

Zoka Central Forest Reserve

UGATIPA16

Country: **Uganda**

Administrative region: **Northern (Region)**

Central co-ordinates: **3.11218 N, 31.65468 E**

Area: **61.6km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Zoka CFR qualifies as an Important Plant Area under criterion A(i), triggered by the presence of two Endangered species (*Balsamocitrus dawei* and *Oxyanthus ugandensis*) for which the site is considered to be globally important, and seven Vulnerable species (*Afzelia africana*, *Khaya grandifoliola*, *Khaya senegalensis*, *Entandrophragma utile*, *Aeglopsis eggelingii*, *Vitellaria paradoxa*, *Antrocaryon micraster*) for which the site is nationally globally important.

Site description

Zoka IPA was designated as a Central Forest Reserve (CFR) in 1948. It covers an area of 61 km² and is located within Itirikwa and Ukusijoni sub-counties of Adjumani district, in the East Madi region of northern Uganda (Latitude: 3.112177; Longitude: 31.654675). It is situated approximately 10 km east of the River Nile and 25 km south of Adjumani Town. It is drained by the Zoka river which flows through the northern part of the reserve (Davenport & Howard 1996). It overlaps with the larger East Madi Wildlife Reserve in the south, whilst to the east of Zoka is Kilak CFR and in the south east are Wiceri, Labala and Got Gweno CFRs. The reserve lies on a gently undulating terrain with altitude ranging from 890 m to 975 m. The vegetation is classified as medium altitude moist deciduous forest. However, only 5-10 sq km (8.2-16.4%) was high forest by 1996 (Davenport & Howard 1996).

Botanical significance

Zoka CFR is one of the few remaining and important mid-elevation forest blocks in northern Uganda, located within the south eastern part of the Sudanian Regional Centre of Endemism (White 1983,1993). It is the main biologically diverse forest in Adjumani district (Zake et al. 2016). Only limited botanical studies have been made at this site owing to its isolation and insecurity over several decades. One of the more detailed studies was by the Government

of Uganda's Forest Department in the early to mid-1990s, when a total of 188 tree and shrub species were recorded from this site (Davenport & Howard 1996). More extensive studies are required and these would result in higher species richness of the site's flora, with inclusion of all plant life forms.

Besides being one of the very few forest ecosystems within the Sudanian CoE in Uganda, Zoka is also of high conservation significance as it hosts a number of rare and threatened plant species. Two species, *Balsamocitrus dawei* and *Oxyanthus ugandensis*, are globally Endangered and another seven are globally Vulnerable.

Balsamocitrus dawei is an Endangered species of tree known to occur in Zoka. It is endemic to Uganda, known from at least four other forest reserves and one National Park (Kibale). Some of these protected areas, including Zoka, are poorly managed and *B. dawei* is threatened by habitat loss and impacts of illegal tree logging (Amani et al. 2022; Kalema & Beentje 2012). In addition, the Endangered shrub *Oxyanthus ugandensis* has been recorded from Zoka CFR (Davenport & Howard 1996), but this will need more intensive surveys to verify its occurrence as no other studies seem to indicate its presence in this IPA. While this species is also known from Tanzania and possibly the Democratic Republic of Congo (DRC), in Uganda it is only otherwise known from Budongo CFR and Semuliki National Park. Zoka IPA therefore represents one of the few critical opportunities to conserve this species, especially since its Tanzanian locality at Bukoba is known to be threatened by ongoing habitat clearance (Ntore et al. 2019) and its occurrence in DRC is doubtful.

Khaya grandifoliola is a globally Vulnerable tree species (Hawthorne 1998) known to occur in the Zoka IPA. Besides Budongo, Zoka is one of the very few other sites where *K. grandifoliola* is known from in Uganda. The species is on Uganda's 'Reserved Tree Species' list of the National Forestry Authority. It is used for firewood, charcoal and timber but because of low branching (Styles & White 1991), exploitation for timber is very limited. *K. senegalensis* is also globally Vulnerable (WCMC 1998) and is known from Zoka IPA. In Uganda, this species is only known from northern sites, and Zoka is one of these few. The species is also on Uganda's 'Reserved Tree Species' list, hence accorded much value and special protection.

Entandrophragma utile, also globally Vulnerable, is an important climax tree species occurring in Zoka. In Uganda, it has been assessed as nationally Endangered (MTWA 2018). It was formerly common in Budongo and Mabira forests but its exploitation caused significant reduction of its abundance even in these two forest

reserves. In all sites of its occurrence in Uganda, including Zoka, it is now very rare. It is used for firewood, charcoal, timber and veneer (Katende 1995, Kalema & Beentje 2012). It is one of the rarest of all the *Entandrophragma* ssp. and indiscriminate harvesting during the years of political unrest in Uganda brought it close to extinction (Katende et al. 1995). The species is on the country's 'Reserved Species' list, and its occurrence in the Zoka IPA is a national treasure.

Vitellaria paradoxa - the shea butter tree - is a globally Vulnerable tree growing in the wooded grassland and woodlands of Zoka. Throughout its range, this species has suffered overexploitation, being used for commercial charcoal production (Boffa et al., 1996; Fondoun & Onana 2001; Kalema & Beentje 2012), and Zoka is no exception, besides being used for shea butter. It is slow growing and farmers do not seem to like planting it, although they usually spare the seedlings on-farms for its valuable shea butter. The exploitation of shea butter though undertaken by non-formalized groups, has been lauded as a more sustainable strategy for utilizing this species. *Azelia africana* and *Antrocaryon micraster*, both globally Vulnerable, are also recorded from Zoka.

Aeglopsis eggelingii is a very uncommon, globally vulnerable small tree (Amani et al 2022). It is a range-restricted species of narrow endemism, known only from Uganda and South Sudan, and possibly DRC (Kalema & Hamilton 2020, POWO 2023). This species was reported from Zoka (Davenport & Howard 1996), but no specimens of it from this site have been found. The same applies to *Mimusops bagshawei* as it, too, is not otherwise known to occur at this site.

Besides the forest habitat which is of highest conservation significance, the *Vitellaria* savanna vegetation which also occurs in Zoka IPA, is assessed as nationally Vulnerable (Plumptre et al 2019). Major threats include conversion to agriculture with extensive habitat loss and commercial charcoal production from *Vitellaria* trees.

Habitat and geology

Zoka CFR is a natural tropical rain forest which is uniquely located as the only combined tropical high forest (THF), woodland and savanna in the Northern part of Uganda (FOZ 2021). The most prominent habitat in Zoka is medium altitude moist deciduous forest with *Cynometra* and *Celtis* (Landgale-Brown et al. 1964). The bigger part of this IPA is however, not occupied by forest habitat as this is estimated to cover less than 20% of this IPA (Davenport & Howard 1996). Rather, the habitat occupying the bigger part of the reserve is dense woodland with tall grass. Other vegetation communities are wooded grassland and more open grassland and wetland (MEMD 2019). A sizeable proportion of the forested tract is regenerating forest, owing to degradation from tree felling for timber. The vegetation of the entire reserve is a mosaic of different communities. The forested tracts support moist forest dominated by *Khaya senegalensis*. *Calycosiphonia spathicalyx*, *Oxyanthus*

ugandensis, *Pycnocomma chevalieri*, *Ficus artocarpoides*, and *Linociera nilotica* are common. Large tracts of forest are now only regenerating secondary forest of *Allophylus-Terminalia-Cordia*, *Cordia-Terminalia-Caloncoba* and *Celtis-Blighia-Cordia*. The midstorey is variably composed of *Cola gigantea*, *Rinorea* spp., *Coffea liberica*, *C. canephora* and *Acalypha neptunica*. Dense tangles of shrubs such as *Capparis erythrocarpos* occasionally occur in the forest. The riverine forests along the main water courses, especially River Zoka, are dominated by *Alchornea laxiflora*, *Baphia wollastonii*, *Caloncoba crepiniana*. In some places, *Pandanus chiliocarpus* grows by the river edge.

The climate is tropical in nature with moderate rainfall and temperature. The rainfall pattern is bimodal with annual rainfall varying between 750 mm to 1500 mm. The rainfall seasons fall between April to June and August to November, with peak rainfall usually experienced in May. Dry conditions are experienced from December to March. The annual mean temperature ranges from 19°C to 36°C while humidity levels are over 80% in most months, but reduce to below 50% during the dry season afternoons, especially from December to February. Topography is characterized by gently undulating plains. The soils are mainly hydromorphic, characterised by undifferentiated river alluvium dominated by grey and yellow sandy clays represented by the Mulembo series of medium to high productivity (Adjumani district local government 2015).

Conservation issues

Zoka IPA follows the boundary of Zoka CFR. In the south, Zoka is contiguous with East Madi Wildlife Reserve (Dranzoa et al. 2011), which is under the jurisdiction of Uganda Wildlife Authority. Zoka CFR was gazetted in 1958 and is under the management of the National Forestry Authority (NFA). Despite the rich biodiversity of flora and fauna and a potential for tourism attraction, the forest reserve has been threatened by illegal timber exploitation, encroachment for human settlement and agriculture (FOZ 2021). Its small size (c. 61 km²) makes it particularly vulnerable to habitat destruction (Kiwuka et al. 2023).

There is widespread forest clearance in Zoka due to the presence of high timber quality hard wood tree species such as the species of *Khaya*, *Entandrophragma* as well as *Azelia africana* and *Vitellaria paradoxa* which are highly sought after for logs used in charcoal production (Bon 2020). In a ministerial statement presented by Mbayo (2016) to the Parliament of Uganda, it was reported that between 30–50% of the reserve is depleted mainly due to illegal logging. Additional drivers of deforestation include weak law enforcement (Zake et al. 2016). Zake et al (2016) further elaborate that the issues that undermine the sustainable management of Zoka CFR include: (i) Inadequate staff capacity for that National Forestry Authority (NFA) to conduct regular and effective monitoring and surveillance, (ii) unclear boundaries for the reserve and community resulting in encroachment and conflicts among the community and the duty bearers, (iii) encroachment on the reserve through

implementation of unregulated/illegal activities (lumbering, settlement, agriculture) by adjacent community and private sector, (iv) unregulated bush burning especially during the dry season, (v) weak implementation of the collaborative forest management programme that was initiated by the National Forestry Authority (NFA), (vi) no clear benefit sharing mechanisms or schemes between NFA and the forest-adjacent communities as incentives for collaborative and sustainable management of the reserve, and (vii) limited involvement of the district leadership (both technical and political) in rolling out the eviction of encroachers from the CFR.

The Apaa land conflict between the Acholi and Madi peoples is also a conservation issue as it has bred political and environmental insecurity (Kobusingye et al. 2017). Implementation of wider and landscape programmes involving both groups need to carefully planned for both warring parties to accept and actively participate.

As a result of the untold degradation of this important resource, a local pressure group named Friends of Zoka (<https://www.friendsofzoka.org/>) was created by well-wishers of this reserve to defend its integrity and halt degradation. This group has created awareness about the reserve, publicized it widely, nationally and internationally, and also devised preliminary strategies to redeem this IPA.

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>Aeglopsis eggelingii</i> M.Taylor	A(i)	–	✓	✓	–	✓	Unknown
<i>Afzelia africana</i> Sm. ex Pers.	A(i)	–	✓	✓	–	✓	Frequent
<i>Antrocaryon micrastrer</i> A.Chev. & Guillaumin	A(i)	–	✓	✓	–	–	Scarce
<i>Balsamocitrus dawei</i> Stapf	A(i)	✓	✓	–	–	✓	Scarce
<i>Entandrophragma utile</i> (Dawe & Sprague) Sprague	A(i)	–	✓	✓	–	✓	Scarce
<i>Khaya grandifoliola</i> C.DC.	A(i)	–	✓	–	–	✓	Scarce
<i>Khaya senegalensis</i> (Desv.) A.Juss.	A(i)	–	✓	✓	–	✓	Frequent
<i>Mimusops bagshawei</i> S.Moore	A(i)	–	–	–	–	✓	Unknown
<i>Oxyanthus ugandensis</i> Bridson	A(i)	✓	✓	✓	–	–	Unknown
<i>Vitellaria paradoxa</i> C.F.Gaertn.	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
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General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Moist Lowland Forest	–	Major
Forest - Subtropical/Tropical Swamp Forest	–	Minor
Savanna - Dry Savanna	–	Major
Savanna - Moist Savanna	–	Major
Grassland - Subtropical/Tropical Dry Lowland Grassland	–	Minor

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Artificial - Terrestrial - Arable Land	—	Minor
Artificial - Terrestrial - Subtropical/Tropical Heavily Degraded Former Forest	—	Major

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	—	Major
Agriculture (arable)	—	Minor
Tourism / Recreation	—	Minor
Forestry	—	Major

Threats

THREAT	SEVERITY	TIMING
Biological resource use - Hunting & collecting terrestrial animals	Low	Ongoing - stable
Natural system modifications - Fire & fire suppression	Medium	Ongoing - stable
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	Medium	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Small-holder farming	Medium	Ongoing - increasing
Biological resource use - Logging & wood harvesting	High	Ongoing - increasing
Human intrusions & disturbance - Work & other activities	Low	Ongoing - increasing
Invasive & other problematic species, genes & diseases - Invasive non-native/alien species/diseases	Low	Ongoing - increasing

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
East Madi Wildlife Reserve	Wildlife Reserve	protected/conservation area overlaps with IPA	—
Zoka Central Forest Reserve	Forest Reserve (conservation)	protected/conservation area matches IPA	—

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Protected Area management plan in place	Management plan needs updating	—	—

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