

Mpanga Gorge

UGATIPA2

Country: **Uganda**

Administrative region: **Western (Region)**

Central co-ordinates: **0.06650 N, 30.32150 E**

Area: **0.88km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Mpanga Gorge qualifies as an IPA under criterion A(i), hosting the entire global population of the Critically Endangered cycad, *Encephalartos whitelockii*.

Site description

Mpanga Gorge is situated in Kamwenge District of western Uganda and covers an area of 0.88 km². The IPA encompasses the gorge around Mpanga Falls, with the Mpanga River flowing towards Lake George, situated 3 km southwest of the site. The gorge itself has steep slopes, with an incline around 35° in places, while altitudes range from 920 m in the valley floor toward Lake George up to 1175 m at the upper edge of the gorge.

Part of the site falls within Queen Elizabeth National Park, although the majority of the IPA falls outside this protected area. The site has been subjected to serious degradation through the construction of a hydroelectric dam on the waterfall. However, as the host of the only population of *Encephalartos whitelockii* known globally, Mpanga Gorge is of great botanical significance. The site is also thought to support one of the highest concentrations of arborescent cycads globally, with much of the population focused within a 70ha area (Roberts 2008).

Botanical significance

Mpanga Gorge is of great botanical importance as it contains the entire population, estimated to consist of around 8,000 individuals, of the Critically Endangered cycad *Encephalartos whitelockii* or Muhure cycad (Kalema 2010). This rare arborescent cycad is under threat due to the previous construction of a hydroelectric dam within the gorge, alongside agriculture, particularly the use of fire to refresh pasture.

E. whitelockii occurs mostly on the gorge slopes, and surveys suggest that juveniles (seedlings and saplings) are significantly more abundant than mature individuals (Ogwal 2017). While loss of

individuals is expected between life stages, the degree of drop off between saplings and mature trees is such that the population has likely been subject to considerable disturbance (Ogwal 2017). As cycads are long-lived species that take time to reach maturity, the loss of individuals before maturity will have significant impacts on seed production in the future.

Habitat and geology

The slopes of Mpanga Gorge are largely covered by moist forest dominated by *Cynometra alexandri* (ironwood). *Vepris trichocarpa* is also very common in the lower storey of this forest while shrubs, including *Whitfieldia elongata*, are common in the understorey (Darbyshire #1066, #1072). On the upper slopes of the valley, forest transitions to woodland with common species in this woodland including *Cordia monoica*, *Dodonaea viscosa*, *Grewia bicolor* and *Strycnos xx* (Darbyshire, pers. comm.). The substrate underlying this IPA is a mixture of black granitic soil and areas of sandy loam within the forest (Muisi, Harrop & Luzinda 1960).

Encephalartos whitelockii grows on rocky granitic slopes in areas of open grassland and at forest edges (Kalema & Beentje 2012). Species that grow in association with *E. whitelockii* include *Combretum molle* and *Grewia mollis* (Ogwal 2017). On very steep slopes, vegetation is very open and cycads are most abundant in these areas. Alongside *E. whitelockii*, there are numerous succulent *Euphorbia xxx*.

Further research is needed to fully categorise the habitats of this site.

Conservation issues

Only a small part of Mpanga Gorge is within Queen Elizabeth National Park (QENP), with around 90% of the global population of *Encephalartos whitelockii* falling outside the National Park (Ogwal 2017). There have been previous discussions surrounding the expansion of QENP into Mpanga Gorge (Nampindo & Plumptre 2005); however, this has not come to fruition to date. Due to the presence of this Critically Endangered cycad, the site has been proposed as a Key Biodiversity Area, with the additional recommendation that this site should be a priority for conservation financing (Plumptre et al. 2017).

The site suffered extensive disturbance with the construction of a small hydroelectric dam on Mpanga Falls in 2011. This dam diverts water away from the falls through a channel used to generate energy. While the Ugandan Wildlife Authority did raise objections to this development, mostly due to the large and unique population of *E. whitelockii* at this site, the National Environment Management

Authority granted permission for it to proceed (Roberts 2008).

The impact of the changing hydrology on the *E. whitelockii* is not fully understood as yet. However, the change in waterflow and mist precipitation may be detrimentally impacting this cycad (Kalema 2010). The construction of the dam itself resulted in the mortality of many *E. whitelockii* individuals, when access roads were built along contour lines where cycads are most concentrated (Roberts 2008; Kalema & Beentje 2012).

The other major risk to habitats is agricultural activity. Cycads have been seen at the borders of crop gardens at the forest edge and, as such, it has been inferred that farming may have restricted the distribution of *E. whitelockii* to more inaccessible areas (Ogwal 2017). While the steep gorge sides are largely unsuitable for farming, the use of fire to refresh pasture on the hills above and within the gorge itself has led to destruction of cycads. In addition, farmers would previously bring their cattle down the steep gorge sides to access water, causing habitat disturbance at the site (Bradley 2019). People have also been injured, and on rare occasions killed, traversing the steep gorge slopes to access clean drinking water from the Mpanga River (SOSpecies et al. 2017).

However, a partnership between the NGOs JESE and PROTOS alongside the IUCN Save Our Species Programme has helped to support conservation of *E. whitelockii* among local communities. New hydraulic pumps were installed to bring water up and outside the gorge, with pumps for both people and livestock. This benefits local communities by providing easier and safer access to clean drinking water and making water more accessible for cattle, which in turn reduces the disturbance on *E. whitelockii* caused by accessing the river gorge (Moorthamers 2016). In addition, the pumps have been used to support crop irrigation which has reduced reliance of local people on maize and has allowed the growth of a wider range of fruit and vegetable crops, thereby improving nutritional variety and increasing income through agricultural sales (Lawrence & Christopher 2020).

As part of the same conservation programme, the area in which *E. whitelockii* grows has been demarcated by white poles and awareness has been raised among local people. PROTOS also undertook a 15-month project focussing on propagation of *Encephalartos whitelockii* seedlings which included the construction of 8 large propagators that can house up to 6,400 seeds, alongside training of youth group leaders in caring for seeds in the propagators (Bradley 2019). While it was previously thought that this cycad was dependent on baboons for germination, seeds were successfully germinated in propagators in community nurseries. Seedlings have subsequently been planted out in the gorge in areas where fire has previously destroyed cycads and also along the access roads where cycads were previously cleared (JESE 2017). A subsequent Darwin Initiative project focussed on Ugandan cycads raised 6,700 *E. whitelockii* seedlings between 2014 and 2017, with over 6,000 of these planted at two sites within the gorge (Pritchard & Seal 2017). Further research is required to understand how well these seedlings have persisted in the area. As part of this Darwin Initiative project, engagement work was also undertaken, including the production of educational materials and the inclusion of two additional local communities in nursery work (Pritchard & Seal 2017).

There have been reports of some collecting of the cycad for ornamental purposes, which would have a detrimental impact on an already threatened population (Kalema 2010). However, with the success of the local propagation programmes, local people are now able to sell *E. whitelockii* seedlings sustainably, providing an income source while also increasing cycad numbers (IUCN Save Our Species et al. 2017).

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>Encephalartos whitelockii</i> <i>P.J.H.Hurter</i>	A(i)	✓	✓	✓	✓	✓	Abundant

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
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General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Moist Lowland Forest	—	Major
Wetlands (inland) - Permanent Rivers, Streams, Creeks [includes waterfalls]	—	Minor
Savanna - Moist Savanna	—	Minor
Rocky Areas - Rocky Areas [e.g. inland cliffs, mountain peaks]	—	Minor
Artificial - Terrestrial - Pastureland	—	Minor
Artificial - Aquatic - Canals and Drainage Channels, Ditches	—	Minor

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Industrial development	—	Major
Agriculture (pastoral)	—	Minor
Tourism / Recreation	—	Minor

Threats

THREAT	SEVERITY	TIMING
Energy production & mining - Renewable energy	High	Ongoing - stable
Agriculture & aquaculture - Livestock farming & ranching - Small-holder grazing, ranching or farming	Low	Ongoing - declining
Natural system modifications - Fire & fire suppression - Increase in fire frequency/intensity	Medium	Ongoing - declining
Residential & commercial development - Tourism & recreation areas	Medium	Future - planned activity

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Queen Elizabeth National Park	National Park	protected/conservation area overlaps with IPA	—

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Mpanga Falls	Key Biodiversity Area	protected/conservation area overlaps with IPA	—

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