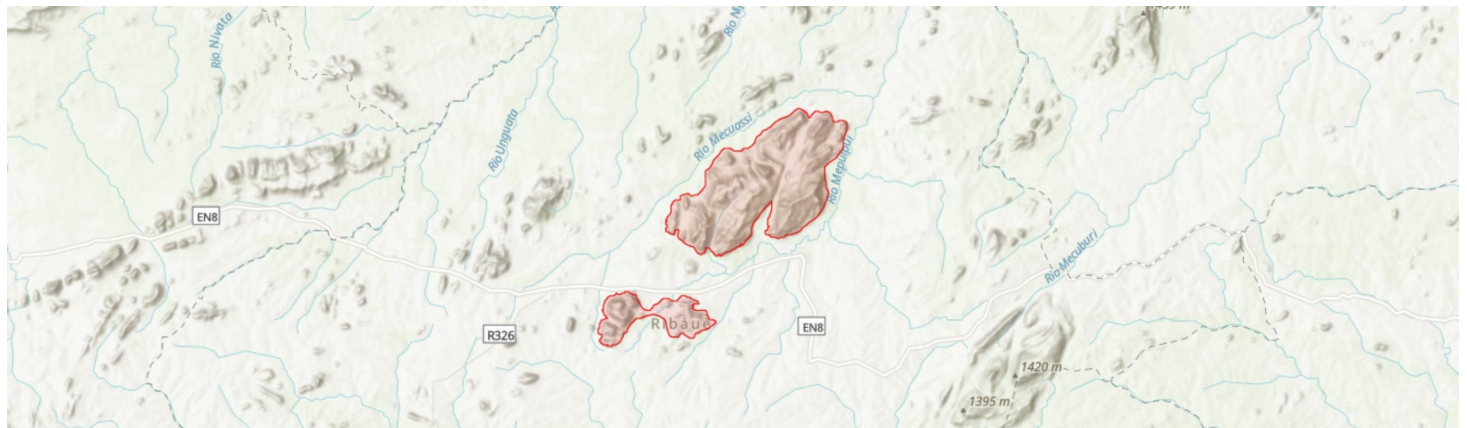


Ribáuè-M'paluwe

MOZTIPA001



Country: **Mozambique**

Administrative region: **Nampula (Province)**

Central co-ordinates: **-14.87444 N, 38.27750 E**

Area: **221km²**

Qualifying IPA criteria

A(i), A(iii), B(ii), C(iii)

IPA assessment rationale

The Ribáuè-M'paluwe massif qualifies as an IPA under all three criteria. Under Criterion A(i), the site supports 15 globally threatened taxa, five of which this site contains the entire known global population. Under Criterion A(iii) the site supports one highly restricted endemic taxon, *Baptorhachis foliacea* which is currently considered to be Data Deficient. Overall, the site supports 22 plant taxa of high conservation importance, in excess of the threshold of 3% under sub-criterion B(ii). Under Criterion C(iii), the site includes a significant area of Medium Altitude Moist Forest, one of Mozambique's national priority habitats recognised during the first Mozambique TIPAs workshop in Maputo in January 2018.

Site description

The Ribáuè-M'paluwe IPA comprises a series of granite inselbergs in Nampula Province of northern Mozambique near the town of Ribáuè in the district of the same name. The main area of the IPA is made up of the Serra de Ribáuè to the west and the Serra de M'paluwe to the east, separated by a wide valley. Outlying Serra Nametere and Mount Matharia to the south of the Ribáuè-Mutáli road are also included within the site. The inselbergs rise from a relatively flat landscape at ca. 500 – 600 m altitude up to 1,675 m at the peak of Monte M'paluwe. This massif forms a part of the belt of granitic inselbergs and massifs running NE-SW across southern Malawi and Nampula and Zambezia provinces of Mozambique, which together comprise the proposed Mulanje-Namuli-Ribáuè Centre of Plant Endemism [CoE] (Darbyshire et al. 2019a).

Botanical significance

The Ribáuè-M'paluwe massif is one of Mozambique's most important sites for plant diversity and endemism. The site supports significant areas of granite outcrop flora and medium-altitude moist forest, both of which are restricted habitat types with a high species diversity. Five plant species are only found at this site: *Aloe rulkensii* (CR), *Baptorhachis foliacea* (DD), *Coleus cucullatus* (VU), *Dombeya leachii* (EN) and *Polysphaeria ribauensis* (EN). *Aloe rulkensii* was only recently discovered, growing on shaded, vertical, granite cliff faces on the edges of moist forest in close association with the spectacular orange-red-flowered herb *Streptocarpus myoporoides*

(EN), which is otherwise known only from nearby Mount Nállume (McCoy & Baptista 2016); both of these species are scarce at Ribáuè. *Baptochachis foliacea*, the only member of an endemic genus to Mozambique (Darbyshire et al. 2019a), is a small annual grass from rocky hillslopes, known only from a historical collection from Serra Nametere (M.R. Carvalho #508). Attempts to refind this species in October 2017 were unsuccessful, but a visit to that site at the end of the rainy season may be more productive. *Coleus cucullatus*, a succulent shrub, is locally common on the open rock slopes of the massif, whilst the large-flowered shrub *Dombeya leachii* is occasional in scrub vegetation along forest margins and riverine thickets (J. Osborne et al., pers. obs.). *Polysphaeria ribauensis* is an understorey forest shrub which is locally frequent at Ribáuè but was only very recently described (Darbyshire et al. 2019b).

Other scarce and threatened species include the forest margin shrub or treelet *Vepris macedoi* (EN), again known only found on the Ribáuè-M'paluwe massif and nearby Mount Nállume, and the locally abundant succulent *Aloe ribauensis* (EN) which is otherwise known only from the southern end of the Mueda Plateau (McCoy et al. 2014). Overall, the site supports 15 national endemic plant taxa, 12 near-endemics and 15 globally threatened taxa on the IUCN Red List. The moist forests are important for nationally rare species, such as *Calycosiphonia spathicalyx*, *Trichoscypha ulugurensis* and *Olea* aff. *madagascariensis*, the latter at its only known site in Mozambique (I. Darbyshire, pers. obs.).

In addition, several taxa that are potentially new to science have been recorded in the Ribáuè-M'paluwe IPA, including one potential new genus of Asparagaceae (T. Rulkens, pers. comm.), and the Critically Endangered shrub *Rytigynia* sp. C of Flora Zambesiaca (Bridson 1998).

Habitat and geology

Steeply sloping granitic rock outcrops, mid-altitude moist forest and miombo woodland are the dominant natural habitat types at the Ribáuè-M'paluwe massif. The site also includes smaller areas of gallery forest, marsh, seasonal stream gullies, seepage on granite rock, and shaded granite cliffs. The large, domed peaks comprise Pre-Cambrian granite-syenites of the Nampula group, dating to ca. 1,100 – 850 mya (Instituto Nacional de Geolgia 1987).

Using remote sensing analyses, Montfort (2019) recorded 17.08 km² of extant moist evergreen forest, of which the majority (11.85 km²) is on Serra de Ribáuè, with a more limited extent (4.73 km²) on Serra de M'paluwe. The forest composition changes with elevation and soil depth and moisture availability. The lower elevation forests are dominated by *Newtonia buchananii*, with *Maranthes goetzeniana* also common, with a canopy up to 25 m in height and with emergents to 30 m. Frequent understorey trees and shrubs include a range of Rubiaceae species, together with e.g. *Drypetes* spp., *Garcinia* spp., *Filicium decipiens*, *Funtumia africana*, *Olex* aff. *madagascariensis* and *Rinorea ferruginea*. Frequent lianas, particularly at forest margins and along riverine fringes, include *Agelaea pentagyna* and *Millettia lasiantha*. Dominant understorey

herbs include *Mellera lobulata* and *Pseuderanthemum subviscosum*. Higher up on the granite slopes over thin soils, shorter and denser forest assemblages occur. In some areas, these are dominated by *Syzygium cordatum*, whilst in others there is a more mixed assemblage, with *Garcinia kingaensis* noted as abundant, along with e.g. *Aphloia theiformis*, *Gambeya gorungosana*, *Pyrostria chapmanii* and *Synsepalum muelleri*. Some riverine fringing forests persist at lower elevations; Müller et al. (2005) noted the presence of *Breonadia salicina*, *Milicia excelsa* and *Syzygium owariense* amongst other species in this habitat.

The granite rock outcrops have a high diversity of micro-habitats according to the slope, aspect, soil depth and moisture availability. These outcrops support a diverse flora of herbs, shrubs, geophytes and succulents including abundant *Aloe ribauensis*, *Aloe chabaudii*, *Euphorbia mlanjeana*, *Xerophyta* spp. including the range-restricted *X. pseudopinifolia* and the cycad *Encephalartos turneri*. *Coleochloa setifera* provides the dominant cover and there are also areas of bare granite rock. In areas of seepage over rocks, a rich herb community develops, with abundant *Exacum zombense* and other typical seepage plants such as *Drosera*, *Utricularia* and *Xyris* spp. Miombo woodland is extensive at lower elevations, although much has now been removed. Dominant species include *Brachystegia spiciformis*, *Uapaca nitida* and *Uapaca kirkiana*, with *Pterocarpus angolensis* and *Stereospermum kunthianum* also frequent; the suffruticose perennial *Cryptosepalum maraviense* can be conspicuous in the ground layer. Müller et al. (2005) note also the presence of stands of the bamboo *Oytenanthera abyssinica*. Large areas of the site are now given over to subsistence agriculture or are in various stages of fallow and degraded former forest; the invasive shrub *Vernonanthura polyanthes* can be abundant in such areas at altitudes below ca. 1,200 m. Montfort (2019) recorded ca. 70% of the land cover on the two main mountains of the massif to be given over to agriculture, fallow or secondary vegetation.

Conservation issues

There are two Forest Reserves within the IPA, the Ribáuè Forest Reserve and the M'paluwe Forest Reserve. The reserves were established in 1957 with the objectives to protect the catchment area and to study the restricted moist forest and gallery forest. Currently, the reserves are not being managed for their biodiversity and there is no control of agricultural expansion within the reserve boundaries.

Expansion of slash and burn agriculture on the slopes of the Ribáuè-M'paluwe massif is a serious threat to the forest and woodland habitats. The main crops grown are maize as a cash and subsistence foodcrop, and tomatoes as a cashcrop (Nitidae, pers. comm. 2021). Fire is used to clear forest and woodland and also spreads uncontrolled into the adjacent granite rock vegetation, causing significant damage. Where forest and woodland has been cleared, unsustainable agricultural practices lead to rapid soil erosion driving further forest clearance for access to fertile forest soil. In addition, the invasive South American shrub *Vernonanthura polyanthes* forms dense stands on fallow land, inhibiting forest and

woodland regeneration and likely outcompeting forest margin species such as *Dombeya leachii*.

Using satellite imagery and analyses, Montfort (2020) estimated that 37% of forest and miombo on Serra de Ribáuè and 47% on Serra de M'paluwe has been lost during the period 2000 – 2020 and that the rate of deforestation is accelerating. Unless interventions are taken, she estimates that the forest resources will be exhausted within the next 35 years. In response to this severe threat, Nitidae and Legado have initiated a programme of community engagement in more sustainable agricultural practices and diversified livelihood options in order to balance community needs with biodiversity conservation. The northern portion of the IPA has recently been designated as the Monte Ribáuè-Mphaluwe Key Biodiversity Area (KBA), on the basis of both its flora and its fauna, the latter including the endemic Ribáuè Mongrel Frog (*Nothophryne ribauensis*, EN). The site would also qualify as an Alliance for Zero Extinction (AZE) site. The IPA is larger in extent than the KBA in order to accommodate the only known site for *Baptorhachis foliacea* at Serra Nametere.

Site assessor(s)

Jo Osborne, Royal Botanic Gardens, Kew

Iain Darbyshire, Royal Botanic Gardens, Kew

Hermenegildo Matimele, Instituto de Investigação Agrária de Moçambique

Camila de Sousa, Instituto de Investigação Agrária de Moçambique

Tereza Alves, Instituto de Investigação Agrária de Moçambique

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>Streptocarpus myoporoides</i> Hilliard & B.L.Burtt	A(i)	✓	✓	✓	–	–	Scarce
<i>Vepris macedoi</i> (Exell & Mendonça) Mziray	A(i)	✓	✓	✓	–	–	Unknown
<i>Baptorhachis foliacea</i> (Clayton) Clayton	A(iii)	✓	✓	✓	✓	–	Unknown
<i>Aloe ribauensis</i> T.A.McCoy, Rulkens & O.J.Baptista	A(i)	✓	✓	✓	–	–	Common
<i>Memecylon nubigenum</i> R.D.Stone & I.G.Mona	A(i)	✓	✓	✓	–	–	Scarce
<i>Cynanchum oresbium</i> (Bruyns) Goyder	A(i)	✓	✓	✓	–	–	Scarce
<i>Stomatostemma pendulina</i> Venter & D.V.Field	A(i)	✓	✓	✓	–	–	Scarce
<i>Aloe rulkensii</i> T.A.McCoy & O.J.Baptista	A(i)	✓	✓	✓	✓	–	Scarce
<i>Coleus cucullatus</i> (A.J.Paton) A.J.Paton	A(i)	✓	✓	✓	✓	–	Common
<i>Dombeya leachii</i> Wild	A(i)	✓	✓	✓	✓	–	Occasional
<i>Polysphaeria ribauensis</i> I.Darbysh. & C.Langa	A(i)	✓	✓	✓	✓	–	Occasional
<i>Cissus aristolochiifolia</i> Planch.	A(i)	✓	✓	✓	–	–	Unknown
<i>Pyrostria chapmanii</i> Bridson	A(i)	✓	✓	✓	–	–	Occasional
<i>Strophanthus hypoleucus</i> Stapf	A(i)	✓	✓	✓	–	–	Frequent
<i>Rytigynia</i> sp. C of F.Z.	A(i)	✓	✓	✓	✓	–	Unknown

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>Plectranthus mandalensis</i> Baker	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
Medium Altitude Moist Forest 900-1400 m	C(iii)	–	–		15.5

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Moist Montane Forest	–	Major
Savanna - Moist Savanna	–	Major
Rocky Areas - Rocky Areas [e.g. inland cliffs, mountain peaks]	–	Major
Wetlands (inland) - Bogs, Marshes, Swamps, Fens, Peatlands [generally over 8 ha]	–	Minor
Artificial - Terrestrial - Subtropical/Tropical Heavily Degraded Former Forest	–	Major
Introduced Vegetation	–	Major
Artificial - Terrestrial - Arable Land	–	Major

Land use types

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

Threats

THREAT	SEVERITY	TIMING
Agriculture & aquaculture - Annual & perennial non-timber crops - Small-holder farming	High	Ongoing - increasing
Natural system modifications - Fire & fire suppression - Increase in fire frequency/intensity	High	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	High	Ongoing - increasing
Invasive & other problematic species, genes & diseases - Invasive non-native/alien species/diseases	High	Ongoing - increasing

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Ribáuè Forest Reserve	Forest Reserve (conservation)	IPA encompasses protected/conservation area	—
M'paluwe Forest Reserve	Forest Reserve (conservation)	IPA encompasses protected/conservation area	—

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Monte Ribauè-Mphaluwe	Key Biodiversity Area	IPA encompasses protected/conservation area	—

Management type

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