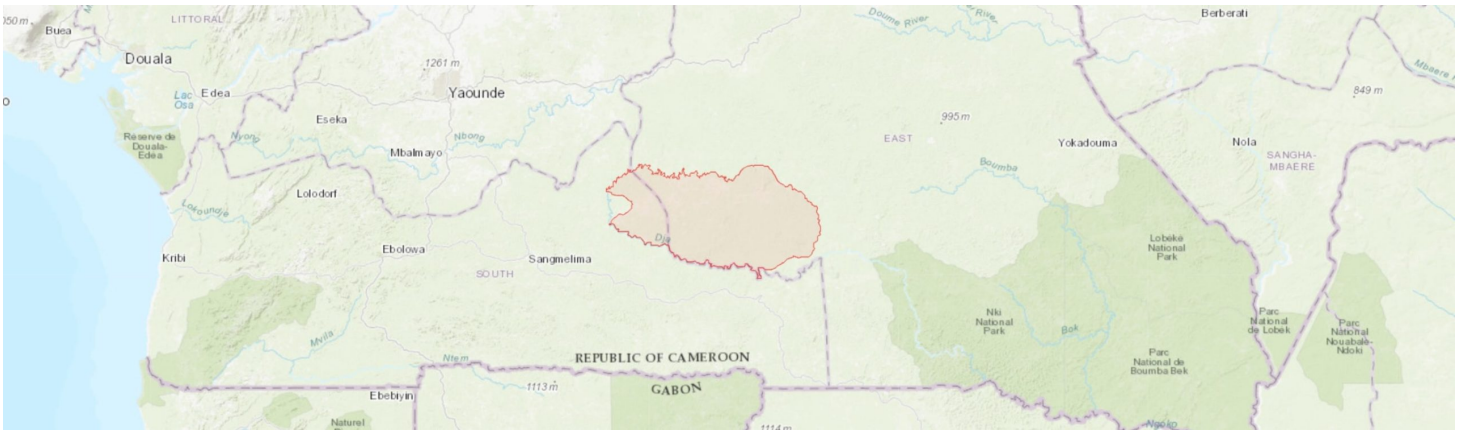
Dja Faunal reserve

CMNTIPA038



Country: **Cameroon**
Administrative region: **East and South (Region)**
Central co-ordinates: **3.00000 N, 13.00000 E**
Area: **6278km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

The Dja Faunal Reserve qualifies as a potential IPA on the basis of several globally threatened plant species, particularly Telfairia batesii (EN), which is recorded only from two locations in the vicinity of Dja and unconfirmed reports from the reserve itself, and Sabicea cruciata (CR), which is recorded from only a single other site in Equatorial Guinea. Bulbophyllum fayi (VU), Cyclantheropsis occidentalis (EN), Drypetes tessmanniana (CR), Homalium hypolasium (EN) and Sabicea cameroonensis (EN) are also notable. In addition, the site would likely qualify under criterion B(iii) as one of the best sites for timber, medicinal and other useful species, and under criterion C(iii) as one of the best sites for evergreen lowland forests (or Letouzey's "Dja Forest" type).

Site description

Dja Faunal Reserve is the largest protected areas in Cameroon. It is located in a sparsely populated area in southern Cameroon, straddling the boundary between East region (Haut-Nyong Division) and South Region (Dja-et-Lobo Division), approximately 300 km east of Kribi on the Atlantic coast and 60 km from the southern border with Gabon and Republic of Congo. It is bordered by the settlements of Bengbis in the northwest and Lomie in the east, with Sangmélima 50 km to the southwest, Yaoundé 120 km northwest and Abong-Mbang 60 km to the north. To the south and east a huge area of relatively undisturbed forest features several other Cameroon protected areas and the transboundary TRIDOM and Sangha Trinational zones.
Dja was designated a hunting reserve in 1950, before becoming a wildlife reserve in 1973. In 1981 UNESCO designated it a Biosphere Reserve and in 1987 a World Heritage Site. The Biosphere reserve was extended in 2020 and now incorporates a total of 1,328,097 ha, including a transition zone of 740,000 ha.
The boundaries of the IPA proposed here match those of the KBA, which include the buffer zone of the Dja Faunal Reserve, increasing the area from 526,000 ha to 627,797 (KBA Partnership, 2020). This approximately matches the 623,619 ha under the original 1973 designation (Forestry Act Ordinance 73/18, cited by IUCN & UNESCO, 2012).
A population of c. 4,000 (UNESCO, 2019) nomadic Baka forest people live traditionally within the reserve in accordance with

enshrining laws valuing their cultural heritage, while populations on the borders of the reserve, estimated at 40,000, include the Banjoué to the North, Nzimé to the east, Mbulu to the west and Fang-Nzaman to the South, as well as other nomadic Baka and Kaka groups (UNESCO, 2021; Betti, 2004; MINFOF & IUCN, 2015).

Botanical significance

Established as a faunal reserve but encompassing a very large area of well-protected Guineo–Congolian lowland evergreen and semi-deciduous forest, the Dja Faunal Reserve also represents a botanically important area. Just how rich it might be for plant diversity or endemicity is hard to judge given the relatively low level of botanical collecting in most of the area. However, a reasonable number of globally threatened species are listed here, while 312 identified tree species (dbh >= 10cm) have been recorded from a plot study of nine transects (5 x 5,000 m, total area 22.5 ha) with another 60 morphospecies unidentified (Sonké & Couvreur, 2012). Herbaceous plants are probably less known although the orchid flora is considered to be noteworthy (UNESCO, 2021).
Amongst the threatened taxa, the reserve is particularly important for Sabicea cruciata (CR), Sabicea cameroonensis, Bulbopyllum fayi (VU), Diaphananthe sarcorhynchoides (VU) , Drypetes tessmanniana (CR), Staurogyne pseudocapitata (EN), Homalium ogoouense (VU) and Calycobolus micranthus (VU). Several rare and threatened species are also known from collections made a little outside the boundaries, particularly those made a century ago by the missionary G.L. Bates from an area near Bitye, close to the Dja river a few km southeast of the Reserve, such as Ixora batesii (CR), Dalbergia nervosa (EN), Agelanthus dichorus (VU) and Telfairia batesii Keraudren (EN). The latter, a very rare Cameroon endemic, was also collected from the Nkout ridge (another important site), just south of Dja, and there are unconfirmed reports that the species might also occur within the reserve (Lovell & Cheek, 2020). Synsepalum batesii (CR) is known from only a single collection in 1921 (Bates 1742) from Bitye, Pavetta robusta (EN) and Pavetta cellulosa (VU) from a few additional locations, and Psychotria lanceifolia (VU) is now known to be quite widespread (Onana & Cheek, 2011); none of these are recorded within the reserve itself. Pachylobus (Dacryodes) igaganga (VU), very rarely recorded in Cameroon, is known from a plot record on the fringes of the reserve near Lomie. Pavetta laxa (CR) is known only from a single collection (Letouzey 4581) near Mekomo, 8 km SW from the confluence of the Dja and Lobe rivers; while this puts it at least 7 km from the nearest boundary of the western buffer zone and around 20 km from the boundary of the strict reserve, rediscovery within the reserve may be the best hope for this species as the collection site area is close to a rubber plantation and is being encroached by slash and burn agriculture, possibly exacerbated by a service road to the nearby Mekin hydroelectric dam (Cheek, 2017).

Habitat and geology

Dja has a four season climate, with the major wet season between September and December (with average monthly rainfall peaking in October at 268 mm), and a lesser wet season between March and June. Rainfall is considerably lower than along the Cameroon Volcanic Line, averaging 1,570 mm, with a monthly average of only 18 mm in December and January. Temperature varies relatively little seasonally around a mean of 23.3° (at 640 m), with mean monthly maxima and minima in August, the coolest month, of 27° and 18° C respectively and of 30° and 19° in April, the hottest month. Humidity remains high all year (IUCN & UNESCO, 2012; Peh et al., 2011).
Geologically the site is part of the South Cameroon Plateau, resting on Precambrian metamorphic basement rocks of the Mbalmayo–Bengbis and Dja series, mainly schists, gneisses and quartzites (IUCN-UNESCO, 2012; Yerima & Van Ranst, 2005). The topography rises slightly to an east-west ridge in the centre and is characterised by numerous small, dome-like hills with a network of shallow valleys in between visible on satellite imagery. A fault-line running along the southern border results in steeper valleys and cliffs in the south, with rapids and waterfalls along the rivers (IUCN-UNESCO, 2012). Soils are Haplic ferralsols of kaolinite clay with iron and aluminum sesquioxides, red (on the higher areas) to yellow and brown, porous and with good physical structure but very weathered and low in all nutrients, especially phosphate (Yerima & Van Ranst, 2005; Peng et al., 2011; IUCN-UNESCO, 2012). After initial forest clearance for agriculture, organic content and nutrients may be quickly and suddenly depleted. Valley areas may be hydromorphic and swampy (Sonké, 2005).
Dja reserve is a large site featuring relatively little geological and edaphic variation or altitudinal range, although having an undulating topology and areas of forest on terra firma, swamp forest and seasonally inundated forest (Manel et al., 2014). Letouzey (1985) characterises most of the reserve as "Dja forests on wet and dry ground and valleys with Uapaca paludosa" (type 187). The forest canopy is typically 30–40 meters high, with emergents (mainly Baillonella toxisperma) up to 60 m (MINFOF & IUCN, 2015). Towards the northwest greater semi-deciduous elements are mapped, although the evergreen forest is still considered dominant (type 190); prairies on chlorite schists (201) are scattered in the western half; and there are degraded areas towards the edges. Sonké & Hardy (2012) distinguish two types of hydromorphic forest: swamp forest in valley bottoms and periodically flooded forest. Degraded or secondary forest areas are common towards the perimeter and are notably lacking in Meliaceae (IUCN & UN, 2012).
Areas of Gilbertiodendron dewevrei monodominant forest are also important (Letouzey 1985, Sonke 2005, Djuikouo et al., 2010, 2014), occuring on flood-prone alluvial soils according to some sources (IUCN & UN, 2012) although Peh et al. (2011) found them not to correspond to physical or chemical soil characteristics.
Despite the relatively homogenous physical environment and moderate rainfall, diversity appears to be high (Djuikouo et al., 2010). Letouzey (1968) considered the Dja forest to be a melting pot between the Biafran Atlantic forest and the semi-deciduous forest further north. Hardy and Sonke (2004) and Manel (2014) found that much of the distributional pattern of diversity accorded with a neutral model of limited dispersion, although habitat heterogeneity also played a part.

Conservation issues

The original 1987 UNESCO inscription describes the 526,000 ha as one the best protected rainforests in Africa, of "unique pristine condition" with 90% "intact" and "undisturbed". The site is managed by MINFOF through the Dja Conservation Service (UNESCO, 2021b) with a variety of international NGOs involved in supporting conservation, including WWF and ZSL. Conservation concern is primarily centered on the decline of large faunal populations (UNESCO, 2019). In 2005 Numbers of both Gorillas and Chimpanzees were each estimated at c.4000 (approximately the same as the resident human population within the core reserve) and elephants numbered 1,150 (IUCN-UNESCO, 2012). However, a 2018 faunal survey estimated numbers of elephants at only 219, Gorillas at 1,258 and Chimpanzees at 2,313, a 50% decline since 2015 for elephants, following an 84% decline from 1995–2015 (MINFOF & IUCN, 2015), although the severity of these declines may have been partly due to previously inflated figures and methodological differences (Bruce et al., 2018). The UNESCO (2019) report describes the reserve as in a "very fragile situation", with numbers of Elephants, Gorillas and Chimpanzees "very low", and warns of "local extinction" of elephants if the decline is not reversed.

While the plant biodiversity within the strict reserve faces less direct threat, the decline of large fauna through hunting and poaching would likely lead to reduction in conservation effort and funding, as well as affecting plant populations through loss of vital natural seed dispersers. The river Dja provides natural protection for the forest around much of the site border; c. 4,000 forest-dwelling Baka people resident within the reserve itself are permitted to hunt but not practice agriculture (UNESCO, 2021). However, there is agricultural encroachment of the forest inside the river perimeter and within the reserve in the northwest around Bengbis, as well as around various settlements along the road running within the northern buffer zone and in the east around Lomie (KBA partnership, 2020; Google Earth 2021; IUCN-UNESCO, 2012). The KBA profile of the site reports a slow but significant deterioration due to small scale agriculture and agro-industry (KBA partnership, 2020). Much of the Biosphere reserve area outside the strict reserve is demarcated for timber extraction as Forest Management Units, (FMUs), risking isolation of plant and animal populations from the wider forests landscape (Betti, 2004b; KBA Partnership, 2020). Plans to declassify 1,000 ha of the Bengbis community forest are considered likely to exacerbate deforestation of the periphery (UNESCO, 2019). Implementation of a buffer zone is urged, with activities limited by conservation principles (UNESCO, 2019). The well preserved condition of the forest owes much to the hitherto isolated and sparsely populated nature of the wider area. Although the TRIDOM scheme and the Biosphere reserve offer some protection for the peripheral area, development, including resurfacing and construction of new roads and bridges, threatens the integrity of this zone (UNESCO, 2019). The site is largely surrounded by exploratory mining concessions, with active exploitation granted in the east for cobalt, manganese and nickel but apparently not yet commenced; calcareous rocks under the Dja river on the southeast border raise the prospect of cement production (IUCN-UNESCO, 2012); diamond, gold and iron mining are also possible in the south and southeast (MINFOF & IUCN, 2015). On the western border, the Mékin dam and SUDCAM rubber and palm oil plantations bring increased infrastructure, population and development pressures (MINFOF & IUCN, 2015). The Mékin dam has already flooded part of the site and impacted water quality of the Dja river (UNESCO, 2019). Further to the east the planned rail link from the Kribi deep water port to the Mballam iron ore mine deep within the isolated forests 80 km south of Dja threatens to transform the TRIDOM area (IUCN-UNESCO, 2012; Betti, 1998).

Conflicts between conservationists or forest wardens and Baka forest people who live off the forest are a prominent issue in central Africa. Dja Faunal Reserve should not be confused with the nearby proposed Messok Dja National Park in Republic of Congo where abuses of Baka people by WWF agents have been reported and conservation is viewed with suspicion or hostility. However, Gallois et al. (2020) report some clashes with rangers over destructive harvesting by Baka of Irvingia trees within the reserve. Devastation of faunal populations is mainly due to groups outside the reserve using modern hunting methods to harvest ivory and bushmeat for the Yaoundé market, and operating from logging concession areas at the periphery (IUCN-UNESCO, 2012).

A management plan, initially drawn up in 2003, was approved in 2007 and launched in 2008 (UNESCO, 2009), but subsequent yearly reports have repeatedly drawn attention to the "lack of entire approval and implementation" (e.g. UNESCO, 2019). Although the Cameroon forest law stipulates a management plan should be updated every five years, there has been no revision of the 2008 plan which was drafted five years earlier and is therefore already outdated in some respects. A lack of sufficient scientific, qualitative and quantitative data in the management plan is argued to limit the feasibility of stipulated aims for participatory conservation in such a vast reserve (J.L. Betti, 2021, pers. com. 9 August). Forest degradation has also been exacerbated by the departure of the ECOFAC project and a failure to implement significant local development projects as a tool for both improving local communities and reducing pressure on forest resources (J.L. Betti, 2021, pers. com. 9 August).

Site assessor(s)

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Jean Lagarde Betti, National Herbarium of Cameroon

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
Staurogyne pseudocapitata Champl.	A(i)	✓	✓	✓	–	–	
Psychotria densinervia (K.Krause) Verdc.	A(i), A(iii)	✓	–	✓	–	–	
Cyclantheropsis occidentalis Gilg & Mildbr.	A(i)	✓	✓	✓	–	–	
Autranella congolensis (De Wild.) A.Chev.	A(i)	–	–	✓	–	–	
Drypetes tessmanniana (Pax) Pax & K.Hoffm.	A(i)	✓	✓	✓	–	–	
Macaranga paxii Prain	A(i)	✓	✓	✓	–	–	
Trichoscypha eugong Engl. & Brehmer	A(i)	✓	✓	✓	–	–	
Calycosiphonia macrochlamys (K.Schum.) Robbr.	A(i)	–	–	✓	–	–	
Calycobolus micranthus (Dammer) Heine	A(i)	✓	✓	✓	–	✓	
Bulbophyllum fayi J.J.Verm.	A(i)	–	–	–	–	–	
Sabicea cameroonensis Wernham	A(i)	✓	✓	✓	–	–	
Psychotria senterrei O.Lachenaud	A(i)	✓	✓	✓	–	–	
Craterostigma yaundense (S.Moore) Eb.Fisch., Schäferh. & Kai Müll.	A(i)	✓	✓	✓	–	–	
Massularia stevartiana (K.Schum.) Hoyle	A(i)	✓	✓	✓	–	–	
Diospyros crassiflora Hiern	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
Sabicea cruciata Wernham	A(i)	✓	✓	✓	–	–	
Diaphananthe sarcorhynchoides J.B.Hall	A(i)	✓	✓	✓	–	–	
Pavetta laxa	A(i)	–	–	–	–	–	
Pavetta robusta Bremek.	A(i)	–	–	–	–	–	
Pavetta cellulosa Bremek.	A(ii)	–	–	–	–	–	
Psychotria lanceifolia K.Schum.	A(i)	–	–	–	–	–	
Synsepalum batesii (A.Chev.) Aubrév. & Pellegr.	A(i)	–	–	–	–	–	
Homalium hypolasium Mildbr.	A(i)	✓	✓	✓	–	–	
Antrocaryon micraster A.Chev. & Guillaumin	A(i)	–	–	✓	–	✓	
Anopyxis klaineana (Pierre) Engl.	A(i)	–	–	–	–	✓	
Dacryodes buettneri (Engl.) H.J.Lam	A(i)	–	–	✓	–	✓	
Ancistrocladus letestui Pellegr.	A(i)	✓	–	–	–	–	
Baillonella toxisperma Pierre	A(i)	–	–	–	✓	–	
Amphimas tessmannii Harms	A(i)	✓	✓	✓	–	–	
Marantochloa mildbraedii Koechlin	A(i)	–	✓	✓	–	–	
Salacia lenticellosa Loes. ex Harms	A(i)	✓	✓	✓	–	–	
Rhipidoglossum ochyrae Szlach. & Olszewski	A(i)	✓	✓	✓	–	–	
Telfairia batesii Keraudren	A(i), A(iii)	✓	✓	✓	–	✓	

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
Dalbergia nervosa O.Lachenaud	A(i), A(iii)	✓	✓	✓	–	–	
Coffea anthonyi Stof f. & F.Anthony	A(i)	✓	✓	✓	–	–	
Cola mahoundensis Pellegr.	A(i)	✓	✓	✓	–	–	
Pachylobus igaganga (Aubrév. & Pellegr.) Byng & Christenh.	A(i)	–	✓	✓	–	–	
Habenaria stenochila Lindl.	A(i)	✓	✓	✓	–	–	
Homalium ogoouense Pellegr.	A(i)	✓	✓	✓	–	–	
Loudetia furtiva Jacq.-Fél.	A(i)	✓	✓	✓	–	–	
Agelanthus dichrous (Danser) Polhill & Wiens	A(i)	–	–	–	–	–	
Garcinia staudtii Engl.	A(i)	✓	–	–	–	–	
Magnistipula cuneatifolia Hauman	A(i)	✓	✓	✓	–	–	
Millettia laurentii de Wild.	A(i)	–	–	✓	–	–	
Prioria joveri (Normand ex Aubrév.) Breteler	A(i)	✓	✓	✓	–	–	
Pterygota bequaertii De Wild.	A(i)	–	–	✓	–	–	
Sarcophrynium villosum (Benth.) K.Schum.	A(i)	✓	✓	✓	–	–	
Tapinanthus preussii (Engl.) Tiegh.	A(i)	✓	–	✓	–	–	
Drypetes celastrinea Pax & K.Hoffm.	A(iv)	✓	✓	✓	–	–	

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	70	Major
Forest - Subtropical/Tropical Swamp Forest	15	Unknown
Rocky Areas - Rocky Areas [e.g. inland cliffs, mountain peaks]	—	Unknown
Artificial - Terrestrial - Subtropical/Tropical Heavily Degraded Former Forest	15	Unknown

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	95	Major
Forestry	5	Major

Threats

THREAT	SEVERITY	TIMING
Natural system modifications - Dams & water management/use - Large dams	Low	Ongoing - stable
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	Low	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Agro-industry farming		Ongoing - increasing
Biological resource use - Hunting & collecting terrestrial animals	High	Ongoing - increasing
Biological resource use - Logging & wood harvesting	Medium	Ongoing - increasing
Energy production & mining - Mining & quarrying	Low	Future - inferred threat

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Dja Faunal Reserve	Wildlife Sanctuary	IPA encompasses protected/conservation area	5260

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Dja Faunal Reserve	Key Biodiversity Area	protected/conservation area matches IPA	6278
Dja Faunal Reserve	Important Bird Area	protected/conservation area matches IPA	6278
TRIDOM (Tri-National Dja-Odzala-Minkébé forest)	Regional trans-border conservation area	protected/conservation area encompasses IPA	6278
Dja Biosphere Reserve	UNESCO Biosphere Site	protected/conservation area encompasses IPA	6278
Dja Faunal Reserve	UNESCO World Heritage Site	IPA encompasses protected/conservation area	5260

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Protected Area management plan in place	A management plan, initially drawn up in 2003, was approved in 2007 and launched in 2008 (UNESCO, 2009), but subsequent yearly reports have repeatedly drawn attention to the "lack of entire approval and implementation of management plan" (e.g. UNESCO, 2019).	2008	–

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