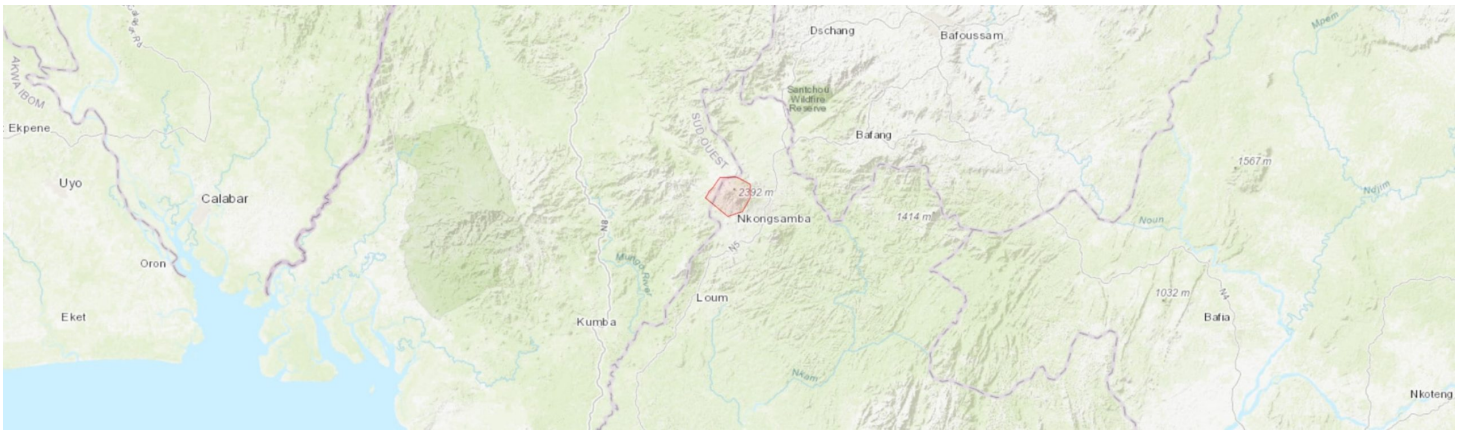
Mount Mwanenguba

CMNTIPA033



Country: **Cameroon**
Administrative region: **Southwest and Littoral (Region)**
Central co-ordinates: **5.02900 N, 9.83390 E**
Area: **119km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Mount Mwanenguba qualifies as a potential IPA by virtue of several globally threatened plants that are partly reliant on this site for their survival. Greater surveying would undoubtedly record more threatened and endemic taxa. The site would also very likely qualify under criterion B(i), C(ii) or C(iii) for its important cloud forest and montane forest habitats.

Site description

Mt Mwanenguba is one of the highest peaks in Cameroon, located along the Cameroon Volcanic Line approximately 125 km inland, close to the large town of Nkongsamba. The site defined here incorporates and is larger than the proposed Integral Ecological Reserve of 52 km2 or Herpetological sanctuary of 47 km. It extends down to around 1,000 m on the southern slopes, nearly to Mwanenguba village in the southeast, and to c. 1,500m in the east above Nkongsamba, and also includes the western slopes down to the road around 1,300 m and the and Mwandon ("Etugé lakes") crater lakes region in the southwest. The Mount Manengouba Key Biodiversity Area, which covers 88 km2, includes a greater area to the north but appears badly degraded and we only include the northern upper slopes. Mwanenguba's caldera and crater lakes are relatively easily reached via a road from Bangem which ascends 800 m rather directly. The forested southern and eastern summit area is less accessible from Nkongsamba via Mwanenguba village or Manjo via Nsong village.

Botanical significance

Mt Mwanenguba is one of several biologically important sites along the Cameroon Volcanic Line. Compared to nearby Mt Kupé, Mt Nlonako and the Bakossi Mountains, less submontane forest has survived at Mt Mwanenguba but unlike the latter two sites it features genuinely montane (>1900 m) habitat, although this is perhaps less well preserved than that of Mt Kupé. The species list presented here is considerably shorter than those for Mt Kupé and Bakossi National Park, as the site was surveyed in a much more limited fashion by the RBG Kew-HNC-Earthwatch team (Cheek et al., 2004). Montane forest also tends to have fewer endemic species and more wide-

ranging species than submontane forest. Nonetheless, the site is of great importance for these habitats, and features numerous globally threatened species.
Beilschmiedia ndongensis (CR), Aframomum kodmin (EN) and Ledermanniella thaloidea (EN), collected near Ndoungue in the valley between Mt Mwanenguba and Mt Nlonako, are outside the boundary of the site as considered here but deserve mention. The former is considered globally endemic to this location, having only been collected once at 700-800 m over a century ago (Cheek et al., 2004; De Kok 2021). Every effort should be made to ensure habitat continuity between these mountains despite the difficulty of development along the valley. Some species, such as Impatiens letouzeyi (EN) are only recorded from the "Etugé" crater lakes region which is on the southwest slopes at around 1,200 m, outside the forest reserve and proposed herpetological sanctuary.

Habitat and geology

One of the major features of the Cameroon Volcanic Line, Mt Mwanenguba is a recent but extinct, multi-stage volcano rising above 2,400 m, and connected west- and southwards by 1,000+ m ridges to the Bakossi mountains and Mt Kupé, respectively. It is separated by the lower (700–800 m) Nkongsamba valley and Mbo Plain from, respectively, Mt Nlonako to the east and the Bamileke plateau and Bamboutos Mountains to the North. The summit region of Mwanenguba features the Eboga caldera with its twin, "male" and "female" crater lakes, plus various peaks east of the caldera rim including the 2,444 m summit pinnacle. Previous research interpreted the caldera as the collapsed remains of the Eboga stratovolcano, which had itself formed inside an earlier, poorly defined Elengoum caldera (Fitton & Dunlop, 1985). However, more recent interpretation by Pouclet et al. (2014) argues conclusively that the eastern Elengoum extrusive complex is more recent (0.89–0.7 Ma) than the older Eboga (0.94–0.89 Ma) stratovolcano and caldera. Both are built on an older but still recent (1.55–0.94 Ma) shield volcano, which evolved into the Eboga stratovolcano. The largely deforested western, southwestern and northwestern flanks correspond to the basaltic and intermediate flows from the Eboga stratovolcano, while the steep, forested southeastern slopes—which constitute most of the proposed Integral Ecological Sanctuary and Herpetological Sanctuary land—are based on pyroclastic, acidic trachytes. However, numerous yet more recent (0.5–0.1 Ma) cinder cones and lava flows are found on the flanks and covering the Eboga caldera, as well as constituting the 2,441 m summit pinnacle. These are mainly basaltic, with basanite, Hawaiite and mugearite predominant. Rocks from the shield stage, as well as pre-Mwanenguba lavas and uplifted basement rocks, occur mainly outside the area here considered (Pouclet et al., 2014). Andosols, rich in trace elements, are common across the mountain, resulting in large areas cleared for cultivation (Tefogoum et al., 2014).
Mount Mwanenguba is situated in one of the wettest areas of tropical Africa and high altitude adds additional orographic and occult precipitation. The latter is induced by the cloud forest vegetation (although this is likely much reduced from its natural state) and probably helps maintain high year-long moisture despite low rainfall from December to February (Wild, 2004a). Total annual precipitation for both Nkongsamba in the west and Bangem in the east is c. 2,800 mm but is likely to be greater at higher altitude, particularly on the southwestern slopes (Wild, 2004a). Temperature varies little seasonally around 23–24 °C; daily gradients, influenced by altitude, are greater.
Cloud forest—characterised by enveloping mist, stunted trees and abundant epiphytes, mosses, and ferns—is stable and well developed from around 1,200 m up to the caldera. This is a rare and internationally important habitat for which Mwanenguba is famous (the "Mists of Mwanenguba").
Submontane forest extended down the eastern valley to Ndongue when surveyed by Ledermann in 1908 but much has subsequently been cleared and what remains has been inadequately surveyed (Cheek et al., 2004). It is unclear to what extent the mosaic of grassland and forest that remains is a natural formation. The montane forest on the summit and southeast flanks is also little surveyed. Montane grassland, regularly burnt and grazed, fills most of the large caldera (1,900–2,000 m) and much of the northern and eastern slopes at similar altitude.

Conservation issues

Preserving the unprotected remaining montane and submontane forest in the southeast and on the summit above the caldera to the east, are probably the conservation priorities from a botanical perspective, even though these forests are relatively little known (Cheek et al., 2004). Many of the species cited here come from grassland areas in the caldera region. Buildings are evident within the caldera and this habitat is threatened by cultivation. Burning and grazing by horses, cattle and goats is implicated in the existence of the caldera grassland and scrubby forest cover (Cheek et al., 2004; KBA partnership, 2020; Blackburn, 2008). On the lower slopes, and up to 1,700 m in places, the main threats are shifting agriculture and informal logging by residents of the local villages and expanding towns below (KBA Partnership, 2020; Rainforest Trust, 2018). Introduction of non-native fish species to the lakes is a major threat to these aquatic systems (Cheek et al., 2004). Chameleons and Goliath Frogs are hunted for the pet trade and food; agricultural contamination also threatens amphibians, as well as human water supplies (Hirschfield et al., 2016; Rainforest Trust, 2021). Climate change and chytrid disease (Batrachochytrium dendrobatidis) are further threats (Hirschfield et al., 2016). Quarrying of the volcanic rock for Pozzolana to make cement and roads is also common on the lower slopes (Tefogoum et al., 2014).
Despite the many previously proposed protected areas and conservation zones (Wild et al., 2004b), the mountain remains legally unprotected. The latest effort, a proposed Herpetological Sanctuary, targets only a relatively small proportion of the mountain but would appear to include most of the more intact area and has the advantage of not including any dwellings (Rainforest Trust, 2021). Local elites have backed conservation efforts in this region (Cheek et al., 2004) and the conservation of forest on the southeast slopes is

attributed to awareness by Nsong villagers of the biological importance of the forest, partly following work by J.L Amiet studying amphibians in the 1970s (KBA partnership, 2020), The Herpetological sanctuary is backed by the Rainforest Trust and the local groups including the Cameroon Herpetology-Conservation Biology Foundation (CAMHERP-CBF) and the Environment and Rural Development Foundation (ERUDEF). Successful sensitisation work was reported (Rainforest Trust, 2018) but it is not known if there has been further progress towards gazettement. Eventual withdrawal of WWF from the Kupé-Mwanenguba area after frustration of efforts towards gazettement of earlier proposals has reportedly left locals distrustful (Rainforest Trust, 2018).
Like the Mwanenguba KBA, the site proposed here is adjacent to the Eastern Bamenda and Associated Hydrobasin KBA, which extends to Mt Kupé and includes the Ngomboaku area, where many important plant species have been recorded and an unusual area of highland Raphia swamp is located (Cheek et al., 2004; KBA partnership, 2020). Habitat connectivity with the biologically related Bakossi Mountains, Mt Kupé and Mt Nlonako are crucial aims for conservation work in this area. Loss of elephants (hunted to extinction by 1984; Wild, et al., 2004) and other megafaunal seed dispersers must threaten the long-term viability of many plant species. Efforts should be made to enable their return via such forest corridors.

Site assessor(s)

Bruce Murphy, Royal Botanic Gardens, Kew

Leonard Usungo, Wildlife Conservation Society, Cameroon

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
Rhipidoglossum polydactylum (Kraenzl.) Garay	A(i)	✓	✓	✓	–	–	
Rhabdotosperma densifolia (Hook.f.) Hartl	A(i)	✓	✓	✓	–	–	
Schefflera hierniana Harms	A(i)	✓	✓	✓	–	–	
Begonia oxyanthera Warb.	A(i)	✓	✓	–	–	–	
Memecylon dasyanthum Gilg & Ledermann ex Engl.	A(i)	✓	–	✓	–	–	
Bidens mannii T.G.J.Rayner	A(i)	✓	✓	–	–	–	
Peperomia kamerunana C.D.C	A(i)	✓	✓	–	–	–	
Polystachya cooperi Summerh.	A(i)	✓	✓	✓	–	–	
Asystasia glandulifera Lindau	A(i)	✓	✓	✓	–	–	
Polystachya albescens Ridl. subsp. manengouba W.Sanford	A(iii), A(iv)	✓	✓	✓	✓	–	
Begonia preussii Warb.	A(i)	✓	–	–	–	–	
Crotalaria ledermannii Bak.f.	A(i)	✓	✓	✓	–	–	
Ixora foliosa Hiern	A(i)	✓	✓	✓	–	–	
Schefflera mannii (Hook.f.) Harms	A(i)	✓	–	–	–	–	
Polystachya geniculata Summerh.	A(i)	✓	✓	✓	–	–	
Polystachya farinosa Kraenzl.	A(i)	✓	✓	✓	–	–	
Brachystephanus giganteus Champl.	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
Morella arborea (Hutch.) Cheek	A(i)	✓	✓	✓	–	–	
Chassalia laikomensis Cheek	A(i), A(iii)	✓	–	–	–	–	
Disperis nitida Summerh.	A(i)	✓	✓	✓	–	–	
Phyllopentas ledermannii (K.Krause) Kårehed & B.Bremer	A(i)	✓	✓	✓	–	–	
Rhabdotosperma ledermannii (Murb.) Hartl	A(i)	✓	✓	✓	–	–	
Habenaria nigrescens Summerh.	A(i)	✓	✓	✓	–	–	
Globimetula oreophila (Oliv.) Tiegh.	A(i)	✓	–	–	–	–	
Pavetta hookeriana Hiern var. hookeriana	A(i)	✓	–	✓	–	–	
Wahlenbergia ramosissima (Hemsl.) Thulin subsp. ramosissima	A(i)	✓	✓	✓	–	–	
Bulbostylis densa (Wall.) Hand.-Mazz. var. cameroonensis S.S.Hooper	A(i)	✓	✓	✓	–	–	
Impatiens letouzeyi Grey-Wilson	A(i)	✓	✓	✓	–	–	
Eragrostis camerunensis W.D.Clayton	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 Montane Forest	—	Major

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE

Threats

THREAT	SEVERITY	TIMING
Geological events - Avalanches/landslides	Medium	Past, likely to return
Invasive & other problematic species, genes & diseases	High	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	High	Ongoing - trend unknown
Agriculture & aquaculture - Livestock farming & ranching	High	Ongoing - trend unknown
Energy production & mining - Mining & quarrying	Low	Ongoing - trend unknown
Natural system modifications - Fire & fire suppression - Increase in fire frequency/intensity	Medium	Ongoing - trend unknown
Biological resource use - Logging & wood harvesting	High	Ongoing - trend unknown
Pollution - Agricultural & forestry effluents - Soil erosion, sedimentation	Medium	Ongoing - trend unknown
Pollution - Agricultural & forestry effluents - Herbicides and pesticides	Medium	Ongoing - trend unknown

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Mont Manengouba	Important Bird Area	protected/conservation area overlaps with IPA	70
Mont Manengouba	Key Biodiversity Area	protected/conservation area overlaps with IPA	70
Mont Manengouba	Alliance for Zero Extinction Site	protected/conservation area overlaps with IPA	70

Management type

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

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