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Bimbia Bonadikombo Community Forest

CMNTIPA024

Country: **Cameroon**
Administrative region: **Southwest (Region)**
Central co-ordinates: **4.00000 N, 9.24500 E**
Area: **37.35km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Bimbia Bonadikombo Community Forest qualifies as a potential IPA under criterion A(i) due to records of a large number (considering its small size) of globally threatened species, four of which have been recorded nowhere else in the world. It should be noted that most of these species were recorded between 30 and 120 years ago and several have not been seen since, sometimes despite targeted searches (Onana & Cheek, 2011). There are also many utilised species, suggesting that the site could also potentially qualify under criterion B(iii). Furthermore, as a rare remnant of low elevation coastal forest in the high rainfall Cross Sanaga-Bioko ecoregion, the site could likely qualify under criterion B(i) or C(iii). However, survival of the forest has been critical for some time already and remaining botanical value likely depends on urgent intervention.

Site description

The Bimbia Bonadikombo Community Forest (BBCF) covers 3,735 hectares on the edge of the growing town of Limbe in Fako division, Southwest Region (Nkemnyi, 2016). The site is within the lowland Atlantic rainforest belt and six main types of vegetation are officially recognised in the management plan: mangrove, swamp forest, littoral vegetation, coastal bar forest, lowland forest and fresh water habitats (Ngalim & Terence, 2016). Located at the foot of Mount Cameroon, on the southeastern side, it is within one of the highest rainfall areas of tropical Africa, although precipitation is not as high as it is on the western side of the mountain (Fraser, Hall & Healey, 1998).

Community Forest status was granted in 2002 based on the new forestry laws of 1994 and following work by the Mount Cameroon Project (partly funded by DFID, UK and the Global Environmental Facility) and local partner organisations (Ngalim & Terence, 2016). National government retains ownership rights and the initial period of community forest management was set for 25 years, with the potential for renewal as well as forfeiture if obligations are not met (Adeyanju, 2017). The forest is managed as nine compartments, with three of these (Dikolo, Likomba laMbenge and LIkomba Lelu, total area 1,200 ha) considered of high conservation value and in principle strictly protected, with only scientific research, environmental education and ecotourism activities allowed (Ahimin & Mbolo, 2010).

Botanical significance

The Bimbia Bonadikombo Community Forest is one of very few patches of surviving coastal low elevation rainforest within the Cross-Sanaga-Bioko coastal forests ecoregion (Olson, 2001), a unique, richly biodiverse zone characterised by greater and more seasonally concentrated precipitation than elsewhere in the Guineo-Congolian forest region (White, 1983; Ngalim & Terence, 2016; Cheek et al., 2001). The site is consequently of great importance for the survival of this habitat and the plants found there. Ferenc et al. (2018) found tree species richness to be greater than at comparable higher altitude (but still lowland) sites within the National Park.
Several taxa known from BBCF are recorded at very few other sites and some species, such as Drypetes moliwensis, are believed to be narrowly endemic to the site itself (Onana & Cheek, 2011).
Many globally threatened species have been recorded but some are possibly or likely extinct at the site; these include Afrothismia pachyantha, Oxygyne triandra and Beilschmiedia preussii (all CR) which are known from nowhere else in the world but have not been recorded since 1905 (Onana & Cheek, 2011). More recently recorded in 1992, Drypetes moliwensis (provisionally CR) is also globally endemic to the site if it still survives there (Onana & Cheek, 2011; Cheek et al., 2000). Threatened species potentially locally extinct at the site but with populations elsewhere include Afrothismia winkleri, Begonia preussii, Ancistrocladus grandiflorus, Liparis goodyeroides, Neoschumannia kamerunensis and Cola cecidifolia. Two critically endangered species of Psychotria, P. moliwensis and P. bimbiensis, were also discovered at this site and named for the area; currently they are each known from only one other locality.

Habitat and geology

BBCF is within one of the wettest parts of West or Central Africa and the climate fits into the type A of the Kloppen classification. Mean annual precipitation measured at Mabeta (20 m.a.s.l), 10-15 km east of the site) and at Mokundange (40 m.a.s.l) a similar distance west were 4,384 and 4,935 respectively over c. 30 years, with a strongly seasonal, monsoon pattern peaking in July and August when maximum temperatures are also somewhat cooler (Fraser et al., 1998). Mean daily temperatures vary by only a couple of degrees throughout the year, with diurnal cycles exceeding this seasonal range. Early in the rainy season there are often storms and heavy rain, with less intense but more constant rain in later months (White, 1983; Fraser et al., 1998). Precipitation is likely to be somewhat greater in the higher altitude parts of the site closer to Mount Cameroon.
Within the vegetation classification of White (1983) the site corresponds to vegetation type 1a, Wetter Guineo-Congolian rain forest plus areas of mangrove forest, while in the classification of Olson et al. (2001) the site corresponds to Cross-Sanaga-Bioko coastal forests. Under the more detailed scheme of Letouzey (1985) the remaining original forest patches are classified as Atlantic Biafran forest with Caesalpinaceae and semi-deciduous elements, but variously categorised degraded forest and plantation types are also indicated.
Mount Cameroon is the highest peak in the Cameroon Volcanic Line (CVL), an 1,600 km chain of intermittent mountains following a fault separating the Congo and West African cratons. Although there have been several 20th Century eruptions of Mount Cameroon, CVL magmas date back through most of the Cenozoic era (Suh et al. 2003; Marzoli et al. 1999). The BBCF site lies on older volcanic rocks outside the range of recent lava flows, which are largely restricted to the summit area but approach the western side of Limbe (Wantim et al., 2013; Anaka, 2018). Although the age and nature of these older rocks is not reported, Mount Cameroon is predominantly basaltic from eruptions within the last 10 Ma and mostly within the last 3 Ma (Suh et al., 2003; Marzoli et al., 2000). Soils are described as old laterites but potentially rich where protected by remaining forest (Anaka, 2018; Ngalim & Terence, 2016).

Conservation issues

Of four intended community forests proposed by the Mount Cameroon Project, Bimbia Bonadikombo was the only one successfully implemented (Adeyanju, 2017). Unfortunately much of the promise of the community forest designation (, both in terms of biodiversity conservation and economic improvement for local people, appears not to have been fulfilled (Nuesiri, 2014, 2022; Ngalim & Terence, 2016). Visits by staff from Limbe Botanic Garden and RBG Kew in 2007-2009 suggested that most of the forest had been cleared, with palm oil plantations and small-holder agriculture the main drivers (Onana & Cheek, 2011). Many of the rare and threatened taxa recorded from the site have not been seen since the early 1990s or even much earlier, and in several cases despite targeted searching (Onana & Cheek, 2011). Continued expansion of Limbe which has a population of 124,000 (Anaka, 2018), puts increasing pressure on surviving forest, with houses being built within the forest boundaries using felled timber (Ngalim & Terence, 2016). Even the best preserved areas have been selectively logged and small scale cultivation is found throughout much of the forest while limited resources and social conflict apparently hinders efforts to police even the designated high conservation value areas (Ngalim & Terence, 2016; Ferenc et al., 2018). Charcoal production has apparently increased rapidly, driving forest loss and degrading the rhizosphere (Ngalim & Terence, 2016). Non-timber forest products have been over-exploited, although there have also been significant efforts to regulate harvesting while encouraging sustainable sources of income (Ngalim & Terence, 2016; Kilang, 2018).
There has apparently been little significant income generation from eco-tourism (Nuesiri, 2014) and this potential development model is severely threatened by bushmeat hunting and loss of habitat (Ngalim & Terence, 2016). Although Cameroon has generally struggled to develop a tourist industry commensurate with it's spectacular natural riches (Mesmin et al., 2009), the site is a particularly promising eco-tourist site due to the proximity of Mount Cameroon and the coastal town of Limbe with it's unusual black sand beaches, botanic gardens, wildlife center, cafes and fishing villages. The village of Bimbia itself also has historic significance as an major slave port, with a fortress which tourists can visit (Anaka,

2018).
It has been difficult to convince local people of the case for conservation in the absence of economic improvement (Ngalim & Terence, 2016; Anaka, 2018). Elite capture, lack of funds and corruption are dominant themes (Nuesiri, 2022). Analyses appear to suggest that the small size and degraded status of the forest make even timber harvesting unprofitable if the proceeds are to be divided on a community basis (Nuesiri, 2016, 2022). External funding associated with the initiation of the community forest has dried up, making administrative and salary costs hard to meet (Anaka, 2018; Nuesiri, 2016, 2022). Many botanical specimens from BBCF as well as other sites in the Mount Cameroon area were deposited at a newly established herbarium at Limbe, close to the site but this also seems to have suffered from lack of funds and specimens are in a poor state of preservation. The initial term of the community forest expires in 2027 and it is doubtful that the forest can be preserved under the community forest model without significant external income targeted at conservation (Nuesiri, 2022).
Due to the small size and inadequate management, both closer operational collaboration and also habitat continuity with MCNP are urgently required (Ferenc et al., 2018).

Site assessor(s)

Bruce Murphy, Royal Botanic Gardens, Kew

Martin Cheek, Royal Botanic Gardens Kew

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
Afrothismia pachyantha Schltr.	A(i)	–	–	–	✓	–	
Afrothismia winkleri (Engl.) Schltr.	A(i), A(iii)	–	–	–	–	–	
Beilschmiedia preussii Engl.	A(i)	–	–	–	✓	–	
Genyorchis platybulbon Schltr.	A(i)	✓	✓	–	–	–	
Liparis goodyeroides Schltr.	A(i)	✓	✓	✓	–	–	
Neoschumannia kamerunensis Schltr.	A(i)	✓	✓	✓	–	–	
Aristolochia preussii Engl.	A(i)	✓	✓	✓	–	–	
Oxygyne triandra Schltr.	A(i)	–	–	–	–	–	
Cola cecidiifolia Cheek	A(i)	✓	✓	✓	✓	✓	
Magnistipula cuneatifolia Hauman	A(i)	✓	✓	✓	–	–	
Afzelia pachyloba Harms	A(i)	–	–	–	–	–	
Ancistrocladus grandiflorus Cheek	A(i)	–	–	–	–	–	
Angylocalyx talbotii Baker f. ex Hutch. & Dalziel	A(i)	–	✓	–	–	✓	
Begonia preussii Warb.	A(i)	–	–	–	–	–	
Bulbophyllum bifarium Hook.f.	A(i)	✓	✓	–	–	–	
Cola nigerica Brenan & Keay	A(i)	✓	✓	✓	–	–	
Craibia atlantica Dunn	A(i)	–	✓	✓	–	✓	
Culcasia sanagensis Ntepe-Nyame	A(i)	✓	–	✓	–	–	

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
Daniellia oblonga Oliv.	A(i)	✓	✓	✓	–	✓	
Entandrophragma angolense (Welw.) C.DC.	A(i)	–	–	–	–	✓	
Entandrophragma cylindricum (Sprague) Sprague	A(i)	–	–	–	–	✓	
Lophira alata Banks ex Gaertn.f.	A(i)	–	–	–	–	✓	
Memecylon dasyanthum Gilg & Ledermann ex Engl.	A(i)	✓	–	–	–	✓	
Nauclea diderrichii (De Wild. & T.Durand) Merrill	A(i)	–	–	–	–	✓	
Rinorea thomasii Achound.	A(i)	✓	✓	✓	–	–	
Salacia lehmbachii Loes var. pes-ranulae N.Hallé	A(i)	✓	✓	–	–	–	
Salacia nigra Cheek	A(i)	✓	–	–	–	–	
Strychnos staudtii Gilg	A(i)	✓	✓	–	–	–	
Vepris lecomteana (Pierre) Cheek & T.Heller	A(i)	✓	✓	✓	–	✓	
Strychnos elaeocarpa Gilg ex Leeuwenb.	A(i)	✓	✓	✓	–	✓	
Afzelia bipindensis Harms	A(i)	–	–	–	–	✓	
Chazaliella obanensis (Wernham) Petit & Verdc.	A(i)	✓	✓	–	–	–	
Psychotria bimbiensis Bridson & Cheek	A(i)	✓	✓	✓	–	–	
Psychotria moliwensis fernandopoensis	A(i)	✓	✓	✓	–	–	
Afrofittonia silvestris Lindau	A(i)	✓	–	–	–	–	

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
Campylostemon mitophorum Loes.	A(i)	✓	✓	✓	–	–	
Millettia pilosa Hutch & Dalz.	A(i)	✓	✓	✓	–	–	
Medusandra richardsiana Brenan	A(i)	✓	✓	✓	–	–	
Grossera major Pax	A(i)	✓	–	–	–	–	
Isomacrolobium leptorrhachis (Harms) Aubrév. & Pellegr.	A(i)	–	–	✓	–	–	
Trichoscypha mannii Hook.f.	A(i)	–	–	✓	–	–	
Warneckea austro-occidentalis R.D.Stone	A(i)	✓	–	✓	–	–	

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 Moist Lowland Forest	–	
Forest - Subtropical/Tropical Mangrove Forest Vegetation Above High Tide Level	–	
Forest - Subtropical/Tropical Swamp Forest	–	
Marine Coastal/Supratidal	–	

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	30	
Agriculture (arable)	–	
Tourism / Recreation	30	
Forestry	–	

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Harvesting of wild resources	–	

Threats

THREAT	SEVERITY	TIMING
Residential & commercial development - Housing & urban areas	Medium	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	High	Ongoing - trend unknown
Biological resource use - Gathering terrestrial plants	Low	Ongoing - trend unknown
Biological resource use - Logging & wood harvesting	High	Ongoing - trend unknown
Agriculture & aquaculture - Annual & perennial non-timber crops - Agro-industry farming	High	Ongoing - trend unknown
Human intrusions & disturbance - War, civil unrest & military exercises	High	Ongoing - trend unknown

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Dikolo, Likomba laMbenge and LIkomba Lelu	Community conservation area	IPA encompasses protected/conservation area	12

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Site management plan in place	Management plan implemented in 2002. It is not know if this was renewed after five years as intended. Community management lease due for renewal in 2027	2002	2027

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