

Ebo Forest









Country: Cameroon Administrative region: Littoral (Region) Central co-ordinates: 4.30970 N, 10.31670 E

Area: 1423km²

Qualifying IPA criteria

A(i)

IPA assessment rationale

Ebo Forest qualifies as an Important Plant Area of Cameroon on the basis of nationally significant populations of globally threatened species and also the exceptional botanical diversity of the site, indicated by the large number of nationally endemic species. Although it has only recently and incompletely been surveyed, 78 globally threatened IUCN Red List species have been recorded at the site, representing over 10% of the Cameroon total. Of these, most qualify under TIPAS criterion A and 8 species are strictly endemic to the site.

Over 800 species (c. 10% of the Cameroonian flora) have been recorded from the area, with many more specimens awaiting identification. When more fully surveyed the area is likely to become one of the richest plant sites in Cameroon. Over 40 national endemics occur and a huge variety of socially, economically or

culturally valuable species are used by local people. The site is also likely to qualify under criterion C as one of the country's best examples of coastal/Biafran lowland rainforest.

Site description

The Ebo forest in Littoral Region, Cameroon, covers c. 1,400 km² of evergreen lowland and submontane cloud forest along numerous low, parallel ridges between the Wouri and Sanaga rivers approximately 100 km from the coast. The suggested IPA site corresponds to the former proposed National Park and is centered around the confluence of the two branches of the Ebo river at approximately 4.3097 N,10.3167 E. From there the river flows SSW, bisecting the site. Small villages surround the Ebo forest populated by the Banen and Bassa peoples, and until the late 1950s and early 1960s there were several inhabited villages within the forest (Abwe & Morgan, 2008). The Ebo Forest Research Project (EFRP) has been working in the forest and with communities surrounding it since the important discovery in 2002 of a lowland Gorilla population in the forest. This population, possibly a unique subspecies, is isolated from other populations of both the Cross River Gorilla (Gorilla gorilla diehli) and Western Gorilla (Gorilla gorilla gorilla) (Oates et al 2003; Morgan, Wild and Ekobo 2003). The forest also harbours many other rare mammals, including one of the largest global surviving populations of both the drill, a Critically Endangered, range-restricted primate, and the rarest Chimpanzee subspecies, Pan troglodytes

ellioti (Morgan et al 2013). The latter is uniquely known amongst Chimpanzees to use tools for both termite fishing and nut cracking (Abwe and Morgan, 2008). The forest is one of few classed as "exceptional priority" for Nigeria-Cameroon chimpanzees by the IUCN-endorsed conservation action plan for the subspecies (Morgan et al 2011). It also constitutes nearly 50% of the Yabassi Key Biodiversity Area (BirdLife International, 2020). Botanically, the forest was hardly known until surveys in the early 21st century found it to be one of the richest and largest surviving intact areas of lowland and submontane forest in tropical Africa, harbouring many globally threatened and nationally endemic plant species (Cheek et al., 2018). These surveys have also revealed several species new to science.

as Ochna calodendron which is of traditional significance to local people. Important waterfall communities also exist within the area, such as that containing the globally endemic Inversodicraea ebo from one of the most threatened plant families in Africa (Cheek et al., 2017). These rare plants are likely to be particularly affected by any incursions in the forest area because of their sensitivity to water turbidity which can be caused by increased surface run-off associated with forest clearance.

Nearly all plant collecting has been in two small areas around the Bekob and Njuma camps; the rest of the site has hardly been explored botanically and likely contains much else that is worthy of scientific research.

Botanical significance

Although located in the biologically important zone between the Cross and Sanaga rivers, which contains the highest plant species diversity per degree square in tropical Africa (Barthlott et al., 1999), the botanical significance of the Ebo forest has only become apparent to scientists in the twentieth-first century. Twentieth century collections were made by the botanists Leouzey and Leeuwenberg in the Yabassi-Yingui area but Ebo was almost completely unsurveyed for plants until 2004 when surveys were undertaken by the Royal Botanic Gardens, Kew and Herbier National du Cameroun, resulting in 2590 herbarium specimens. These collections suggest that diversity and endemism may be equivalent or even greater than that found at Kupe-Bakossi 100 km to the north where 82 endemic and 212 threatened species have been documented (Cheek et al., 2018). So far, surveying efforts have resulted in publication of sixteen new species to science discovered at Ebo, ranging from herbs and shrubs to canopy trees. Eight of these Ardisia ebo, Palisota ebo, Inversodicraea ebo, Kupeantha ebo, Crateranthus cameroonensis, Pseudohydrosme ebo, Uvariopsis dicaprio and Kupeantha yabassi are narrowly endemic to Ebo while two others have a slightly larger range but have also been named after the site: Gilbertiodendron ebo and Talbotiella ebo. Further new species to science remain to be published in the genera: Ardisia, Begonia, Chassalia, Cola, Justicia, Ledermanniella, Mitriostigma, Pavetta, Psychotria, Rhaptopetalum and Zenkerella (M. Cheek pers. comm., 2020). Many of these species are also so far endemic to Ebo or its immediate neighbourhood. Overall, the area is known to contain over 100 globally threatened species from the official IUCN Red List as well as several others that are Near Threatened, or provisionally threatened but awaiting formal IUCN assessment. In total, well over 800 species have already been recorded at Ebo, one tenth of the total Cameroon flora (Onana, 2011), and at least 40 species are nationally endemic.

The proposed area is important for both lowland evergreen moist tropical forest, containing species ranging from the spectacular and globally endemic herb Pseudohydrosme Ebo to the giant, Endangered timber tree Microberlinia bisulcata, as well as submontane cloud forest featuring rare endemics such as Uvariopsis dicaprio and Kupeantha ebo. In addition, small areas of deciduous forest occur on igneous outcrops, featuring species such

Habitat and geology

The forest lies on ancient, highly weathered, basement complex rocks, with some ferralitic areas in the lower, flatter southern part (Cheek et al., 2018). The topology consists of numerous low parallel, ridges running SSW-NNE, parallel with the Cameroon Volcanic Line. Altitude ranges from c. 130 to 1,115 m, with the south flatter and lower than the northern part. There is a wet season from March until November with >100 mm precipitation. Rainfall has been measured at Bekob and Njuma within the proposed area at 2,336 and 3,135 mm p.a. respectively between 2010 and 2016 (Cheek et al., 2018). Mean annual temperature is 25–28 °C (Whytock et al., 2021). The Ebo river flows south through the site into the Dibamba river which joins the Cameroon estuary at Douala.

Ebo forest is a major part of the largest intact forest landscape in the important Cross-Sanaga-Bioko coastal forest ecoregion (Popatov et al., 2017; Grantham et al., 2020ab; Whytock et al., 2021). As well as the predominant evergreen, closed canopy lowland forest and submontane forest with Podocarpus latifolius, there are also areas of semi-deciduous woodland on inselbergs and waterfall communities. According to Letouzey's (1981) categorisation, the site consists mainly of variations on dense humid Atlantic Littoral forest (type 247), Atlantic Biafran forest (types 228, 235) and Atlantic Northwest forest with semi-deciduous elements (type 205), as well as some submontane forest (type 117). Varying abundances of "caesalpinioid" legume species and the presence of Sacoglottis gabonensis are used to define these variations.

Conservation issues

The Ministry of Forestry and Wildlife (MINFOF) started the process of gazettement of this forest as a national park in 2006 following work by the World Wide Fund for Nature (WWF) Cameroon. The process had stalled, partly due to objections from local communities wary of losing traditional rights to the forest, when in March 2020 decrees (signed in February 2020) were unexpectedly revealed announcing that the area of the proposed National Park would instead be brought under two Forest Management Units (FMU) to be commercially exploited for timber. This would have seriously increased the danger to the majority of threatened plant species and made the continued long term survival of the important faunal

populations untenable. The surprise development was also opposed by local villagers, this time in coalition with a range of local and international conservation organisations, resulting in the government revoking the concessions in August 2020 (Alberts, 2020; Cheek et al., 2021). The ultimate status of the forest remains undecided but conservation agencies have now forged a close working alliance with local villagers and are keenly aware that traditional access and use of the forest should be a key component of conservation plans (Mfossa et al., 2018; Gaworecki, 2020; Truscott, 2021).

Despite the suspension of plans for direct exploitation, the site remains threatened by encroachment. To the north lies a large forestry concession (FMU 00-004) while logging roads in the southern part of the forest give access to illicit logging and bushmeat hunting. A major 123,000 ha palm oil plantation has also been established on the western fringe of the forest by the Cameroonian company Azur/Greenfil, which, it is feared, will lead to an increase in encroachments into the forest for bushmeat and logging as well as forming a dispersal boundary for forest populations (Mowbray, 2017; Earthsight, 2018; Orozco & Salber, 2019). Non-industrial cultivation is actually the main source of palm oil in the region, and is a further local threat through insidious and ongoing forest fragmentation (Nkongho et al., 2014; Mahmoud et al., 2019). A study of Ebo and the wider Littoral region reported a 57% increase in fragmentation of natural forest between 1975 and 2017 (Mahmoud et al 2019). Future expansion of cultivation into the Ebo forest area can also be envisaged if timber extraction does proceed in and around the forest since logging and road building has been shown to be a facilitator of further land clearance (Mahmoud et al 2019). The conservation of the forest is also threatened by mining permits covering the southeastern part, amounting to around a third of the area (Mahmoud et al., 2019).

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
Afrofittonia silvestris Lindau	A(i)	~	-	~	-	_	
Afrostyrax lepidophyllus Mildbr.	A(i)	-	~	-	-	-	
Afzelia bipindensis Harms	A(i)	-	~	-	-	~	
Afzelia pachyloba Harms	A(i)	-	~	-	-	~	
Allanblackia gabonensis (Pellegr.) Bamps	A(i)	~	-	-	-	-	
Ardisia ebo Cheek	A(i)	~	~	~	~	-	
Asystasia lindauiana Hutch. & Dalziel	A(i)	~	~	-	-	-	
Aulacocalyx camerooniana Sonké & S.E.Dawson	A(i)	~	~	-	-	-	
Berlinia korupensis Mackinder & Burgt	A(i)	~	~	-	-	-	
Belonophora ongensis S.E.Dawson & Cheek	A(i), A(iii)	~	~	-	-	-	
Boutiquea platypetala (Engl. & Diels) Le Thomas	A(i)	~	~	-	-	-	
Calycosiphonia macrochlamys (K.Schum.) Robbr.	A(i)	~	~	-	-	-	
Campylospermum umbricola (Tiegh.) Farron	A(i)	-	-	-	-	-	
Chazaliella obanensis (Wernham) Petit & Verdc.	A(i)	~	~	~	-	-	
Chlamydocardia subrhomboidea Lindau	A(i)	~	~	-	-	-	
Coffea fotsoana Stoffelen & Sonké	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)	~	~	-	-	-	
Diospyros crassiflora Hiern	A(i)	-	-	-	-	~	
Dorstenia prorepens Engl.	A(i)	~	~	_	_	_	
Drypetes preussii (Pax) Hutch.	A(i)	~	~	-	-	-	
Entandrophragma utile (Dawe & Sprague) Sprague	A(i)	-	-	-	-	~	
Floscopa mannii C.B.Clarke	A(i)	~	~	-	-	-	
Garcinia kola Heckel	A(i)	_	_	_	_	~	
Gilbertiodendron ebo Burgt & Mackinder	A(i)	~	~	-	-	~	
Gilbertiodendron newberyi Burgt	A(i)	~	~	~	-	~	
Hoplestigma pierreanum Gilg	A(i), A(iii)	~	~	~	-	-	
Hymenostegia brachyura (Harms) J.Léonard	A(i)	~	~	_	-	-	
Impatiens frithii Cheek	A(i)	~	~	-	-	-	
Inversodicraea ebo Cheek	A(i)	~	~	~	~	-	
Kupeantha ebo Alvarez & Cheek	A(i)	~	~	~	~	-	
Lophira alata Banks ex Gaertn.f.	A(i)	-	-	-	-	~	
Microberlinia bisulcata A.Chev.	A(i)	~	-	~	-	~	
Microcos magnifica Cheek	A(i)	~	~	~	-	-	
Momordica enneaphylla Cogn.	A(i)	-	-	-	-	-	
Myrianthus fosi Cheek	A(i)	~	~	_	-	~	
Ochna calodendron Gilg & Mildbr.	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
Palisota ebo Cheek	A(i)	~	~	~	~	-	
Pauridiantha divaricata (K.Schum.) Bremek.	A(i)	~	~	-	-	-	
Pavetta brachycalyx Hiern	A(i)	~	~	-	-	-	
Piptostigma macrophyllum Ghogue, Sonké & Couvreur	A(i)	~	~	-	-	-	
Piptostigma submontanum Ghogue, Sonké & Couvreur,	A(i)	~	~	~	-	-	
Psychotria darwiniana Cheek	A(i)	~	~	-	-	-	
Psychotria densinervia (K.Krause) Verdc.	A(i), A(iii)	~	~	-	-	-	
Psychotria lanceifolia K.Schum.	A(i)	~	~	-	-	-	
Psychotria njumei Cheek	A(i)	~	~	-	-	-	
Rhaptopetalum breteleri Letouzey	A(i)	~	~	-	-	-	
Rhaptopetalum sessilifolium Engl.	A(i), A(iii)	~	~	-	-	-	
Sabicea rufa Wernham	A(i)	~	~	~	-	-	
Sabicea xanthotricha Wernham	A(i)	~	~	-	-	-	
Salacia nigra Cheek	A(i)	~	~	-	-	_	
Schefflera mannii (Hook.f.) Harms	A(i)	-	-	-	-	-	
Secamone letouzeana (H. Huber) Klack.	A(i)	-	-	-	-	-	
Staurogyne bicolor (Mildbr.) Champl.	A(i)	~	~	-	-	-	
Talbotiella ebo Mackinder & Wieringa	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
Tapinanthus preussii (Engl.) Tiegh.	A(i)	~	~	-	-	-	
Trichostachys petiolata Hiern	A(i)	~	~	-	-	-	
Uvariopsis submontana Kenfack, Gosline & Gereau	A(i)	~	-	~	-	-	
Whitfieldia preussii (Lindau) C.B.Clarke	A(i)	~	~	-	-	-	
Xylopia africana (Benth.) Oliv.	A(i)	~	-	~	-	-	
Crateranthus cameroonensis Cheek & Prance	A(i)	~	~	~	~	-	
Mendoncia camerounensis Breteler & Wieringa	A(i)	~	~	~	-	-	
Hymenostegia talbotii Baker f.	A(i)	~	~	-	-	-	
Hymenostegia viridiflora Mackinder & Wieringa	A(i)	~	~	~	-	-	
Costus albiflos Maas & H.Maas	A(i)	~	~	-	-	-	
Costus kupensis H.Maas & Maas	A(i)	~	~	~	-	-	
Plagiosiphon discifer Harms	A(i)	~	~	~	-	_	
Rungia congoensis C.B.Clarke	A(ii)	-	-	-	-	-	
Uvariopsis zenkeri Engl.	A(i)	-	-	-	-	-	
Vitex lokundjensis W.Piep.	A(i)	~	-	~	-	-	
Nothodissotis barteri (Hook.f.) Veranso-Libalah & G.Kadereit	A(i)	~	~	~	-	-	
Anthonotha xanderi Breteler	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
Afrothismia fungiformis Sainge & Kenfack	A(i)	~	~	~	-	_	
Pseudohydrosme ebo Cheek	A(i)	~	~	~	~	-	
Uvariopsis dicaprio Cheek & Gosline	A(iii), A(iv)	~	~	~	~	-	
Dicranolepis polygaloides Gilg ex H.Pearson	A(i)	~	-	-	-	-	
Rhaphidophora pusilla N.E.Br	A(i)	~	~	~	-	-	
Leplaea thompsonii (Sprague & Hutch.) E.J.M.Koenen & J.J.de Wilde	A(i)	-	-	-	-	~	
Sabicea medusula K.Schum. ex Wernham	A(i)	-	-	-	-	-	
Globulostylis rammelooana Sonké	A(i)	-	-	~	-	-	
Bulbophyllum alinae Szlach.	A(i), A(iii)	~	~	~	-	-	
Bulbophyllum calvum Summerh.	A(i)	~	~	~	-	-	
Genyorchis platybulbon Schltr.	A(i)	~	-	~	-	-	
Bulbophyllum teretifolium Schltr.	A(i)	~	-	~	-	-	
Eggelingia gabonensis P.J.Cribb & Laan	A(i)	~	~	~	-	-	
Kupeantha yabassi M.G.Alvarez & Cheek	A(i), A(iii)	~	~	~	~	-	
Phyllanthus caesiifolius Petra Hoffm. & Cheek	A(i)	~	~	~	-	-	
Phyllanthus nyale Petra Hoffm. & Cheek	A(i)	~	~	~	-	-	
Guibourtia pellegriniana J.Léonard	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
Neolemonniera batesii (Engl.) Heine	A(i)	~	~	~	-	-	
Thyrsosalacia pararacemosa N.Hallé	A(i)	~	~	~	-	-	
Bulbophyllum porphyrostachys Summerh.	A(i)	~	~	~	-	-	
Hamilcoa zenkeri (Pax) Prain	A(i)	~	~	~	-	-	
Coffea leonimontana Stoff.	A(i)	~	~	~	-	-	
Dichapetalum korupinum Breteler	A(i)	~	~	~	-	-	
Vitex yaundensis Gürke	A(i)	~	~	~	-	-	
Aristolochia preussii Engl.	A(i)	~	~	~	-	-	
Landolphia maxima (K.Schum. ex Hallier f.) Pichon	A(i)	~	~	~	-	-	
Rinorea thomasii Achound.	A(i)	~	~	~	-	-	
Psychotria arborea Hiern	A(i)	~	~	~	-	-	
Trichoscypha mannii Hook.f.	A(i)	-	~	~	-	-	
Entandrophragma angolense (Welw.) C.DC.	A(i)	-	-	-	-	~	
Tricalysia vadensis Robbr.	A(i)	~	~	~	-	-	
Impatiens banen Cheek	A(iii)	~	~	~	~	-	
Thunbergia cuanzensis S.Moore	A(iii)	~	~	~	-	-	

IPA criterion C qualifying habitats

HABITAT	QUALIFYING SUB-	≥ 5% OF NATIONAL	≥ 10% OF NATIONAL	1 OF 5 BEST SITES	AREAL COVERAGE
	CRITERION	RESOURCE	RESOURCE	NATIONALLY	AT SITE

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Moist Lowland Forest	80	Major
Forest - Subtropical/Tropical Moist Montane Forest	20	Major
Wetlands (inland) - Permanent Rivers, Streams, Creeks [includes waterfalls]	-	Unknown

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Harvesting of wild resources	100	Minor

Threats

THREAT	SEVERITY	TIMING
Agriculture & aquaculture - Annual & perennial non-timber crops - Agro-industry farming	Medium	Ongoing - increasing
Agriculture & aquaculture - Wood & pulp plantations - Small-holder plantations	Medium	Ongoing - increasing
Biological resource use - Logging & wood harvesting - Unintentional effects: large scale (species being assessed is not the target) [harvest]	High	Future - planned activity
Energy production & mining - Mining & quarrying	Medium	Ongoing - trend unknown
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	Low	Ongoing - trend unknown

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Yabassi Important Bird Area	Important Bird Area	protected/conservation area overlaps with IPA	1400
Yabassi Key Biodiversity Area	Key Biodiversity Area	protected/conservation area overlaps with IPA	1400

Management type

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

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