

Licuati Forest

Floresta de Licuáti (Test version)

MOZTIPA009



Country: **Mozambique**

Administrative region: **Maputo (Province)**

Central co-ordinates: **-26.46680 N, 32.46030 E**

Area: **470km²**

Qualifying IPA criteria

A(i), C(iii)

IPA assessment rationale

Licuáti qualifies as an IPA under criteria A and C. The Licuáti Thicket is unique and is also home to plant species of conservation concern including threatened, rare and range restricted species that trigger criterion A(i): *Empogona maputensis* (EN), *Warneckea parvifolia* (EN), *Xylopia torrei* (EN), *Sclerochiton apiculatus* (VU), *Acridocarpus natalitius* var. *linearifolius* (VU), *Polygala francisci* (VU), *Psychotria amboniana* subsp. *mosambicensis* (VU), *Rytigynia celastroides* var. *australis* (VU), *Tephrosia forbesii* subsp. *forbesii* (VU) and *Warburgia salutaris* (EN). Licuáti also qualifies under criterion C(iii) as Licuáti Thickets are a range restricted and nationally threatened habitat that does not occur elsewhere in the country.

Site description

Licuáti Forest, which includes the Licuáti Forest Reserve, is situated in Matutuine District of Maputo Province in southern Mozambique. Located at approximately (-26.47°, 32.46°) with altitude ranging between 30 and 75 m, this IPA has a total extent of around 470 km². The Lebombo Mountains and the Eswatini border lie about 40 km to the west, the Maputo Special Reserve on the Indian Ocean coast is 30 km to the east and Maputo city is about 50 km to the north. The northern boundary is formed by the Porto Henrique-Bela Vista Road. This IPA contains one seasonal spring, Puchene Esculo, that flows into the Tembe River, one of the most important rivers in the south of Maputo Province.

"Licuáti" denotes an extremely thick and impenetrable bush in Ronga, the local language (Izidine et al. 2009). In biological terms, the Licuáti Forest lies within the core zone of the Maputaland Centre of Plant Endemism (CoE) which is home to a high number of endemic and near-endemic plant species (van Wyk 1996).

Botanical significance

The Licuáti IPA forms a part of the core zone of the Maputaland CoE. While the CoE as a whole is home to a large number of endemic and near-endemic plants, this IPA is of particular significance, with 32 Maputaland (excluding the Lebombos sub-centre) endemics and 2500 plant taxa in total (van Wyk 1996). Darbyshire et al. (2019a) indicate that 13 of these are restricted to the Mozambique section of this CoE.

While the Licuáti IPA is of particular botanical significance owing to its endemic taxa (Matimele 2016), it is also the best and largest remaining extent of a unique vegetation type - Licuáti Thicket.

Examples of endemic and threatened taxa within this habitat include *Xylopiya torrei* (EN), *Empogona maputensis* (EN), *Warneckea parvifolia* (EN), *Sclerochiton apiculatus* (VU), *Acridocarpus natalitius* var. *linearifolius* (VU), *Polygala francisci* (VU) and *Psychotria amboniana* subsp. *mosambicensis* (VU). Overall, these species are threatened due to habitat loss. In addition, *Acridocarpus natalitius* var. *linearifolius* is harvested and traded for medicinal use in Maputo in Mozambique, and Durban and Johannesburg in South Africa.

Additional examples of Maputaland (in the broad sense) endemic plant species recorded in the Licuáti IPA include *Psydrax fragrantissima* (NT), *Encephalartos ferox* (NT), *Dicerocaryum forbesii* (LC), *Diospyros inhacaensis* (LC), *Pavetta vanwykiana* (LC), *Vangueria monteiroi* (LC) and *Zanthoxylum delagoense* (LC).

Alongside the threatened taxa listed above, these species are mostly confined to the Licuáti thicket vegetation type throughout their known range in both Mozambique and just over the border in KwaZulu-Natal Province, South Africa.

Species of economic importance found in the Licuáti IPA include *Afzelia quanzensis* for high class timber; *Dialium schlechteri* (LC), *Garcinia livingstonei* and *Vangueria monteiroi* (LC) for edible fruits; *Acridocarpus natalitius* var. *linearifolius* (VU), *Warburgia salutaris* (EN), *Dicerocaryum forbesii* (LC), *Bridelia cathartica* (LC), *Securidaca longipedunculata*, *Erythrophleum lasianthum* (NT), *Brachylaena huillensis* (NT) and *Xylothecca kraussiana* (LC) for medicines.

Although it is also threatened by habitat loss, the biggest threat to *Warburgia salutaris* is human exploitation as it is harvested for its popular medicinal uses (Dludlu et al. 2017; Senkoro et al. 2019, 2020).

Habitat and geology

The Licuáti IPA area is a mixture of tree savanna and woodland, sand forests, and patches of grassland (Myre 1971; Matimele & Timberlake 2020). The IPA is dominated by Licuáti thicket, also known as short sand forest in South Africa (du Randt 2018), which is mainly dense woody vegetation from 4 to 6 m tall. The characteristic species of the Licuáti thicket include *Warneckea parvifolia*, *Psydrax fragrantissima*, *Sclerochiton apiculatus*, *Croton pseudopulchellus*, *Cola greenwayi*, *Brachylaena huillense*, *Hymenocardia ulmoides*, *Pteleopsis myrtifolia* and *Monodora junodii*. These, mostly evergreen thickets, are associated with a characteristic emergent tree layer of *Afzelia quanzensis*, *Balanites maughamii*, *Dialium schlechteri* and *Newtonia hildebrandtii*.

This thicket is interspersed with “tall sand forest” as it is known in South Africa (du Randt 2018), also known as Licuáti Forest (Tokura et al. 2020), which has a more open structure, with more species in the tree layer and a canopy above 8 m tall. Characteristic species include *Ptaeroxylon obliquum*, *Erythrophleum lasianthum*, *Cleistanthus schlechteri*, and *Uvaria lucida*. Both Licuáti Thicket (short sand forest) and Licuáti Forest (tall sand forest), are found within a matrix of open woodland dominated by *Albizia adianthifolia*

var. *adianthifolia*, *Albizia versicolor* and *Terminalia sericea* (Myre 1971; Siebert et al. 2002; Izidine 2003). Other common species dispersed throughout the woodland areas include *Strychnos spinosa*, *Strychnos madagascariensis* and *Vangueria infausta*. Grassland is not extensive within the Licuáti IPA, but where it occurs contains scattered trees of *Syzygium cordatum* and the palm *Hyphaene coriacea*. Grasslands are also favoured places for *Dicerocaryum forbesii*, a prostrate herb with perennial taproot. In geological terms, the Licuáti area lies on ancient dunes resulting from geomorphological processes that were operating for millennia over the Pliocene to the Pleistocene periods about 3 – 5 million years ago (du Randt 2018). The climate is humid tropical with two main seasons, a dry and cold season from April to September, followed by a wet, hot, humid and rainy season from October to March. The Licuáti IPA shows an altitudinal gradient increasing from east to west with annual precipitation of nearly 600 mm (Izidine et al. 2003; van Wyk 1996). Because the rainfall is low, the vegetation is maintained by moisture obtained from the south-easterly winds that carry moist coastal air from the sea (Matimele 2016). Species found in the Licuáti IPA are adapted to well drained nutrient- poor sandy soils.

Conservation issues

The full extent of the Licuáti Forest Reserve (LFR), which has also been recognised as a Key Biodiversity Area, falls within the Licuáti IPA. In general terms, forest reserves in Mozambique are not regarded as areas for conservation and, therefore, they are not managed by the National Administration of Conservation (Administração Nacional das Áreas de Conservação, ANAC), the government body overseeing nature conservation in the country. Instead, they fall under the National Forestry Directorate with very limited focus on biodiversity issues. Licuáti Thicket, the most unique vegetation of this IPA, occurs nowhere else except for small pockets in Tembe National Park in KwaZulu-Natal and it forms the core of the Maputaland Centre of Endemism (van Wyk & Smith 2001). The Licuáti Thicket represents the only large area of this thicket type, and this site is therefore irreplaceable.

The Licuáti Forest Reserve was proclaimed as a Forest Reserve in 1943, with focus on protecting the stands of Chamfuta (*Afzelia quanzensis*) and ensure its sustainable harvesting (Gomes e Sousa 1968). Despite being a forest reserve historical timber concessions and agricultural and livestock rangeland concessions were issued due to unclear boundary definitions of where the actual reserve was situated. Over the past 10 years, the Licuáti Thicket has become one of the Maputo’s nearest sources of trees and shrubs for charcoal, with the extraction of larger species such as *Newtonia hildebrandtii*, *Erythrophleum lasianthum*, *Balanites maughamii* and *Manilkara discolor*. Charcoal production involves cutting of thick woody stems, piling them and covering with sand and grass and then igniting these traditional charcoal kilns (Tokura et al. 2020). In the process of cutting and cleaning large stems, many small branches and twigs are left in the forest. These dry out and create a source of fuel for fire. The combination of a seasonal drought, increased fuel-load

from branches left during the charcoal production and ignition sources from lighting of charcoal kilns is resulting in more frequent fires within the Licuáti Thicket. This vegetation type is not fire tolerant, and the slow growing nature of species within this system suggests that fire and cutting for charcoal will result in severe habitat degradation and possibly an ecological shift to grassy savannas such as those found in previously disturbed farmed areas around the Licuáti Thicket (Matimele 2016).

With 80% of Mozambique's population depending on charcoal as a source of energy, and all wood to make charcoal coming from indigenous vegetation with little indication of this trend changing (Chavana 2014), further loss and severe degradation of at least 80% of the Licuáti Thicket is expected to occur within the next 25 years (Matimele 2016).

Important bird species found in the IPA include Cape Vulture (*Gyps coprotheres*, EN) (BirdLife International 2017). Neergaard's Sunbird (*Cinnyris neergaardi*, NT), only known from Mozambique and South Africa, is an uncommon species found particularly in Maputaland sand forest (du Randt 2018).

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>Sclerochiton apiculatus</i> Vollesen	A(i)	✓	✓	✓	—	—	Frequent
<i>Xylopia torrei</i> N.Robson	A(i)	✓	✓	✓	—	—	Frequent
<i>Acridocarpus natalitius</i> A.Juss. var. <i>linearifolius</i> Launert	A(i)	✓	✓	✓	—	—	Common
<i>Warneckea parvifolia</i> R.D.Stone & Ntetha	A(i)	✓	✓	✓	—	—	Frequent
<i>Empogona maputensis</i> (Bridson & A.E.van Wyk) J.Tosh & Robbr.	A(i)	✓	✓	✓	—	—	Scarce
<i>Psychotria amboniana</i> K.Schum. subsp. <i>mosambicensis</i> (E.M.A.Petit) Verdc.	A(i)	✓	✓	✓	—	—	Frequent
<i>Warburgia salutaris</i> (G.Bertol.) Chiov.	A(i)	—	✓	✓	—	✓	Occasional
<i>Polygala franciscii</i> Exell	A(i)	✓	✓	✓	—	—	Unknown
<i>Rytigynia celastroides</i> (Baill.) Verdc. var <i>australis</i> Verdc.	A(i)	✓	✓	✓	—	—	Unknown
<i>Tephrosia forbesii</i> Baker subsp. <i>forbesii</i>	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
Licuati Thicket	C(iii)	—	—	—	—

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Dry Forest	35	Major
Shrubland - Subtropical/Tropical Dry Shrubland	55	Major
Savanna - Dry Savanna	10	Minor

Land use types

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

Threats

THREAT	SEVERITY	TIMING
Biological resource use - Logging & wood harvesting - Unintentional effects: large scale (species being assessed is not the target) [harvest]	High	Ongoing - stable
Biological resource use - Logging & wood harvesting - Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]	Medium	Ongoing - stable
Biological resource use - Gathering terrestrial plants - Intentional use (species being assessed is the target)	High	Ongoing - stable
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
Agriculture & aquaculture - Livestock farming & ranching - Small-holder grazing, ranching or farming	Medium	Ongoing - increasing

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Licuáti Forest Reserve	Forest Reserve (conservation)	IPA encompasses protected/conservation area	140

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Licuáti Forest Reserve	Key Biodiversity Area	protected/conservation area encompasses IPA	140

Management type

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

Bibliography

Izidine, S., Siebert, S. & Van Wyk, B. 2003. **Maputaland's Licuáti forest and thicket**. Veld Flora, Vol 89, page(s) 56 - 61

Chavana, R. 2014. **Estudo da cadeia de valor de carvão vegetal no sul de Moçambique..** Relatório preliminar de pesquisa 186602

Gomes e Sousa, A. 1968. **Reserva Florestal de Licuati..** Instituto de Investigação Agrária de Moçambique Comunicações, Vol 18 (pub. Instituto de Investigação Agrária de Moçambique)

Izidine, S.A. 2003. **Licuáti forest reserve, Mozambique: Flora, utilization and conservation..** Unpublished MSc. thesis (pub. University of Pretoria)

Timberlake, J., Goyder, D., Crawford, F., Burrows, J.E., Clarke, G.P., Luke, Q., Matimele, H., Müller, T., Pascal, O., de Sousa, C. & Alves T. 2011. **Coastal dry forests in northern Mozambique..** Plant Ecology and Evolution, Vol 144, page(s) 126-137

Matimele, H.A. 2016. **An Assessment of the Distribution and Conservation Status of Endemic and Near Endemic Plant Species in Maputaland.**

Matimele, H. & Timberlake, J. 2020. **Maputaland World Heritage Application: Terrestrial Plants and Vegetation.** Unpublished.

van Wyk, A.E. 1996. **Biodiversity of the Maputaland Centre.** The Biodiversity of African Plants (pub. Kluwer Academic Publishers), page(s) 198-207

Dludlu, M., Dlamini, P., Sibandze, G., Vilane, V. & Dlamini, C. 2017. **Distribution and conservation status of the Endangered pepperbark tree Warburgia salutaris (Canellaceae) in Swaziland.** Oryx, Vol 51, page(s) 451-454

du Randt, F. 2018. **The Sand Forest of Maputaland.**

Myre, M. 1971. **As pastagens da regio do Maputo.** Memórias #3 (pub. IIAM)

Senkoro, A., Shackleton, C., Voeks, R. & Ribeiro, A. 2019. **Uses, knowledge, and Management of the Threatened Pepper-Bark Tree (Warburgia salutaris) in southern Mozambique.** Economic Botany, Vol 73, page(s) 304-324

Senkoro, A., Talhinas, P., Simões, F., Batista Santos, P., Shackleton, C., Voeks, R., Marques, I. & Ribeiro Barros, A. 2020. **The genetic legacy of fragmentation and overexploitation in the threatened medicinal African pepper bark tree, Warburgia salutaris.** Scientific Reports, Vol 10, page(s) 19725

Steenkamp, Y., van Wyk, B. & Victor, J. 2004. **Maputaland-Pondonland-Albany.** Hotspots revisited (pub. University of Chicago), page(s) 219-228

Tokura, W., Matimele, H., Smit, J. & Hoffman, M. 2020. **Long-term changes in forest cover in a global biodiversity hotspot in southern Mozambique.** Bothalia, Vol 50

van Wyk, A. & Smith, G. 2001. **Regions of floristic endemism in southern Africa: a review with emphasis on succulents.**

Izidine, S. & Siebert, S. & Wyk, A.E. & Zobolo, A.M. 2009. **Threats To Ronga Custodianship Of A Sacred Grove In Southern Mozambique. Indilinga: African Journal of Indigenous Knowledge Systems.** Indilinga: African Journal of Indigenous Knowledge Systems, Vol 7, page(s) 182-197

Siebert, S.J., Bandiera, S.O., Burrows, J.E. & Winter, P.J 2002. **SABONET southern Mozambique expedition 2001.** SABONET News, Vol 7, page(s) 6-18