



The endemic plant species of Ebo Forest, Littoral Region, Cameroon, with a new Critically Endangered cloud forest shrub, *Memecylon ebo* (Melastomataceae-Olisbeoideae)

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Summary. We emphasise the urgent need to conserve the Ebo forest (Littoral Region, Cameroon), which holds 10 strict endemic plant species and 15 near endemics for a total of 25, a very high number far exceeding the threshold for its recent status as an Important Plant Area (IPA). We describe a further strict endemic species from the Ebo Forest, *Memecylon ebo* sp. nov. (Melastomataceae-Olisbeoideae), placed in sect. *Afzeliana* due to its ellipsoid, blue-green fruits. The yellow petals and jade green anther-connectives of *M. ebo* are unique in the genus *Memecylon*, which has >400 species ranging overall from Africa to the western Pacific. *Memecylon ebo* is assessed as Critically Endangered [CR], using the 2012 IUCN standard, due to its small range size and the extremely high and ongoing threats of logging at Ebo and also due to subsequent threats of potential oil palm plantation and mining projects. With the addition of *Memecylon ebo*, the tally of Critically Endangered plant species recorded from Ebo forest is now the highest of any IPA in Cameroon, equalling that of Ngovayang with 24 CR species.

Key Words. Conservation, Ebo, extinction, logging, oil palm plantation.

Introduction

The genus *Memecylon* L. (Melastomataceae-Olisbeoideae) is distributed throughout the Old World tropics, reaching 25°N latitude in NE India, N Bangladesh and S China, 32°S latitude in southern Africa and extending to the western Pacific in the Solomon Islands, Fiji and Tonga. The >400 recognised species are shrubs or small trees mainly of surviving areas of tropical forest. Since January 2020, 66 names of *Memecylon* new to science have been published, mainly from Madagascar (Stone 2020, 2022a, 2022b, 2023) and also from India (IPNI 2022, continuously updated). In accordance with morphological and molecular findings (Jacques-Félix 1978; Bremer 1982; Stone 2006, 2014a, 2022c; Stone & Andreasen 2010), *Memecylon* is now circumscribed to exclude the monospecific western and central African genus *Spathandra* Guill. & Perr., the paleotropical *Lijndenia* Zoll. & Moritz, and the African-Madagascan *Warneckeia* Gilg, which were formerly included within *Memecylon*. The members of *Memecylon* sensu stricto are characterised by a combination of very hard wood; leaves opposite, estipulate, and apparently 1-nerved (less often “subtrinnerved” sensu Jacques-Félix *et al.* 1978; Jacques-Félix 1983, 1985); a general lack of indumentum; flowers small and 4-merous; anther-connectives enlarged and with a dorsal oil-gland (or with gland reduced or absent in some species and species-groups); fruits baccate with 1 – few large seeds and embryo foliaceous and convoluted.

In continental Africa, *Memecylon* sensu stricto holds 73 species and is entirely sub-Saharan and mainly tropical; it extends from the Republic of Guinea in the west with seven species (Gosline *et al.* 2023a, 2023b) to Tanzania in the east with 15 species (POWO 2023, continuously updated). *Memecylon* is entirely absent from NE Africa, including Ethiopia, Somalia and S Sudan (e.g. Darbyshire *et al.* 2015). Taxon diversity in Africa is highest in Cameroon, with 32 species (Onana 2011). In contrast, for the moment, only 21 species are listed for neighbouring Gabon (Sosef *et al.* 2006). Many of the Cameroon species are narrow endemics and highly threatened by forest clearance. The *Cameroon Plant Red Data book* includes 12 *Memecylon* species, all but one of which are either Endangered or Critically Endangered (Onana & Cheek 2011).

Within Cameroon, the highest diversity of species of *Memecylon* is held within the Cross-Sanaga River Interval (Cheek *et al.* 2001) as is recorded also in numerous other evergreen forest angiosperm genera e.g. *Vepris* Comm. ex A.Juss. (Rutaceae, Cheek & Onana 2021), *Saxicolella* Engl. (Podostemaceae, Cheek *et al.* 2022), *Cola* Schott & Endl. (Malvaceae-Sterculioideae, Cheek *et al.* 2020a) and *Uvariopsis* Engl. & Diels (Annonaceae, Couvreur *et al.* 2022; Gosline *et al.* 2022). The Interval has the highest species and generic diversity of flowering plants per degree square in tropical Africa (Barthlott *et al.* 1996; Dagallier *et al.* 2020), including endemic genera such as *Medusandra* Brennan (formerly

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Medusandraceae, now Peridiscaceae, Soltis *et al.* 2007; Breteler *et al.* 2015) and new genera to science are still being discovered there, e.g. *Korupodendron* Litt & Cheek (Vochysiaceae, Litt & Cheek 2002) and *Kupea* Cheek & S.A.Williams (Triuridaceae, Cheek *et al.* 2003).

The species of *Memecylon* in Guineo-Congolian Africa (sensu White 1983) are classified as belonging to subg. *Mouririoides* (Jacq.-Fél.) R.D.Stone or subg. *Memecylon*, with the latter further subdivided into six endemic sections: *Afzeliana* Jacq.-Fél., *Diluviana* R.D.Stone, *Felixiocydon* R.D.Stone, *Germainiocydon* R.D.Stone, *Polyanthema* Engl. s.s., and *Sitacydon* R.D.Stone (Stone 2014a). Section *Afzeliana* is distinguished by its ellipsoid to oblong fruits that are often white when young, turning blue or purple at maturity; the remaining sections have globose fruits that are usually green when immature. The section *Afzeliana* was recently revised, recognising 20 species, 17 of which are in Cameroon (Stone *et al.* 2008), and *Memecylon emancipatum* R.D.Stone from Liberia has since been recognised (Stone 2014b). *Afzeliana* is also

a monophyletic group in phylogenetic analyses of DNA sequences (Stone 2014a).

In this paper, we formally describe *Memecylon ebo*, a further new species of sect. *Afzeliana* that is narrowly endemic within the Cross-Sanaga River Interval, specifically the Ebo forest in Littoral Region, Cameroon. Several photos taken in the Ebo Forest of an unusual, yellow-petalled Melastomataceae-Olisbeoideae with jade-green stamens, subtrinate leaf-blades, sessile inflorescences and highly contracted pedicels (Fig. 1) were found by MC in early 2023 when reviewing photographic images for use in the book *Important Plant Areas of Cameroon* (Murphy *et al.* 2023). These photos were referred to RDS who identified them as a new species of *Memecylon* sect. *Afzeliana* (Stone *et al.* 2008). The specimen they were linked to, Prenner 23 (K, YA), had erroneously been identified as *Memecylon zenkeri* Gilg which has long inflorescences bearing white petalled, blue-staminate flowers on long pedicels (Fig. 2). However, the two species are vegetatively highly similar, both having quadrate-alate young internodes and thickly



Fig. 1. *Memecylon ebo*. Flowering branch collected as Prenner 23. PHOTO: G. PRENNER.

leathery leaves with conspicuous transverse veins united with a pair of looping intramarginal nerves. Searches of all specimens of *Memecylon zenkeri* at K and of 173 specimen images on GBIF (<https://www.gbif.org/>) brought to light six other flowering and fruiting specimens that matched *Prenner* 23, all from a small area in the NE quadrant of the Ebo Forest. The ellipsoid fruits of the specimens matching *Prenner* 23 confirmed placement in *Memecylon* sect. *Afzeliana*.

We also review and update information on the endemic plant species of Ebo Forest, recently designated as an Important Plant Area (IPA) of Cameroon (Murphy *et al.* 2023) and under immense threat of commercial logging.

Materials & Methods

This study is based on herbarium specimens. All specimens cited have been seen by us, unless indicated as “n.v.”. The methodology for the surveys in which most of

the specimens were collected is given in Cheek & Cable (1997). Herbarium citations follow Index Herbariorum (Thiers 2023, continuously updated), nomenclature follows Turland *et al.* (2018) and binomial authorities follow IPNI (2022, continuously updated). The *Flore du Cameroun* volume for Melastomataceae (Jacques-Félix 1983) followed by the taxonomic treatment of *Memecylon* sect. *Afzeliana* (Stone *et al.* 2008) were the principal reference works used to determine the identifications of the specimens of what proved to be the new species. Material of the suspected new species was identified by comparing morphologically with protologues, reference herbarium specimens (Cheek in Davies *et al.* 2023), including type material of *Memecylon* sect. *Afzeliana* principally at K, but also using material and online images from BR, MO, P and YA, including all 173 images on GBIF (accessed 15 April 2023) of *Memecylon zenkeri*. The description was made following the terms used in Beentje & Cheek (2003) and the format of Stone *et al.* (2008) and Stone & Cheek (2018).



Fig. 2. *Memecylon zenkeri*. Flowering branch. Note the “star flower” floral architecture and the blue anther connectives with oil glands, all characteristic of *Memecylon* sect. *Afzeliana* (Stone *et al.* 2008). PHOTO: R. D. STONE.

The conservation assessment was made in accordance with the categories and criteria of IUCN (2012). Herbarium material was examined with a Leica Wild M8 dissecting binocular microscope fitted with an eyepiece graticule measuring in units of 0.025 mm at maximum magnification. The drawings were made with the same equipment using a Leica 308700 camera lucida attachment.

Taxonomic Treatment

The new species from Ebo represented by *Prenner* 23, because it has quadrate-alate stems with nodes that are $<2 \times$ the diameter of the internodes, leaves which are both subtrinervate and with a pair of looping intramarginal nerves connecting with the transverse veins and transverse veins which are impressed above and prominent below, keys out to *Memecylon zenkeri* at couplet 15 in the revision of Stone *et al.* (2008). Characters separating the two species are indicated in Table 1 below.

Memecylon ebo *R.D.Stone & Cheek, sp. nov.* Type: Cameroon, Littoral Region, Yingui, Bekob village, Yabassi, 4°25'14.0"N, 10°24'45.0"E, alt. 1040 m, forest understory, fls, 28 April 2005, *Tchiengue* 2107 with Ekwoe, Horwath, Hoffmann (holotype K [barcode K001243169]; isotype YA).

<http://www.ipni.org//urn:lsid:ipni.org:names:77348191-1>

Evergreen understory shrub 0.2 – 1 (– 1.5) m tall, entirely glabrous. Branchlets slender, the youngest 1 – 3 internodes quadrangular in cross section and narrowly

alate, wings c. 0.20 – 0.25 mm wide, becoming terete with age, epidermis subglossy, brown; internodes (1.3 –) 1.5 – 2.8 (– 3.1) cm long, 1 – 2 mm diam.; nodes swollen 1.8 – 3.5 mm diam. *Leaves* on petioles 2 – 4 (– 6) \times 1 mm, the petioles twisted, channelled on the adaxial side. Blades thickly coriaceous, dark green and shining on the upper surface, paler beneath, drying black above and midbrown? beneath, lanceolate-elliptic or narrowly elliptic-oblong in outline, (8.4 –) 10 – 14.5 (– 15) \times (2.7 –) 3.3 – 5 (– 5.5) cm; bases acute to broadly acute, apices acuminate, the acumens narrowly triangular (0.8 –) 1 – 1.5 \times 0.2 – 0.3 cm; midnerve, lateral and transverse nerves strongly impressed on the adaxial surface, sub-bullate, prominent on the abaxial; lateral nerves diverging from the midnerve at the base of the blade, forming arches between the junctions with the transverse veins, 2 – 5 mm from the margin; transverse veins 9 – 16 pairs, of about the same thickness as the laterals, prominent on the abaxial surface; network of smaller venules absent or inconspicuous. *Inflorescences* subsessile cymules, 1 – 4-flowered, 0.5 – 0.6 cm long including flowers; borne mostly at the leafless, slightly thickened nodes of otherwise leafy branches or rarely at the leafy nodes, 1 – 7 nodes distant from the stem apex; 1 – 3 flowering/fruiting nodes per leafy stem. Inflorescence axis 0 – 2.8 \times 1.5 mm, unbranched; bracts opposite, in pairs, with up to 3 pairs per axis, spreading, triangular convex, 1.2 – 1.5 \times 1.3 mm; apices often with a mucro; bases often united, sheathing the axis, forming a boat shaped structure; persistent in fruit (Fig. 3E). *Flowers* subsessile; pedicels partly concealed by the subtending bracts, 0.8 – 1.5 \times 0.8 mm; hypantho-calyx pale greenish-white, obconic, c. 2 mm long \times 3.5 mm diam.,

Table 1. Diagnostic differences separating *Memecylon zenkeri* from *M. ebo*. Data for *M. zenkeri* from *Fl. Cameroun* (Jacques-Félix 1983) and from specimens at K ($n = 40$).

| | <i>Memecylon zenkeri</i> | <i>Memecylon ebo</i> |
|--|-----------------------------------|--|
| Petal colour | white or bluish-white | yellow |
| Petal posture | erect | spreading |
| Anther connective colour | blue | jade green |
| Anther connective gland | highly conspicuous | inconspicuous or absent |
| Staminal filament length (mm) | 3 | 4 – 5 |
| Pedicel length, flowers (mm) | 4 | 0.8 – 1.5 |
| Pedicel length, fruits (mm) | 8 – 10 | 1 – 1.5 |
| Bracts | narrowly triangular, caducous | broadly triangular, persistent |
| Inflorescence axis length (mm) | 10 | 0 – 2.8 |
| No. flowers per inflorescence | 10 – 12 | 1 – 4 |
| Mature fruit colour | white, ripening blue | green-blue (turquoise or teal) when both immature and mature |
| Fertile nodes leafless or not | leafy or leafless | leafless or rarely leafy |
| Number of fertile nodes per leafy stem | (1 –) 6 – 9 | 1 – 3 |
| Height (m) | (1 –) 2 – 4 (– 9) | 0.2 – 1 (– 1.5) |
| Phenology | fl. April – June, fr. Nov. – Jan. | fl. Feb. & April, fr. Sept. – Nov. |

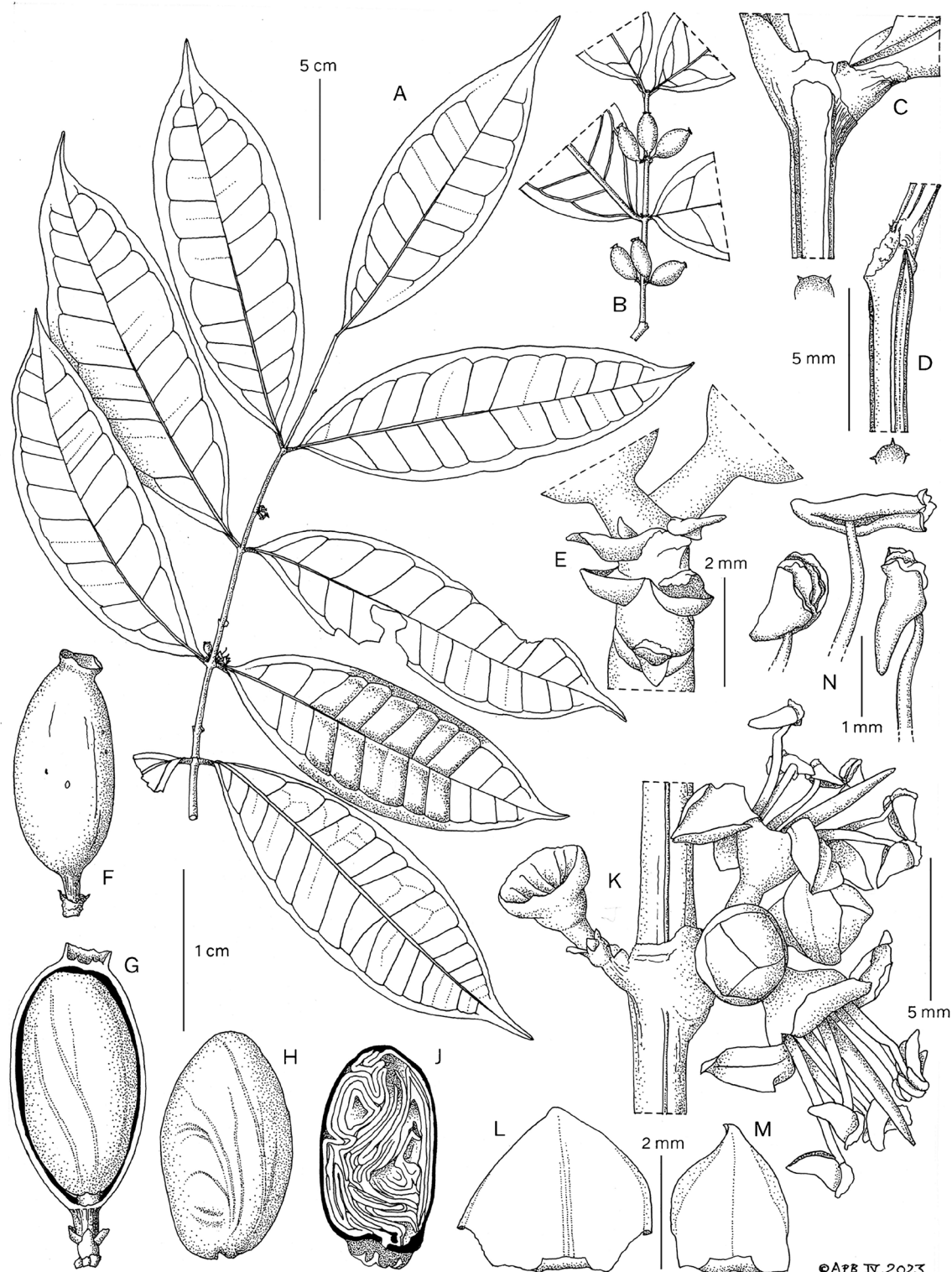


Fig. 3. *Memecylon ebo*. **A** habit, flowering branch; **B** habit, fruiting branch; **C** & **D** detail of stem apex, leaf bases and inter-node, also transverse sections of stem showing four wings; **E** inflorescence axis, showing bract pairs and pedicels with bases of two fruits; **F** fruit, showing sheathing bract pairs; **G** fruit, rehydrated, with seed exposed; **H** rehydrated seed; **J** seed in longitudinal section showing the folded cotyledons; **K** two inflorescences at leafless node; **L** outer petal, outer (abaxial) surface; **M** inner petal, inner (adaxial surface); **N** three rehydrated anthers. **A** & **L** – **N** from *Tchiengue* 2107; **B** – **D** & **F** from *Xanthos* 297; **E**, **G** – **J** from *Osborne* 198; **K** from *Prenner* 23. DRAWN BY ANDREW BROWN.

the calyx margin entire, lacking lobes, the inner surface with eight radial ridges in pairs, flanking the bases of the staminal filaments (Fig. 3K). Petals pale yellow (Fig. 1), 4, spreading to slightly recurved, outer petals subtriangular, 2.5 – 3 × 3.5 mm, apices obtuse, bases shortly and broadly unguiculate, margins involute; inner petals as the outer but smaller, quadrangular, 2 – 2.1 mm wide, apices acute. Stamens long-exserted on slender, white, cylindrical filaments 4 – 5 × 0.2 – 0.25 mm; anther cells white, oblong, (0.6 –) 1.5 × 0.6 mm; the connective jade green, extending dorsally, conical in dorsal view, excavated ventrally (1.5 –) 2 × (0.4 –) 0.7 – 1 mm, in side view in life slightly hook-shaped (Fig. 3K) and outwardly curved, lacking a dorsal keel, the oil-gland absent or diffuse and very inconspicuous appearing as a dark discolouration between the midpoint and the extremity of the connective. Style slender, 5 – 7 × 0.6 – 0.7 mm, tapering to an acute apex. *Fruit* white when young, blue-green at maturity, ellipsoid-oblong (9 –) 12 – 16 × (6 –) 7 – 9 mm long, crowned by the persistent but non-acrescent calyx, calyx broadly funnel shaped c. 1 × 3 mm; mesocarp fleshy-leathery. *Seed* coat grey-brown, smooth, slightly smaller than the fruit (Fig. 3H), embryo with cotyledons foliaceous, highly folded (Fig. 3J).

RECOGNITION. *Memecylon ebo* differs from all other species of *Memecylon* in the yellow petals and jade green anther-connectives.

In the absence of flowers, *Memecylon ebo* has been confused with the sympatric *M. zenkeri*, also of sect. *Afzeliana*. However, in fruit, it can be recognised by the infructescence axes being sessile or very short, 0 – 2.8 mm long (vs c. 10 mm long in *M. zenkeri*) and the fruiting pedicels very short, 1 – 1.5 mm (vs 8 – 10 mm long).

DISTRIBUTION. Cameroon. Endemic on current evidence to the NE quadrant of Ebo Forest, Littoral Region.

ADDITIONAL SPECIMENS. CAMEROON. Littoral Region. Yabassi, Yingui, Ebo Forest, Bekob village, Ndokbaembi on N-S ridge, along century old abandoned German rd, fr., 21 April 2005, Cheek 12435 with Morgan, Corcoran & Jonas (CAS, K [K000460187], SCA n.v., YA n.v.); *ibid.*, towards the river, Nolokeyembi path, fl., 17 Feb. 2006, Prenner 23 with Fenton & Alobuede (K [K001243168], YA n.v.); *ibid.* off S transect along river, fr., 15 Sept. 2006, Osborne 62 with Engomgwie, Mam & Morgan (K [K000341249], YA); *ibid.*, Bekob drinking stream trail, 1550 m along, fr., 27 Oct. 2006, Osborne 198 with Beheng (K [K000341246], YA n.v.); *ibid.*, Ndogbayembe trail 1550 m from Bekob camp, fr., 11 June 2008, MacKinnon 174 (K [K001243166], MO n.v., YA n.v.); *ibid.*, Bekob, 525 m along Decamb trail, fr., 30 Nov. 2013, Xanthos 297 with van der Burgt, Ngansop & Tchiengue (G n.v., K [K001286641], YA n.v.).

HABITAT & ECOLOGY. Intact, undisturbed, submontane evergreen (cloud) forest; 710 – 1040 m alt.

CONSERVATION STATUS. *Memecylon ebo* is assessed here as Critically Endangered [CR B1ab(iii) + B2ab(iii)] using the IUCN (2012) criteria. This is because it is known from a single threat-defined location, with area of occupancy and extent of occurrence both c. 4 – 8 km², in the NE quadrant of the Ebo forest around the Banen village of Bekob, currently uninhabited. This is one of the most intensively surveyed parts of the Ebo forest, because Bekob was for many years the main research centre for biologists in the forest. Within this small area, it appears not infrequent nor inconspicuous since seven collections were made over nine years (2005 – 2013) by six collectors (see above). Many Memecyloid species are both restricted in their range and infrequent within it (Cheek pp. 212 – 222 in: Onana & Cheek 2011), and this is supposed by us to be the case with *Memecylon ebo*. Surveys elsewhere in Ebo, for example around Njuma in the NW quadrant, also intensively surveyed, have failed to find this species.

It is possible that *Memecylon ebo* will yet be found at additional locations in Cameroon outside Ebo. However, while surveys have not been exhaustive, many thousands of specimens have been collected in areas to the north, south, west and east of Ebo (Cheek *et al.* 1992; Cheek *et al.* 1996; Cable & Cheek 1998; Cheek *et al.* 2000; Maisels *et al.* 2000; Chapman & Chapman 2001; Harvey *et al.* 2004; Cheek *et al.* 2004; Cheek *et al.* 2006; Cheek *et al.* 2010; Harvey *et al.* 2010; Cheek *et al.* 2011). Given the vegetative similarity of *Memecylon ebo* to *M. zenkeri*, all 173 specimen images of that species on GBIF were checked in case further specimens of the new species might be found under this name, but no new additional records were detected.

If *Memecylon ebo* occurs elsewhere, it is most likely to be in the Bakossi area to the west of Ebo in SW Region, especially Mt Kupe-Bakossi Mts to the NW, since several threatened, range-restricted species are confined or almost confined, to these two areas, e.g. *Costus kupensis* Maas & H.Maas (Maas-van de Kamer *et al.* 2016), *Coffea montekupensis* Stoff. (Stoffelen *et al.* 1997), *Microcos magnifica* Cheek (Cheek 2017a), *Dovyalis* sp. 1 of Mt Kupe (Cheek *et al.* 2004) and *Impatiens frithii* Cheek (Cheek & Csiba 2002). However, since Mt Kupe has been intensively collected, we consider this unlikely.

The Ebo forest, while recently designated as an IPA, is not protected and a large part was designated as a logging concession in Feb. 2021 (Lovell 2020). Although this was suspended by the President of Cameroon in Aug. 2021 (Kew Science News 2020), the forest is now immediately threatened by a further logging concession in 2023 and logging has started at the eastern and southern edges.

Additional threats are clearance of forest habitat for oil palm plantations and for an open cast iron-ore mine (Cheek *et al.* 2018c).

PHENOLOGY. Flowering in Feb. and April. Fruits ripening in Sept. – Nov.

ETYMOLOGY. Named for the forest of Ebo in Littoral Region, Cameroon, to which *Memecylon ebo* appears endemic.

VERNACULAR NAMES & USES. None recorded.

NOTES. *Memecylon ebo* appears to be relatively frequent around Bekob village (abandoned), former research base where all seven known specimens occur in 4–8 km². In contrast, the vegetatively similar *M. zenkeri* is much less frequent but more widespread, with eight specimens recorded scattered, mostly thinly, over the several hundred square kilometres within the Ebo forest that have been surveyed, with a cluster of three specimens near the former Juma camp, in the NW quadrant of Ebo. One specimen of *M. zenkeri* (Lockwood 44), is recorded near Bekob, so that the two species appear to be sympatric. *Memecylon zenkeri* is a relatively widespread species, occurring from SE Nigeria to Gabon.

Apart from these two species, only one other of the genus, *Memecylon virescens* Hook.f., has been recorded from Ebo thus far, with a single record sympatric with *M. ebo* near Bekob, MacKinnon 213 (K, YA).

That the connective oil-gland is absent or diffuse and very inconspicuous in *Memecylon ebo* is unusual in the genus. However, not all members of sect. *Azeliiana* have the oil-gland. It is also reduced or absent in *M. mamfeanum* (Jacq.-Fél.) R.D.Stone, Ghogue & Cheek, *M. hyleastrum* R.D.Stone & Ghogue, *M. bako-siense* R.D.Stone, Ghogue & Cheek, and *M. rheophyticum* R.D.Stone, Ghogue & Cheek.

The endemic plant species of Ebo Forest, Littoral Region

The Ebo Forest, a former proposed National Park, covers c. 1,400 km² of lowland and submontane forest, including important inselberg and waterfall areas, with an altitudinal range of 130–1115 m alt. and a rainfall of 2.3–3.1 m per annum (Abwe & Morgan 2008; Cheek *et al.* 2018c). To date, over 100 globally threatened plant species have been documented there, including 23 new to science (Murphy *et al.* 2023), of which *Memecylon ebo* is the tenth that is globally endemic to Ebo (see Table 2).

Ebo was recently highlighted (Kew Science News 2020) as an IPA. Of the 49 IPAs in Cameroon, Ebo has the highest number (23) of documented Critically Endangered [CR] plant species (IUCN global assessments, <https://www.iucnredlist.org/>), i.e. those with the highest level of global threat and closest to

extinction, after Ngovayang (Bipindi) which has 24 (Murphy *et al.* 2023: 23, table 3). With the addition of *Memecylon ebo*, here assessed as CR also, Ebo equals Ngovayang, and with the description and assessment of additional narrow endemics in the course of preparation for publication, including in the genera *Ardisia* Sw., *Begonia* L., *Chassalia* Comm. ex Poir., *Cola*, *Microcos* L. and *Mitriostigma* Hochst., it will soon have the highest number of CR species in Cameroon, and possibly in all of tropical Africa. Most of Ebo's CR species are endemic or near endemic to Ebo (see Table 2). However, several other CR species of Ebo occur at more than two other additional sites (see Murphy *et al.* 2023: 169–177) e.g. *Belonophora ongensis* S.E.Dawson & Cheek (Rubiaceae, Cheek & Dawson (2000)). Other point endemic CR species occur just outside the boundary of Ebo, e.g. *Kupeantha yabassi* M.G.Alvarez & Cheek (Rubiaceae, Alvarez-Aguirre *et al.* 2021). Ebo also holds the only Cameroonian location for globally threatened species such as *Nothodissotis barberi* (Hook.f.) Ver.-Lib. & G.Kadereit (Veranso-Libalah *et al.* 2019).

Discussion

The publication in this paper of a further endemic species of plant for the Ebo forest emphasises Ebo's global importance for conservation. No other site in Cameroon has more Critically Endangered plant species now than Ebo.

Cameroon has the highest number of globally extinct plant species of all countries in continental tropical Africa (Humphreys *et al.* 2019). The extinction of species such as *Oxygyne triandra* Schltr. (Thimiaceae, Cheek *et al.* 2018d) and *Afrothismia pachyantha* Schltr. (Afrothismiaceae, Cheek & Williams 1999; Cheek *et al.* 2019a; Cheek *et al.* 2023a) are well known examples, recently joined by species such as *Vepris bali* Cheek (Rutaceae, Cheek *et al.* 2018b), *V. montisbambutensis* Onana (Onana & Chevillotte 2015) and *Ardisia schlechteri* Gilg (Primulaceae, Murphy *et al.* 2023). However, another 127 potentially globally extinct Cameroon species are documented (Murphy *et al.* 2023: 18–22).

It is critical now to detect, delimit and formally name species as new to science, since, until they are scientifically recognised, they are essentially invisible to science. Only when they have a scientific name can their inclusion on the IUCN Red List (<https://www.iucnredlist.org/>) be facilitated (Cheek *et al.* 2020b). Most (77%) species named as new to science in 2023 are already threatened with extinction (Brown *et al.* 2023). Many new species to science have evaded detection until today because they have minute ranges which have remained unsurveyed until recently, as was the case with *Memecylon ebo*. However, there are exceptions (Cheek & Etuge 2009; Cheek *et al.* 2019b).

Table 2. The strictly endemic plant species of Ebo, and those near-endemic, i.e. also at one or two additional locations.

| Species name (family) | Strictly Endemic to Ebo | Additional Locations (if any) | IUCN Conservation Assessment (if available on iucnredlist.org) | Reference (* = newly recorded at Ebo in this paper) |
|--|-------------------------------|--|---|--|
| <i>Afrothismia fungiformis</i> (Afrothismiaceae) | | Mt Kupe | EN | Cheek <i>et al.</i> (2023a) |
| <i>Piptostigma submontanum</i> (Annonaceae) | | Rumpi Hills; Bakossi Mts | EN | Ghogue <i>et al.</i> (2017) |
| <i>Uvariopsis dicaprio</i> (Annonaceae) | X | | CR | Gosline <i>et al.</i> (2022) |
| <i>Crateranthus cameroonensis</i> (Lecythidaceae) | X | | CR | Prance & Jongkind (2015) |
| <i>Inversodicraea ebo</i> (Podostemaceae) | X | | CR | Cheek <i>et al.</i> (2017) |
| <i>Costus kupensis</i> (Costaceae) | | Mt Kupe | EN | Maas-van de Kamer <i>et al.</i> (2016) |
| <i>Microcos magnifica</i> (Grewiaceae) | | Mt Kupe | EN | Cheek (2017a) |
| <i>Pseudohydrosme ebo</i> (Araceae) | X | | CR | Cheek <i>et al.</i> (2021) |
| <i>Palisota ebo</i> (Commelinaceae) | X | | CR | Cheek <i>et al.</i> (2018c) |
| <i>Impatiens frithii</i> (Balsaminaceae) | | Bakossi Mts; Mt Etinde-Mt Cameroon | EN | Cheek & Csiba (2002)* |
| <i>Impatiens banen</i> (Balsaminaceae) | X | | n/a | Cheek <i>et al.</i> (2023b) |
| <i>Kupeantha ebo</i> (Rubiaceae) | X | | CR | Cheek <i>et al.</i> (2018a) |
| <i>Ardisia ebo</i> (Primulaceae) | X | | CR | Cheek & Xanthos (2012). References to this species outside of Ebo are erroneous (Cheek pers. obs. 2024). |
| <i>Psychotria pachycalyx</i> (Rubiaceae) | | Rumpi Hills; Bata, Rio Muni | n/a | Lachenaud (2019)* |
| <i>Berlinia korupensis</i> (Leguminosae) | | Korup National Park | CR | Mackinder & Pennington (2011)* |
| <i>Talbotiella ebo</i> (Leguminosae) | | Loum Forest Reserve; Mone Forest Reserve | EN | Mackinder <i>et al.</i> (2010) and van der Burgt (pers. comm. to Cheek 2022) |
| <i>Dichapetalum korupinum</i> (Dichapetalaceae) | | Korup National Park | CR | Breteler (1996)* |
| <i>Phyllanthus caesiifolius</i> (Phyllanthaceae) | | Bakossi Mts | CR | Hoffmann & Cheek (2003)* |
| <i>Phyllanthus nyale</i> (Phyllanthaceae) | | Bakossi Mts | CR | Hoffmann & Cheek (2003)* |
| <i>Rhaptopetalum breteleri</i> (Lecythidaceae) | | Nguélémendouka | CR | Prance & Jongkind (2015)* |
| <i>Aulacocalyx camerooniana</i> (Rubiaceae) | | Akom II forest | CR | Sonké <i>et al.</i> (2005); Cheek (2017b)* |
| <i>Coffea leonimontana</i> (Rubiaceae) | | S of Kompina (Littoral), where likely extinct | CR | Stoffelen <i>et al.</i> (1996, publ. 1997)* |
| <i>Vitex yaoundensis</i> (Lamiaceae) | | Yaoundé; Mungo River Forest Reserve | CR | Pollard (2004)* |
| <i>Memecylon ebo</i> (Melastomataceae) | X | | n/a | This paper |

If further global extinction of plant species is to be avoided, effective conservation prioritisation, backed up by investment in protection of habitat, ideally through reinforcement and support for local communities, who often effectively own and manage the areas

concerned, is crucial. IPA programmes, often known in the tropics as TIPAs (Darbyshire *et al.* 2017; Murphy *et al.* 2023) offer the means to prioritise areas for conservation based on the inclusion of highly threatened plant species, among other criteria. Such measures

are vital if further species extinctions, of narrowly endemic, highly localised species such as *Memecylon ebo*, are to be avoided.

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Declarations

Conflict of Interest The authors declare no conflicts of interest.

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