

# Moebase

MOZTIPA032



Country: **Mozambique**

Administrative region: **Zambézia (Province)**

Central co-ordinates: **-17.04510 N, 38.75080 E**

Area: **71km<sup>2</sup>**

## Qualifying IPA criteria

A(i), C(iii)

## IPA assessment rationale

Moebase qualifies as an Important Plant Area under criterion A(i) as it is the only known extant site for *Triceratella drummondii* (CR), and holds a globally important population of *Icuria dunensis* (EN). It is also deemed to contain over 5% of the global population of *Warneckea sessilicarpa* (CR) which is known from only four sites, one of which may no longer be extant - Moebase is likely to be a critical site for the survival of this species. It also qualifies under criterion C(iii) as the *Icuria*-dominated coastal dry forest of the Rovuma Centre of Endemism is a nationally threatened and range-restricted habitat, and the Moebase IPA contains the largest known example of this forest type.

## Site description

The Moebase IPA is located in Pebane District of Zambézia Province. It lies immediately south of the coastal village of Moebase, ca. 215 km ENE of the seaport of Quelimane. The site falls within the southern extension of the proposed Rovuma Centre of Plant Endemism [CoE] (Burrows & Timberlake 2011; Darbyshire et al. 2019a) and comprises a small area of dune systems with coastal dry forest patches and interdunal slacks on heavy mineral-rich coastal sands.

## Botanical significance

This site is of high botanical importance for the presence of three rare and threatened species of the Rovuma CoE. Firstly, it is the southern-most locality for the globally Endangered endemic tree *Icuria dunensis* ('icuri' or 'ncuri'). The Moebase IPA holds the largest confirmed patches of *Icuria*-dominated forest, totalling ca. 9 km<sup>2</sup>, and it is one of only three *Icuria* forests assessed to be in "very good condition" using a Forest Ecological Condition Index (A. Massingue, unpubl. data). This is also the first site at which *Icuria* was recognised as a distinct forest tree during surveys in August 1995 (Lubke et al. 2018). Secondly, the seasonal wetlands in the dune slacks at Moebase hold the only known extant population of the diminutive wetland herb *Triceratella drummondii*, which is assessed as Critically Endangered (S. Richards, in press). This species was previously known also from the Gwanda area of Zimbabwe, over 1,000 km inland from Moebase, but it has not been observed at that locality since the 1960s despite three searches undertaken between 1996 and 2001 to no avail (Barker et al. 2001). Around twenty individuals were observed within a single population was observed during an Environmental Impact Assessment at Moebase in 1997 (Barker et al. 2001). Finally, evidence has recently come to light that the Critically Endangered endemic shrub *Warneckea sessilicarpa* occurs within the *Icuria* forests - this is derived from a specimen (Boana #154) collected in 1997 which had previously been misidentified as *W. sousae* but is confirmed to be *W. sessilicarpa* by the global expert on this group, R.D. Stone (pers. comm.). Further discoveries of rare species are likely to be made with further exploration of these forest patches.

## Habitat and geology

The *Icuria* forest is highly impressive here, forming dense, monodominant dry forest stands with many mature individuals, some reaching up to 40 m in height (A. Massingue, pers. obs.), and with

substantial recruitment evident. These forests occur on low-lying, seasonally damp, ancient sand dune systems behind the foredunes, between 1 km and 4 km from the shoreline (Lubke et al. 2018). The sands of these dunes are rich in heavy minerals including ilmenite (titanium ore), which may be of interest for mining (URS/Scott Wilson 2011). Icuria patches are surrounded by open dune scrub and woodland with typical species including *Garcinia livingstonei* and *Strychnos spinosa* (Barker et al. 2001). The interdunal slacks have a high water table and include areas of free-standing water in the wet season. Dominant species recorded in these wetlands include *Eragrostis ciliaris*, *Xyris anceps* and *Utricularia* sp.; *Triceratella drummondii* was found in these slacks growing on open wet sands together with the *Digitaria eriantha* and *Bulbostylis hispidula* (Barker et al. 2001).

Extensive areas of miombo woodland were previously found on the raised, freely drained dune deposits to the east of the village and north of the Icuria patches, but this woodland has been seriously depleted in recent decades as the village and associated subsistence agriculture has expanded - these miombo woodlands are excluded from the IPA delineation. To the west, the Moebase Estuary has extensive stands of mangroves, and there are also mangroves along the eastern boundary.

A habitat survey was conducted as part of an initial Environmental Impact Assessment conducted on the Moebase mining exploration concession (see Conservation Issues) but a full species inventory would be desirable and may well uncover further rare and threatened species.

The climate at Moebase is highly seasonal, with rainfall peaking in December to March; the average annual precipitation is approximately 1350 mm.

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## Conservation issues

This IPA falls within the extensive (>8,000 km<sup>2</sup>) Primeiras & Segundas Environmental Protection Area (APAIPS) which extends along the coast south to Pebane and north to Angoche. However, the emphasis here is on offshore and marine protection, and there is little evidence of conservation action at Moebase at present.

The surrounding area is subject to high population pressure from the expanding settlement of Moebase and encroachment of subsistence agriculture into natural habitats. A previously large area of miombo woodland on the eastern edge of the village has been largely destroyed over the past 30 – 40 years and it is feared that, now that this wood resource has been largely exhausted, the local population may target the Icuria patches more frequently (Darbyshire et al. 2019b). However, at present the Icuria patches are largely intact. The primary threats currently are clearance for access routes to the beach, uncontrolled burning, and the stripping of Icuria bark for making ropes (A. Massingue, pers. obs.). Areas of fixed dunes in both the west and east of the IPA have been converted to mashambas.

A significant future threat to this IPA is that it falls within a mining concession (License 4623C, Moebase and Naburi deposits, currently owned by Pathfinder Minerals plc), and has commercially viable

concentrations of heavy minerals (URS/Scott Wilson 2011). There is continued interest in the exploitation of these deposits. The Moebase IPA overlaps with the Moebase Region Important Bird Area (BirdLife International 2020) which covers the Moebase Estuary and surrounding coastal habitats. The area is also of interest for other faunal groups including reptiles. This site is included within the extensive APAIPS Key Biodiversity Area. As Moebase is the only known extant locality for the Critically Endangered species, *Triceratella drummondii*, it would also qualify as an Alliance for Zero Extinction site.

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## 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>Icuria dunensis</i> <i>Wieringa</i>	A(i)	✓	✓	✓	—	—	Abundant
<i>Warneckea sessilicarpa</i> (A.Fern. & R.Fern.) <i>Jacq.-Fel.</i>	A(i)	✓	✓	✓	—	—	Unknown
<i>Triceratella drummondii</i> <i>Brenan</i>	A(i)	✓	✓	✓	✓	—	Scarce

## 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)	—	—	—	8.95

## General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Dry Forest	—	Major
Shrubland - Subtropical/Tropical Dry Shrubland	—	Major
Marine Coastal/Supratidal - Coastal Sand Dunes	—	Major
Savanna - Moist Savanna	—	Minor
Artificial - Terrestrial - Arable Land	—	Minor

## Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Tourism / Recreation	—	Major
Harvesting of wild resources	—	Unknown
Agriculture (arable)	—	Minor

## Threats

THREAT	SEVERITY	TIMING
Biological resource use - Gathering terrestrial plants	Medium	Ongoing - increasing
Energy production & mining - Mining & quarrying	Unknown	Future - inferred threat
Agriculture & aquaculture - Annual & perennial non-timber crops - Small-holder farming	Medium	Ongoing - trend unknown

## Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Primeiras & Segundas	Environmental Protection Area	protected/conservation area encompasses IPA	—

## Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Moebase Region	Important Bird Area	protected/conservation area overlaps with IPA	—
APAIPS	Key Biodiversity Area	protected/conservation area encompasses IPA	—

## Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
No management plan in place		—	—

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