protection Area	protected/conservation area overlaps with IPA	–

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Primeiras & Segundas Environmental Protection Area (APAIPS)	Key Biodiversity Area	protected/conservation area overlaps with IPA	–
Primeiras & Segundas Environmental Protection Area (APAIPS)	Important Bird Area	protected/conservation area overlaps with IPA	–

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Site management plan in place	Kenmare Resources plc, management plan and environmental policy for Moma Titanium Mineral Mine	–	–

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