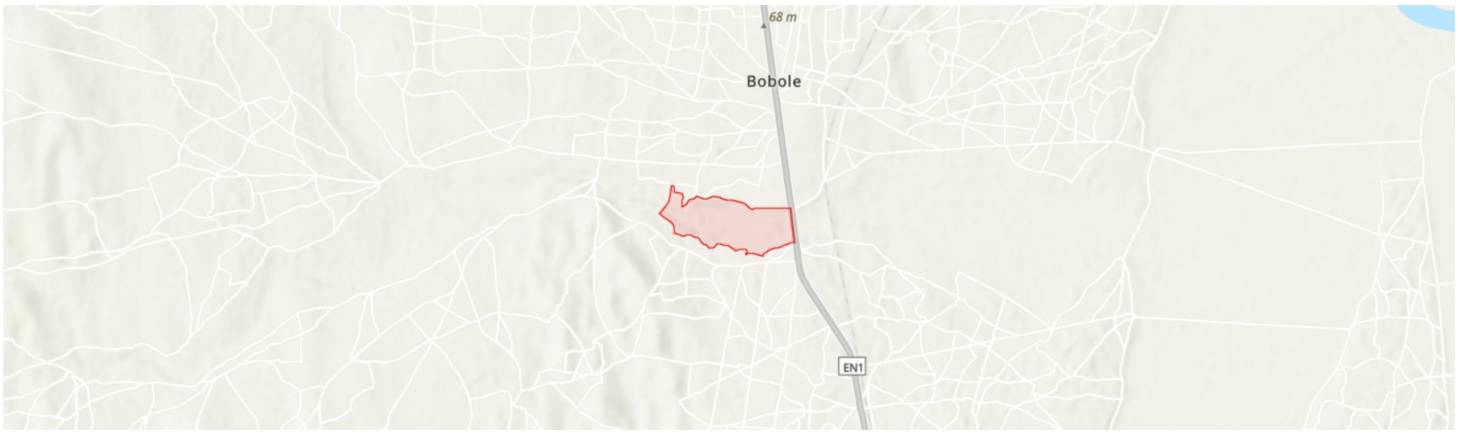
Bobole

MOZTIPA054



Country: **Mozambique**
Administrative region: **Maputo (Province)**
Central co-ordinates: **-25.61386 N, 32.67010 E**
Area: **0.23km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Bobole qualifies as an IPA under sub-criterion A(i), as one of the five best sites nationally for the Vulnerable species Raphia australis. As this site has been recognised as a botanical reserve for several decades, there is a great opportunity to restore habitats and protect R. australis at this site.

Site description

Bobole IPA of Marracuene District, Maputo Province is based upon the Bobole Botanical Reserve (Reserva Botânica de Bobole), the only botanical reserve designated in Mozambique. Located 30 km north of Maputo city on Bobole stream, a tributary of the Incomati River, this IPA is historically associated with floodplain vegetation, however, much of this has been cleared to make way for agriculture. The IPA is around double the size of Bobole Botanical Reserve. While this IPA extends beyond the botanical reserve in the west, continuing along Bobole stream for a further 450 km beyond the reserve boundary, it also excludes the northerly and southerly edges of the botanical reserve to avoid the residential areas that reside in these areas.

Botanical significance

The primary aspect of botanical importance within this IPA is the population of the globally Vulnerable species Raphia australis. There are 85 individuals of this near-endemic species present at 19 localities within Bobole Botanical Reserve (Pais 2011). There is no information size for population size of R. australis outside the reserve and there appear to be few, or possibly no large individuals, visible from satellite imagery (Google Earth 2021). However, the continued integrity of the known populations in the botanical reserve are dependent on wider landscape integrity and hydrology, therefore conservation work upstream will help support the resilience of these R. australis individuals.
Although this site does not host the largest population of this species, there is great opportunity for conserving it here given its status as a botanical reserve. This species is also of particular importance socio-economically, as the local population have a long history of using R. australis in construction and for cultural purposes.
The Raphia australis population at Bobole is under great pressure from agriculture, as the reserve is already heavily degraded and the persistent disturbances caused by surrounding agriculture is having a detrimental impact on this population, particularly inhibiting the regeneration of this species (Pais 2011). As a result, the density of this species within Bobole Botanical Reserve has decreased from 160 individuals per hectare in 1999 to 39 individuals per hectare in 2010 (Pais 2011).

Habitat and geology

Bobole is a wetland site, centred around Bobole stream, and is underlain by peat alluvium soils with some sandy soils on inland dunes. Mean average temperatures range from 18 – 25°C in June and July to 26 – 32°C in December and January, while average annual precipitation is 654 mm, with the majority of this falling

between November and March (Lötter et al., in prep.). Moisture at this site is also gained through lateral infiltration of aquifers in the sand dunes. This helps to maintain a high water table throughout the year, with sub-surface irrigation of the peat soils also contributing to an increased rate of decay and nutrient cycling, resulting in high fertility soils (Pais 2011).
Raphia australis occurs on these peat soils, alongside other tree species such as Afzelia quanzensis, Bridelia cathartica, Myrica serrata, Strychnos spinosa, Syzigium cordatum, Trichilia emetica and Voacanga thouarsii (Pais 2011). The Raphia palms themselves create micro-habitats as water that collects in the leaf axils soon allows the development of humus. A number of epiphytes, particularly ferns, grow in this humus (João 2011). In the understory, shrubs include Barringtonia racemosa, Phyllanthus reticulatus and Sesbania sesban alongside a number of non-native shrubs such as Cajanus cajan, Lantana camara and Ricinus communis, while the herbaceous layer is dominated by Typha capensis (Pais 2011).
Due to the high productivity of the soils within this IPA, however, much of this habitat has been heavily transformed by agriculture. A number of vegetable crops are grown such as onion, carrot, tomato, green beans, lettuce and cabbage. Established Raphia australis palms occur within the machambas while the edges of these fields are delineated by drainage channels, where sugarcane and banana are grown (João 2011).

Conservation issues

Bobole IPA includes much of Bobole Botanical Reserve. First designated in 1945, under Portuguese governance, Bobole Botanical Reserve was established in recognition of the need to protect swamp forest and to provide opportunities to study this ecologically interesting habitat. The swamp forests were formerly extensive around the Incomati River but had been cleared for farming including commercial rice and banana farms (Pais 2011). A 200 ha area was initially designated, to protect habitats and provide an opportunity for ecological research, particularly studying the ecologically interesting Raphia australis. However, this was reduced to 12 ha by 1967 due to the continued degradation of habitat.
Although the site is referred to as a botanical reserve, it is not part of the protected area network. With this lack of formal protections, the site is heavily degraded, with the entire area transformed for agriculture.
There has previously been limited conservation activities in the area, including guards (although there are few and they were previously reported to be unpaid roles) and a netting fence installed in recent decades which was quickly damaged and removed by local people (Manhice 2010). The guards and some residents have raised awareness of the importance of Raphia australis within the local community (Manhice 2010). In a survey of local residents, with 47 respondents, over half stated that they actively take care to avoid damage or destruction of this species when undertaking agricultural activities within the reserve (João 2011). These findings suggest there is a good level of awareness surrounding the importance of Raphia australis within this IPA.
Despite this awareness, the species is still exposed to a number of threats because of the economic reliance of local residents on farming this land (Manhice 2010). Burning to clear land for a new agricultural cycle often damages leaves and trunks of established R. australis, while seedlings are actively removed during the weeding process and left by the roadside (Manhice 2010; João 2011). Seedlings are also negatively impacted by the creation of drainage channels which increase water runoff and lower the recruitment rate (Matimele 2016). Low seedling recruitment was found to be a particular issue within this IPA, with over 902 seeds recorded per hectare of habitat and only 147 seedlings per hectare, constituting the biggest drop in abundance between stages in the Raphia australis lifecycle (Pais 2011). This is of particular concern for a monocarpic species that only reaches maturity after 20 – 40 years; the loss of seedlings in the present day could have a profoundly detrimental impact on the population viability, the full effects of which may not be revealed for many decades given its lengthy lifecycle.
As the only botanical reserve in Mozambique, there is a lot of interest in conserving this site and a restoration project, led by Instituto de Investigação Agrária de Moçambique and funded by Biofund, began in 2021. While this project is still in its early stages, with surveys being undertaken to support future conservation action, the end goal is to establish a syntropic agricultural system at this site (C. de Souza, pers. comm. 2021). As local people are heavily dependent on the highly productive land of Bobole, it is not feasible to prevent them from farming the area. However, the development of ecologically sensitive farming practices, particularly with regard to Raphia australis regeneration, could allow the integration of livelihoods and conservation within this IPA.
The faunal taxa of this IPA have not been fully documented, although the Palm-nut vulture (Gypohierax angolensis), which disperses seeds of Raphia australis, has is known to occur within Bobole Botanical Reserve. Despite being assessed as globally Least Concern, the presence of this ecologically important bird species is thought to be at risk in this reserve, which may further exacerbate regeneration of the palm species (Pais 2011).

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
Raphia australis Oberm. & Strey	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

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Swamp Forest	–	Major
Artificial - Terrestrial - Arable Land	–	Major

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Agriculture (arable)	–	Major

Threats

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

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Reserva Botânica de Bobole	Botanical Reserve	protected/conservation area matches IPA	–

Management type

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

Bibliography

Lötter, M., Burrows, J., McCleland, W., Stalmans, M., Schmidt, E., Soares, M., Grantham, H., Jones, K., Duarte, E., Matimele, H. & Costa, H. M. In Prep. **Historical Vegetation Map and Red List of Ecosystems Assessment for Mozambique – Version 1.0 – Final report.**

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

BIOFUND 2021. **BCI e BIOFUND Incentivam Uso Do Cartão Bio | Biofund.**

João, F.E. 2011. **Análise da influência da prática de agricultura na regeneração e manutenção da espécie Raphia australis na Reserva Botânica de Bobole em Marracuene, província de Maputo.**

Pais, A. 2011. **Estudo da ocorrência e estado de conservação da Raphia australis Oberm. Strey na Reserva Botânica de Bobole.**

Manhice, A. 2010. **Planta rara em risco de extinção em Moçambique.** Notícias, Vol 15 July

Google Earth 2021. **Google Earth Satellite Imagery.**