Massif des Mamelles

CMNTIPA026

Country: **Cameroon**
Administrative region: **South (Region)**
Central co-ordinates: **2.56760 N, 9.94870 E**
Area: **93km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

The site qualifies as a potential IPA under Criterion A(i) due to the presence of globally threatened species such as Afrotrewia kamerunica, Rhapiostylis ovatifolia, Deinbollia mezilii and Culcasia bosii (all EN), which are known from very few other sites. Considering the small size of the site, quite a large number of threatened, endemic or nationally rare species are known. However, there are caveats against some of these species due to the paucity of data available. Tchouto (2004) mentions several taxa as associated with the site but for several of these, such as Monanthotaxis elegans, Gilbertiodendron pachyanthum and Monodora zenkeri, specimen numbers are not available. Other taxa, such as Cassipourea alternifolia, Pauridiantha multiflora, Cola hypochrysea and Culcasia bosii have been included here although they occur a little distance from the main hills, while other rare or threatened taxa that are recorded imprecisely from nearby (such as Ochthocosmus calothyrsus) have not been included but should be searched for at the site. In summary, further surveying of this small site should be performed to verify the state of the habitat and what taxa still occur. This should be an urgent priority given the imminent threats faced from mining, palm-oil clearance and coastal development.

Site description

Massif des Mamelles is a low ridge of forested hills, approximately 15 km long and 2 km wide, running NNE-SSW parallel to the coast, which is 12 km away. The nearest town is Ebodje, on the N7 coastal road between Campo and Kribi. Three peaks are named on the map, from north to south, Mont Puku, Mont Mbimba and Mont Die Buster (Openstreetmap 2022; results from Geonames). The hills interrupt the low plain between the sea and Campo Ma'an National Park 25 km to the east. Mt Elephant (475 m) lies around 20 km to the north, while to the south the low plain stretches across the border and well into Equatorial Guinea.

Botanical significance

The site is relatively little known but was noted in the work of Tchouto (2004) on the Campo Ma'an area as a botanical hotspot and key site for rare and range-restricted taxa. While some of the taxa are also recorded from within the Campo Ma'an National Park, others are not, such as Afrotrewia kamerunica (Cheek & Lovell, 2020). Some taxa are also shared with Mont Elephant. Both sites represent a vegetation type categorised by Tchouto (2004), following Letouzey (1986), as "Caesalpsa" vegetation type 3 ("Lowland evergreen forest rich in Caesalpinioideae, with Sacoglottis gabonensis and other coastal indicators"). The site was actually explored for several days in September 1862 by Richard Francis Burton but no observations or specimens were recorded (Letouzey, 1968b).

Habitat and geology

South Cameroon lies on the northern edge of the Congo craton, in a zone where Archean rocks became reactivated in the Proterozoic eon to form the metasedimentary and meta-igneous Ntem complex, which is in turn subdivided by age into the Ntem, Nyong and Ayna

units (Teutsong et al., 2020). Within the Nyong unit, which consists of paleoproterozoic (c. 2089–2050 Ma) gneisses and amphibolites, the Massif des Mamelles is a greenstone belt containing banded iron formations (Moudioh et al., 2020). To the west it is bordered by an eastward thrusting coastal band which extends down from the neo-proterozoic Yaoundé group zone bordering the Congo craton to the north. The iron ores at the site predominantly consist of martite, goethite and quartz with lesser amounts of magnetite, hematite, kaolinite, and halloysite (Teutsong et al., 2020). Tchouto (2004) reports xanthic ferrasols, ferralic cambisols and ferric acrisols around the Massif. Teutsong (2020) describes the "loose horizon" as dark brown, lumpy sandy-clay and also reports low phosphorous content in the geological profile, although it is unclear if this influences soil phosphate levels.
The vegetation of the site is little reported. Tchouto's (2004) multivariate analysis categorises the local forest as the Caesalpsa vegetation type ("Lowland evergreen forest rich in Caesalpinioideae, with Sacoglottis gabonensis and other coastal indicators"), which is more or less absent from the National Park area and differs from the dominant Caesalp evergreen forest in much of the park by the abundance of Sacoglottis gabonensis and other coastal indicators. However, it is unclear if the hills themselves are continuous with this type and to what extent their height, exposure and soil characteristics are responsible for a locally unique flora.

Conservation issues

The site was one of the first iron ore reserves to be identified in the southern Cameroon iron ore corridor but has yet to be exploited (Ngoran et al., 2016; Teutsong et al., 2020). However, recent increased demand for steel has led to greater iron prospecting in Cameroon (Ngoran et al., 2016). Teutsong et al., (2020) suggest that the Mamelles reserves are of mainly medium grade ore with acceptable contaminant levels, and that further investigation is justified. Approximately 350 Mt of ore at a mean composition of 30% Fe are reported for the site by (Nkoumbou et al., 2017). Proximity to the deep sea Kribi port is a major factor contributing to the potential exploitation of these reserves compared to richer reserves further east that require major new transport infrastructure (Teutsong et al., 2020). The Cameroon company SteelCam was reported recently to have hired a French consultancy in relation to the site (Africa Intelligence, 2019). At nearby Lobé, SinoSteel have been widely reported as investing US$660 million in the 35% ores. Although no extraction had taken place by 2017 (Nguepjouo, 2017), the Chinese funded deep sea port at Kribi is now operational, providing a nearby export route (Yingwu, 2019).
In addition to the direct threat of mining at the site, the area is under threat from development and population growth associated with the port development. The forests outside of Campo Ma'an National Park, towards the coast, were already more disturbed (Tchouto, 2004) and huge rubber and palm oil (Hevecam and SocaPalm) plantations have cleared most of the area north of the site up to the Kribi-Ebolowa road. To the south the forest, although considerably altered from its natural state, was relatively well-managed as a logging concession (FMU 09-025) by the Dutch firm Wijma between 2005 and 2016 (Nforngwa, 2019). This is now to be developed as a major palm oil plantation by a little known company Camvert, with almost the whole area of 60,000 hectares between the national park and the coast scheduled for clearance (Nforngwa, 2019). Because the Mamelles site lies in a notch in the north edge of this block, this development will isolate it on three sites from other natural habitat while exposing it to clearance for small scale logging and agriculture.

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
Cassipourea alternifolia Breteler	A(i)	✓	✓	✓	–	–	
Cola hypochrysea K.Schum.	A(i), A(iii)	✓	✓	–	–	–	
Culcasia bosii Ntépé Nyamè	A(i)	✓	✓	✓	–	–	
Deinbollia mezilii D.W.Thomas & D.J.Harris	A(i)	✓	✓	✓	–	–	
Uvariopsis vanderystii Robyns & Ghesq.	A(i)	–	–	✓	–	–	
Begonia zenkeriana L.B.Sm. & Wassh.	A(i)	✓	–	✓	–	–	
Afrotrewia kamerunica Pax & K.Hoffm.	A(i)	✓	✓	✓	–	–	
Rhaphiostylis ovatifolia Engl. ex Sleumer	A(i)	–	–	–	–	–	
Gilbertiodendron pachyanthum (Harms) J.Léonard	A(i)	✓	✓	✓	–	–	
Psychotria lanceifolia K.Schum.	A(i)	✓	–	–	–	–	
Isomacrolobium leptorrhachis (Harms) Aubrév. & Pellegr.	A(i)	✓	–	–	–	–	
Hymenocoleus glaber Robbr.	A(i)	✓	–	–	–	–	
Dichapetalum oliganthum Breteler	A(i)	–	–	–	–	–	
Gilbertiodendron klainei (Pierre ex Pellegr.) J.Léonard	A(i)	–	–	✓	–	–	
Psychotria arborea Hiern	A(i)	✓	✓	✓	–	–	
Globulostylis rammelooana 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

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	90	Major

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Extractive industry	–	Major
Agriculture (arable)	–	

Threats

THREAT	SEVERITY	TIMING
Agriculture & aquaculture - Annual & perennial non-timber crops - Agro-industry farming	High	Ongoing - increasing
Transportation & service corridors - Roads & railroads	Medium	Ongoing - increasing
Energy production & mining - Mining & quarrying	High	Future - planned activity
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	Unknown	Ongoing - trend unknown

Management type

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

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