Campo Ma'an National Park

CMNTIPA025

Country: **Cameroon**
Administrative region: **South (Region)**
Central co-ordinates: **2.43600 N, 10.26590 E**
Area: **2640.6km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Important populations of over 120 globally threatened species occur at Campo Ma'an. Therefore the site easily qualifies as an IPA under criterion A(i). In addition, the site would likely qualify under criterion B(i) or C(iii) due to the diversity and importance of the lowland rainforest habitats it contains: in particular, the large, intact area of lowland evergreen rainforest rich in Caesalpinoideae, and the unique variant (Tchouto's type 2) with Calpocalyx heitzii and Sacoglottis gabonensis found in the Isle of Dipikar region. Furthermore, the large numbers of reported timber trees and non-timber forest products mean that the site is very likely to qualify under criterion B(iii) as one of the 15 richest sites nationally for socially, economically, or culturally useful species.

Site description

Campo Ma'an National park, established in January 2000 by Presidential decree no 2000/004 (UNESCO, 2018), is one of Cameroon's largest protected areas, encompassing 264,000 ha of evergreen and mixed semi-deciduous tropical forest in the Ntem Valley and Ocean subdivisions of Cameroon's South region. Extending eastwards inland from the coast at Campo between the rivers Bongala and Ntem, the park then curves north and east again, forming a dog's leg shape 15-30 km wide and 115 km long. The northern border lies a few km from the Kribi-Akom II-Ebolowa N17 road. To the south the park is partly adjacent to the international border and Equatorial Guinea's Reserva Natural de Rio Campo, while further east lies the RAMSAR wetland site Partie Camerounaise du Fleuve Ntem in the swampy area where the Mvila and Ntem rivers combine to form a network of channels, the Boucles du Ntem (Idriss, 2012). From mangroves and coastal evergreen forest near the coast, the forest follows a ridge of low mountains up to 1100 m in height, and transitions to drier forest with a greater semi-deciduous element in the eastern parts. Created partly in mitigation of the Kribi-Chad pipeline project, the forest is part of a much larger Operation Technical Unit (UTO), with several large FMUs and plantations forming a peripheral zone incorporated in the management plan (WWF, 2018; UNESCO, 2018).

Botanical significance

Research by Tchouto (2004) has revealed a high number of globally threatened species occurring in the Campo Ma'an area. Many of these occur within the national park boundaries, occupying several different habitats including submontane forest, swamp forest, lowland evergreen tropical forest, waterfalls and rapids. A number of highly threatened species in the Podostemaceae are known from the rapids of the Bongala and Ntem rivers forming the boundary, although other species known only from the Memve'ele Fallls are outside the park.

Several threatened species are listed by Tchouto (2004) for which specimen data from the national park has not been located (for example, Acridocarpus camerunensis). Where no other evidence exists that these occur within the national park area the taxa have not been included here. However, when a location inside the boundary (such as Dipikar island) is indicated in table 5.6 (Tchouto, 2004) then the taxon has been provisionally included even if no specimen has been found. A number of species are also included from collections just outside the border, particularly in the areas of Zingui and Akom II, as these are strongly suspected to also occur within the park. Amphimas tessmannii (EN) is included based on the type specimen collected near Campo although apparently just over the border in Rio Muni.

The site is important as a major area of largely intact tropical lowland forest as well as a representative of other important vegetation types, including mangroves, swamp forest and submontane forest, which contribute to the overall botanical diversity of c. 1,500 species, a number approximately equal to that of the Dja Faunal Reserve which occupies double the area (UNESCO, 2018). Tchouto (2004) records a greater total of 2,227 taxa from the wider Campo Ma'an TOU area. Research has suggested the Campo Ma'an area was likely to have been a refugial zone for plant species during the Pleistocene period of drier climate conditions, resulting in a high level of endemicity (Tchouto et al., 2009). For example, 10 species of Begonia, a potential refugial bioindicator genus (Sosef 1994, 1996), are recorded within the National Park, while 114 national endemics and 29 local endemics are recorded from the wider TOU (Tchouto, 2004). Many of these endemics are now recorded more widely, particularly because of greater collecting in Gabon and Equatorial Guinea, and proximity to the national border may in fact reduce the number of national endemics compared to other sites in Cameroon. However, several species occur towards the northern limit of their geographical range and are therefore nationally rare or unknown elsewhere in Cameroon, even if they are more widely known to the south. Six species are here considered to be narrowly endemic to the park itself (Inversodicraea kamerunica and Tapura tchoutii, Triceratorhynchus sonkeanus, Cola nana, Cola subglaucescens & Ardisia letouzeyi) but several more are likely limited to the larger TOU area.

Tchouto (2004) refers to unpublished research indicating 112 timber species and 249 non-timber forest product (NTFP) species are found within the TOU. While many timber species are on the global red list, many of these assessments are out of date and based on IUCN criterion A, suggesting they do not qualify under IPA criterion A(i). However, Campo Ma'an may qualify as one of the overall best sites for useful species.

Habitat and geology

The site lies predominantly on Precambrian metamorphic basement rocks which produce low nutrient, acidic soils of approximately pH 4 (Tchouto, 2004). Cretaceous sedimentary rocks are also found near the coast in the Campo basin, and migmatites and granites in the hillier terrain inland. Soils are mainly ferrasols and acrisols, strongly weathered, deep and clayey but sandier in the coastal and riverine areas. Altitude ranges from sea level at the coast to around 1,100 m in the hills further east.

The climate has two wet and two dry seasons, with rainfall of 2,800 mm at Campo (2,950 at Kribi) reducing inland to 1,670 mm in the Nyabessan/Ma'an area, probably due partly to a rain shadow effect (Tchouto, 2004). This climate gradient results in an increase in semi-deciduous vegetation further east, although extensive swamp areas are also found. Many rivers flow through the site (Ntem, Lobe, Bongala, Biwome, Ndjo'o, Mvila and Nye'ete), often with rocky beds that support rare rheophytic plants (Cheek et al., 2017; Kuetegue et al., 2019). Even at the coast the four-season climate distinguishes this area of Cameroon from the higher rainfall Cross-Sanaga area to the north where total annual precipitation also tends to be higher (White, 1983).

In the broad classification of White (1983) Campo Ma'an lies within the the Lower Guinea part of the Guineo-Congolian region of endemism and within vegetation type 1a, wetter types of lowland rainforest. Olson et al.'s (2001) scheme places it within a large band of Atlantic Coastal Equatorial Forest which extends south from the Sanaga river and is distinguished from the wetter Cross-Sanaga-Bioko coastal forests region. The northern border of South region roughly follows the Nyong river which may have acted as a biogeographical barrier in the past and has also likely contributed, together with the larger and closely parallel Sanaga river, to a somewhat different forest type in this region (Cheek et al., 2001; Oates et al., 2004).

Letouzey (1985) made finer discriminations in vegetation type, categorising the site area as mainly Atlantic Biafran forest rich in Caesalpinoideae (type 228) but with several subtypes characterised by abundance of a few indicator species, particularly Sacoglottis gabonensis and Calpocalyx heitzii. Tchouto's (2004) multivariate analysis of plot data distinguishes 10 vegetation types in the TOU area, with type 1 (lowland evergreen forest rich in Caesalpinaceae) dominating most of the park area (65% according to UNESCO, 2018). This is a continuous canopy, three-tier rainforest with emergents and buttresses, found on moderate hills and slopes, and dominated by c.70 species of trees in the (former) Caesalpinoideae subfamily, several of which are gregarious. Much smaller areas of other types are also present. Type 2 (a variant of type 1 with abundant S. gabonensis and C. heitzii) is found in the Dipikar area, and closer to Campo there is an Atlantic variant with more coastal elements. In the eastern part of the park, type 7 is found, which mixes more semi-deciduous elements but is still dominated by

evergreen species and retains a largely closed canopy. In the northwest part of the park, near Zingui, there is a tiny area of type 3 which features coastal elements including Sacoglottis gabonensis, and which has been largely cleared for palm oil planation outside the park but extends to Mont Elephant, Massif des Mamelles and Lobe. Submontane forest (type 9) is found on hilltops above 800m and contributes a large proportion of species. Around rivers some mangroves (type 11) are found nearer the coast and, in other parts, there is swamp forest (type 10), although much of the latter is outside the park area in the RAMSAR wetland around Ma'an. Near Ebianemeyong Tchouto (2004) also distinguishes an additional zone of the more subjectively defined Okoume forest (type 12), an open forest dominated by the important timber species Aucoumea klaineana which has spread from plantations such as Kienke and may not be native to the National Park area or to Cameroon (pers. comm. Xander van der Burgt and Jean Michel Onana, 2021).

Conservation issues

Campo Ma'an National Park benefits from both its protected status and its positioning in an area of Cameroon that has historically been hard to access and little disturbed. However, despite having the highest level of formal protection, there remain serious threats to the site's biodiversity, and recent development in the region has increased access to the forest, reducing the isolation which has preserved it up to now. National Park status was awarded partly to balance the negative biodiversity impact of the Kribi-Chad pipeline project (WWF, 2018). Tchouto (2004) indicated that it remained a "paper park" only and that forests in the area faced a number of threats including large- and small-scale agriculture, logging and hunting. Sunderland et al. (1997) suggest the forest was largely undisturbed until the 1960s but since that time logging concessions have changed its character in the Campo area of the park and in the other concessions surrounding the park boundary. The interior region remains more intact (UNESCO, 2018), with populations of elephants, gorillas and chimps considered stable when last evaluated (Nzoo Dongmo et al., 2015). However, WWF (2018) have more recently expressed concern that the park needs saving from a variety of developments which together are likely to increase population and activity in the area. These include the pipeline project, the Memve'ele hydroelectric dam, the Kribi deep seaport complex, rubber and oil palm projects (particularly in former well-managed FMU areas (Nforngwa, 2019)) and a proposed railway link from Mbalam to Kribi. Previously, the population outside of the major population centres of Ebolowa, Kribi and Campo has been very low (Sunderland et al., 1997) but major population growth is predicted in the region from these developments. Net migration was reported at 14% in 2010, exceeding annual population growth (Ajonina et al., 2010). Logging trails already allow bushmeat hunters to penetrate deep into the forest and threaten to open the park up to small-scale agriculture which could be hard to prevent (WWF, 2018). Bushmeat consumption has been calculated at 1,206 t/day, or 200g per person/day within the TOU (Ajonina et al., 2010).
Loss of the buffer zone of selectively logged FMUs to palm oil plantation is probably the major threat as this isolates the park genetically and brings in migrant labour, with associated pressure for food from hunting and agriculture, while increasing access to the park itself. Expansion of agriculture from Akom II and other settlements along the road north of the park is also likely to progress into the park unless prevented. Because of the many important species known from just north of the park border, it is highly recommended that the c.5 km band between the border and the Kribi-Ebolowa road, from Zingui to Akom II is treated with high conservation concern as a buffer region, and that these species are actively searched for within the park boundaries.
The unique character of the forest in the Campo region, which harbours vegetation and species unknown to other parts of the National Park (Sunderland et al., 1997; Tchouto, 2004), is particularly threatened by proximity to coastal development. The Memvele dam project, as well as bringing the same problems of access and disturbance, also seems likely to render extinct several populations of rheophytic plants at rapids on the Ntem river, most of which are globally restricted to this river (Cheek et al., 2017; Kuetegue et al., 2019).
From a positive perspective, the presence of healthy populations of gorillas and other large mammals, as well as waterfalls, beaches and other natural scenery, boosts the chance of conservation action and ecotourism (Walter et al., 2021). The second management plan emphasised ecotourism and other sustainable income generation to improve local livelihoods. As well as the natural riches, Forje et al. (2021) considers the local population's openness to tourist development as an asset. However, these researchers also found that the local population did not consider ecotourism to be improving their livelihoods. Development of ecotourism is considered to be held back by poor roads and other infrastructural challenges (Forje et al., 2020) but these obstacles also mitigate threats to the park. Conversely, development associated with the Kribi port and other projects boosts the potential for tourist access but also brings threats.
As discussed further below, the park is a also a key component of Cameroon’s Red++ carbon strategy (CARN, 2020).

Site assessor(s)

Bruce Murphy, Royal Botanic Gardens, Kew

Jean Michel Onana, University of Yaounde I, Faculty of Science, Department of Plant Biology; IRAD-Herbier National Camerounais

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)	–	–	✓	–	✓	
Albertisia capituliflora (Diels) Forman	A(i)	✓	✓	✓	–	–	
Allexis zygomorpha Achound. & Onana	A(i)	✓	✓	✓	–	–	
Albertisia glabra (Diels ex Troupin) Forman	A(i)	✓	✓	✓	–	–	
Ancistrorhynchus crystalensis P.J.Cribb & Laan	A(i)	✓	✓	✓	–	–	
Angraecum angustum (Rolfe) Summerh.	A(i), A(iii)	✓	✓	✓	–	–	
Antrocaryon micraster A.Chev. & Guillaumin	A(i)	–	✓	✓	–	✓	
Aulacocalyx camerooniana Sonké & S.E.Dawson	A(i)	✓	✓	✓	–	–	
Aulacocalyx mapiana Sonké & Bridson	A(i), A(iii)	✓	✓	✓	–	–	
Begonia mbangaensis Sosef	A(i)	✓	✓	✓	–	–	
Begonia zenkeriana L.B.Sm. & Wassh.	A(i)	✓	✓	✓	–	–	
Beilschmiedia cinnamomea (Stapf) Robyns & R.Wilczek	A(i)	✓	✓	✓	–	–	
Beilschmiedia klainei Robyns & R.Wilczek	A(i)	✓	✓	✓	–	–	
Bertiera heterophylla Nguembou &	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
Sonké							
Bertiera rosseeliana Sonké, Esono & Nguembou	A(i)	✓	✓	✓	–	–	
Boutiquea platypetala (Engl. & Diels) Le Thomas	A(i)	✓	✓	–	–	–	
Bulbophyllum platybulbon (Schltr.) Govaerts & J.M.H.Shaw	A(i)	✓	✓	✓	–	–	
Calpocalyx heitzii Harms	A(i)	–	✓	✓	–	–	
Calvoa stenophylla Jacq.-Fél.	A(i)	✓	✓	✓	–	–	
Calycosiphonia macrochlamys (K.Schum.) Robbr.	A(i)	–	✓	✓	–	–	
Cassipourea alternifolia Breteler	A(i)	✓	✓	✓	–	–	
Coffea mapiana Nguembou & A.P.Davis	A(i)	✓	✓	✓	–	✓	
Cola hypochrysea K.Schum.	A(i), A(iii)	✓	✓	✓	–	✓	
Crotonogyne impedita Prain	A(i)	✓	✓	✓	–	–	
Crotonogyne zenkeri Pax	A(i)	✓	–	✓	–	–	
Culcasia bosii Ntépé Nyamè	A(i)	✓	✓	✓	–	–	
Dacryodes buettneri (Engl.) H.J.Lam	A(i)	–	–	✓	–	✓	
Deinbollia macroura Gilg ex Radlk.	A(i)	✓	✓	✓	–	–	
Deinbollia maxima Gilg ex Engl.	A(i)	–	✓	✓	–	–	
Deinbollia mezilii D.W.Thomas & D.J.Harris	A(i)	✓	✓	✓	–	–	
Deinbollia pycnophylla Gilg ex Engl.	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
Dictyophleba setosa B.de Hoogh	A(i)	✓	✓	✓	–	–	
Dracaena viridiflora Engl. & K.Krause	A(i)	–	–	✓	–	–	
Drypetes preussii (Pax) Hutch.	A(i)	✓	–	✓	–	–	
Drypetes staudtii (Pax) Hutch.	A(i)	✓	–	–	–	–	
Drypetes tessmanniana (Pax) Pax & K.Hoffm.	A(i)	✓	✓	✓	–	–	
Garcinia staudtii Engl.	A(i)	✓	–	–	–	–	
Gilbertiodendron klainei (Pierre ex Pellegr.) J.Léonard	A(i)	✓	–	✓	–	–	
Gluema ivorensis Aubrév. & Pellegr.	A(i)	–	–	–	–	–	
Habenaria batesii la Croix	A(i)	✓	✓	✓	–	–	
Impatiens gongolana N.Hallé	A(i)	✓	✓	✓	–	–	
Inversodicraea kamerunensis (Engl.) Engl.	A(i)	✓	✓	✓	✓	–	
Inversodicraea ntemensis (Y.Kita, Koi, Rutish. & M.Kato) J.J.Schenk, Herschlag & D.W.Thomas	A(i)	✓	✓	✓	–	–	
Inversodicraea tchoutoi Cheek	A(i)	✓	✓	✓	–	–	
Ixora synactica De Block	A(i)	✓	✓	✓	–	–	
Ledermaniella bifurcata (Engl.) C.Cusset	A(i)	✓	✓	✓	–	–	
Ledermanniella linearifolia Engl.	A(i)	✓	✓	✓	–	–	
Liparis gracilentis Dandy	A(i)	✓	✓	✓	–	–	
Malouetia barbata	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
J.Ploeg							
Mapania raynaliana D.A.Simpson	A(i)	✓	✓	✓	–	–	
Ormocarpum klainei Tisser.	A(i)	✓	✓	✓	–	–	
Pauridiantha divaricata (K.Schum.) Bremek.	A(i)	✓	✓	✓	–	–	
Pavetta kribiensis S.D.Manning	A(i)	✓	✓	✓	–	–	
Pavetta mpomii S.D.Manning	A(i)	–	–	✓	–	–	
Petchia africana Leeuwenb.	A(i)	✓	✓	✓	–	–	
Prioria joveri (Normand ex Aubrév.) Breteler	A(i)	✓	✓	✓	–	–	
Sabicea medusula K.Schum. ex Wernham	A(i)	–	✓	✓	–	–	
Psychotria camerunensis E.M.A.Petit	A(i)	✓	✓	✓	–	–	
Psychotria densinervia (K.Krause) Verdc.	A(i), A(iii)	✓	–	✓	–	–	
Psychotria lanceifolia K.Schum.	A(i)	–	✓	✓	–	–	
Sabicea apocynacea (K.Schum.) Razafim.	A(i)	–	✓	✓	–	–	
Staurogyne bicolor (Mildbr.) Champl.	A(i)	✓	✓	✓	–	–	
Stenandrium thomense (Milne-Redh.) Vollesen	A(i)	✓	✓	✓	–	–	
Strychnos gnetifolia Gilg ex Onochie & Hepper	A(i)	✓	✓	✓	–	–	
Strychnos staudtii Gilg	A(i)	–	–	✓	–	–	
Testulea gabonensis	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
Pellegr.							
Trichoscypha hallei Breteler	A(i)	✓	✓	✓	–	–	
Trichoscypha mannii Hook.f.	A(i)	–	✓	✓	–	–	
Psychotria torrenticola O.Lachenaud & Séné	A(i)	✓	✓	✓	–	–	
Bulbophyllum alinae Szlach.	A(i), A(iii)	✓	✓	✓	–	–	
Bulbophyllum coriscence Szlach.	A(i)	✓	✓	✓	–	–	
Sarcophrynium villosum (Benth.) K.Schum.	A(i)	✓	✓	✓	–	–	
Vepris lecomteana (Pierre) Cheek & T.Heller	A(i)	–	–	✓	–	–	
Entandrophragma candollei Harms	A(i)	–	–	–	–	✓	
Entandrophragma cylindricum (Sprague) Sprague	A(i)	–	–	–	–	✓	
Entandrophragma utile (Dawe & Sprague) Sprague	A(i)	–	–	–	–	✓	
Entandrophragma utile (Dawe & Sprague) Sprague	A(i)	–	–	–	–	✓	
Khaya anthotheca C.DC.	A(i)	–	–	–	–	✓	
Khaya ivorensis A.Chev.	A(i)	–	–	–	–	✓	
Lophira alata Banks ex Gaertn.f.	A(i)	–	–	–	–	✓	
Nauclea diderrichii (De Wild. & T.Durand) Merrill	A(i)	–	–	–	–	✓	
Pterygota bequaertii De Wild.	A(i)	–	–	–	–	✓	
Tieghemella africana Pierre	A(i)	–	–	✓	–	✓	
Baillonella toxisperma Pierre	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
Afzelia bipindensis Harms	A(i)	–	–	–	–	✓	
Afzelia pachyloba Harms	A(i)	–	–	–	–	✓	
Aucoumea klaineana Pierre	A(i)	–	–	✓	–	✓	
Copaifera religiosa J.Léonard	A(i)	–	✓	✓	–	✓	
Chlorophytum petrophilum K.Krause	A(i)	✓	✓	✓	–	–	
Hoplestigma pierreanum Gilg	A(i), A(iii)	✓	✓	✓	–	–	
Duguetia dilabens Chatrou & Repetur	A(i)	–	–	–	–	–	
Pavetta muiriana S.D.Manning	A(i)	✓	✓	✓	–	–	
Psychotria njumei Cheek	A(i)	–	✓	✓	–	–	
Uvariopsis korupensis Gereau & Kenfack	A(i)	✓	✓	✓	–	–	
Uvariopsis submontana Kenfack, Gosline & Gereau	A(i)	✓	✓	✓	–	–	
Acridocarpus camerunensis Nied.	A(i)	✓	✓	✓	–	–	
Calpocalyx klainei Pierre ex Harms	A(i)	–	✓	✓	–	–	
Hymenocoleus glaber Robbr.	A(i)	✓	✓	✓	–	–	
Hymenostegia viridiflora Mackinder & Wieringa	A(i)	✓	✓	✓	–	–	
Psychotria podocarpa Petit	A(i)	✓	✓	✓	–	–	
Tabernaemontana hallei (Boiteau) Leeuwenb.	A(i)	✓	✓	✓	–	–	
Uvariodendron giganteum (Engl.) R.E.Fr.	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
Uvariopsis vanderystii Robyns & Ghesq.	A(i)	–	–	✓	–	–	
Xylopia mildbraedii Diels	A(i)	✓	✓	✓	–	–	
Tricalysia vadensis Robbr.	A(i)	✓	–	–	–	–	
Ardisia dewitiana Taton	A(i)	✓	✓	✓	–	–	
Aulotandra kamerunensis Loes.	A(i)	✓	✓	✓	–	–	
Necepsia afzelii Prain ssp. zenkeri Bouchat & J. Léonard	A(i)	✓	✓	✓	–	–	
Gilbertiodendron pachyanthum (Harms) J.Léonard	A(i)	✓	✓	✓	–	–	
Diospyros alboflavescens (Gürke) F.White	A(i), A(iv)	–	✓	✓	–	–	
Rhaphiostylis subsessilifolia Engl.	A(i)	✓	✓	✓	–	–	
Beilschmiedia cuspidata (K.Krause) Robyns & R.Wilczek	A(i)	✓	✓	✓	–	–	
Isomacrolobium leptorrhachis (Harms) Aubrév. & Pellegr.	A(i)	–	✓	✓	–	–	
Amphiblemma letouzeyi Jacq.-Fél.	A(i)	✓	✓	✓	–	–	
Tapinanthus preussii (Engl.) Tiegh.	A(i)	✓	✓	✓	–	–	
Diaphananthe sarcorhynchoides J.B.Hall	A(i)	✓	✓	✓	–	–	
Rinorea dewildei Achound.	A(i)	✓	✓	✓	–	–	
Psychotria sonkeana O.Lachenaud & Séné	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
Kylicanthe cornuata Descourv. & Stévart & Droissart	A(i)	✓	✓	✓	–	–	
Liparis hallei Szlach.	A(i)	✓	✓	✓	–	–	
Polystachya batkoi Szlach. & Olszewski	A(i)	✓	✓	✓	–	–	
Polystachya bipoda Stévart	A(i)	✓	✓	✓	–	–	
Polystachya lejolyana Stévart	A(i)	✓	✓	✓	–	–	
Psychotria droissartii O.Lachenaud	A(i)	✓	✓	✓	–	–	
Sericanthe lowryana Sonké & Robbr.	A(i)	✓	✓	✓	–	–	
Memecylon alipes R.D.Stone	A(i)	✓	✓	✓	–	–	
Uvariopsis zenkeri Engl.	A(i)	✓	✓	✓	–	–	
Strychnos mimfiensis Gilg ex Leeuwenb.	A(i)	✓	✓	✓	–	–	
Cola elegans Pierre ex Breteler	A(i)	✓	✓	✓	–	–	
Nephrangis bertauxiana Szlach. & Olszewski	A(i)	✓	✓	✓	–	–	
Dischistocalyx champluvieranus Lejoly & Lisowski	A(i)	✓	✓	✓	–	–	
Impatiens hians Hook.f. var. bipindensis (Gilg) Grey-Wilson	A(i)	–	✓	✓	–	–	
Neuropeltis laxiflora Lejoly & Lisowski	A(i)	✓	✓	✓	–	–	
Ardisia letouzeyi Taton	A(i)	✓	✓	✓	✓	–	
Triceratorhynchus sonkeanus (Droissart, Stévart & P.J.Cribb)	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
Szlach., Oledrz. & Mytnik							
Amphimas tessmannii Harms	A(i)	✓	✓	✓	–	–	
Angraecum curvipes Schltr.	A(i)	✓	✓	✓	–	–	
Guibourtia tessmannii (Harms) J.Léonard	A(i)	–	✓	✓	–	–	
Justicia gigantophylla (Lindau) H.J.Sm. & C.Moran	A(i), A(iv)	✓	✓	✓	–	✓	
Vepris araliopsioides Onana	A(i)	✓	✓	✓	–	–	
Bulbophyllum sanfordii (Szlach. & Olszewski) Govaerts & J.M.H.Shaw	A(i)	✓	✓	✓	–	–	
Calpocalyx ngouniensis Pellegr.	A(i)	–	✓	✓	–	–	
Englerodendron graciliflorum (Harms) Estrella & Ojeda	A(i)	✓	✓	✓	–	–	
Neolemonniera batesii (Engl.) Heine	A(i)	✓	✓	✓	–	–	
Aphanocalyx hedinii (A.Chev.) Wieringa	A(i)	✓	✓	✓	–	–	
Polystachya laurentii De Wild.	A(i)	✓	✓	✓	–	–	
Ancistrorhynchus tenuicaulis Orchidaceae	A(i)	✓	✓	✓	–	–	
Begonia microsperma Warb.	A(i)	✓	✓	✓	–	–	
Deinbollia saligna Keay	A(i)	✓	✓	✓	–	–	
Globulostylis rammelooana Sonké	A(i)	✓	✓	✓	–	–	
Piptostigma	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
oyemense Pellegr.							
Pseudosabicea batesii (Wernham) N.Hallé	A(i)	–	–	✓	–	–	
Psychotria arborea Hiern	A(i)	✓	✓	✓	–	–	
Psychotria senterrei O.Lachenaud	A(i)	✓	✓	✓	–	–	
Rinorea dewitii Achound.	A(i)	✓	✓	✓	–	–	
Sabicea rufa Wernham	A(i)	✓	✓	✓	–	–	
Psychotria villicarpa O.Lachenaud subsp. villicarpa	A(i)	✓	✓	✓	–	–	
Chytranthus micranthus Gilg ex Radlk.	A(iv)	✓	✓	✓	–	–	
Cola nana Engl. & K.Krause	A(iii)	✓	✓	✓	✓	–	
Cola subglaucescens Engl.	A(iii)	✓	✓	✓	✓	–	
Culcasia linearifolia Bogner	A(iii)	✓	✓	✓	–	–	
Dialium latifolium Harms	A(iii)	✓	✓	✓	–	–	
Impatiens akomensis S.B.Janssens, Sonké & O.Lachenaud	A(iii)	✓	✓	✓	✓	–	
Pavetta renidens (K.Krause) Bremek.	A(iv)	✓	✓	✓	–	–	
Scaphopetalum riparium Engl. & K.Krause	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	—	
Forest - Subtropical/Tropical Swamp Forest	—	
Wetlands (inland) - Permanent Rivers, Streams, Creeks [includes waterfalls]	—	
Forest - Subtropical/Tropical Moist Montane Forest	—	
Forest - Subtropical/Tropical Mangrove Forest Vegetation Above High Tide Level	—	

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	100	Major

Threats

THREAT	SEVERITY	TIMING
Energy production & mining - Oil & gas drilling	Medium	Ongoing - stable
Residential & commercial development - Commercial & industrial areas	Medium	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	Low	Ongoing - increasing
Agriculture & aquaculture - Annual & perennial non-timber crops - Agro-industry farming	High	Ongoing - increasing
Biological resource use - Hunting & collecting terrestrial animals	Medium	Ongoing - increasing
Transportation & service corridors - Roads & railroads	Medium	Future - planned activity
Energy production & mining - Mining & quarrying	Low	Ongoing - trend unknown
Biological resource use - Logging & wood harvesting	Medium	Ongoing - trend unknown
Energy production & mining - Renewable energy	High	Ongoing - trend unknown
Natural system modifications - Dams & water management/use - Large dams	High	Ongoing - trend unknown

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Campo Ma'an National Park	National Park	protected/conservation area matches IPA	—

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Campo Ma'an Complex IBA	Important Bird Area	protected/conservation area encompasses IPA	–

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Protected Area management plan in place	The plan indicated a five year budget of CFAF 6750. Emphasis was on increasing management capacity, implementing effective monitoring of populations and resources, ecotourism and sustainable income generation, cross-border cooperation, federation of major local bodies (mining and logging concessions, agro-industry, municipalities) to mitigate impacts	2015	2019

Bibliography

Onana J.-M. & Cheek M. 2011. **Red Data Book of the flowering plants of Cameroon.**

Letouzey, R. 1968. **Étude Phytogéographique du Cameroun.**

Letouzey, R. 1985. **Notice de la carte phytogéographique du Cameroun au 1: 500,000..**

Cheek, M., Feika, A. Lebbie, A., Goyder, D., Tchiengue, B., Sene, O., Tchouto, P. & van der Burgt, X. 2017. **A synoptic revision of Inversodicraea (Podostemaceae).** Blumea, Vol 62, page(s) 125–156

Wieringa, J.J. 1999. **Monopetalanthus exit. A systematic study of Aphanocalyx, Bikinia, Icuria, Michelsonia and Tetraberlinia (Leguminosae, Caesalpinioideae)..** Wageningen Agricultural University Papers, Vol 99(4), page(s) 1-320

Idriss, C. 2012. **Partie Camerounaise du fleuve Ntem (2067). Fiche descriptive sur les zones humides Ramsar (FDR).**

Tchoutou, M.G.P., Yemefack, M., De Boer, W.F., De Wilde, J.J.F.E., Van der Maesen, L.J.G. & Cleef, A.M. 2006. **Biodiversity hotspots and conservation priorities in the Campo-Ma'an rain forests, Cameroon.** Biodiversity and Conservation, Vol 15, page(s) 1219–1252

Tchoutou, M.G.P., De Boer, W.F., De Wilde, J.J.F.E. & Van der Maesen, L.J.G. 2006. **Diversity patterns in the flora of the Campo-Ma'an rain forest, Cameroon: do tree species tell it all?.** Biodiversity and Conservation, Vol 15, page(s) 1353–1374

Kuetegue, F.,Sonké, B., Ameka, G.K. 2019. **A checklist of rheophytes of Cameroon.** PhytoKeys, Vol 121, page(s) 81–131

Orozco, A.O. & Salber, M. 2019. **Palmed off: An investigation into three industrial palm oil and rubber projects in Cameroon and the Republic of Congo.**

White, A.F. 1983. **The vegetation of Africa. A descriptive memoir to accompany the UNESCO/AETFAT/UNSO vegetation map of Africa.**

Olson, D.M. et al. 2001. **Terrestrial ecoregions of the world: a new map of life on earth.** Bioscience, Vol 51, page(s) 3-938

Cheek, M., Mackinder, B., Gosline, G., Onana, J.-M. & Achoundong, G. 2001. **The Phytogeography and Flora of Western Cameroon and the Cross River-Sanaga River Interval.** Systematics and Geography of Plants, Vol 71(2), page(s) 1-4

Tchoutou, M.G.P., De Wilde, J.J.F.E., De Boer, W.F., Van der Maesen, L.J.G. & Cleef, A.M 2009. **Bio-indicator species and Central African rain forest refuges in the Campo Ma'an area, Cameroon.** Systematics and Biodiversity, Vol 7(1), page(s) 21-31

Tchoutou, M.G.P. 2004. **Plant Diversity in a Central African Rain Forest. Implications for biodiversity conservation in Cameroon. PhD thesis, Wageningen University.**

Oates, J.F., Bergl, R.A. & Linder, J.M. 2004. **Africa's Gulf of Guinea Forests: Biodiversity Patterns and Conservation Priorities.**

Ajonina, G., Amougou, J.A., Djontu, G.A. et al., 2010. **State of Environment of Campo-Ma'an Cameroon-Report WWF-MINEP.**

UNESCO World Heritage Centre 2018. **UNESCO World Heritage site nomination: Campo Ma'an National Park.**

World Wildlife Fund 2018. **The saving of Campo Ma'an National Park.**

Cheek, M. & Pearce, L. 2015. **Tapura tchoutoi. The IUCN Red List of Threatened Species 2015: e.T202747A2750463.**

Ghogue, J.-P. 2017. **Inversodicraea kamerunensis (amended version of 2010 assessment). The IUCN Red List of Threatened Species 2017: e.T185482A120463590.**

Nzooh Dongmo, Z.L., N'Goran, K.P., FONDJA & C., NKONO, J. 2015. **Evaluation de la dynamique des populations de grands et moyens mammifères dans le domaine forestier permanent de l'Unité Technique Opérationnelle Campo Ma'an. Rapport Technique.**

BirdLife International 2021. **Important Bird Areas factsheet: Campo Ma'an complex.**

Conservation Action Research Network (CARN) 2020. **REDD+ IN CAMEROON.**

Forje, W.G., Martin, T.N., Nfornkah, B.N., Awazi, N.P., Djomo, C.C., Sone, D.E & Fokeng, R.M 2020. **Assessing the impact of ecotourism on livelihood of the local population living around the Campo Ma'an National Park, South Region of Cameroon.** Journal of Hospitality Management and Tourism, Vol 11(1), page(s) 1-11

G.W.Forje, Tchamba, M.N. & Eno-Nku, M. 2020. **Determinants of ecotourism development in and around protected areas: The case of Campo Ma'an National Park in Cameroon.** Scientific African, Vol 11 e00663, page(s) 1-13

(MINFOF) Ministry of Forestry and Wildlife 2015. **Parc National de Campo Ma'an: Plan d'affaire 2015 – 2019 Et Stratégie de mise en œuvre.**

Nforngwa, E.N. 2019. **NGOs reject new oil palm plantation in southern Cameroon.**

Sosef, M. 1994. **Refuge Begonias. Taxonomy, phylogeny and historical biogeography of Begonia sect. Loasibegonia and sect. Scutobegonia in relation to glacial rain forest refuges in Africa.** Wageningen Agricultural University Papers, Vol 26(1), page(s) 1-306

Sosef, M. 1996. **Begonias and African rain forest refuges: general aspects and recent progress.** The Biodiversity of African Plants (pub. Springer), page(s) 602-611