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Begonia ebo sp. nov. (Sect. *Filicibegonia*-Begoniaceae), endangered in Ebo, a highly threatened forest in Littoral Region, Cameroon

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Abstract. *Begonia ebo* H.Lockwood sp. nov., a terrestrial herb endemic to Cameroon cloud forest, is described, mapped and illustrated. It is the first species of *Begonia* Section *Filicibegonia* known to have yellow flowers (vs pink or white), to have inflorescences that are epiphyllous, appearing to emerge from the upper leaf surface (vs ordinarily axillary) and, also, the first species of the section known to be endemic to Cameroon. It is also endemic to the Cross-Sanaga River Interval. In contrast, six of the nine species of Sect. *Filicibegonia* are endemic to the interval between the Sanaga River of Cameroon and the Congo River. So far *Begonia ebo* is only known from inside or adjacent to the Ebo forest, Littoral Region, Cameroon, apart from a single record from the Chaine de Nkohom in Central Region c. 60 km distant. In view of the massive ongoing threats of industrial logging to the Ebo Forest, the stronghold and main centre of this species on current evidence, the conservation status of *Begonia ebo* is provisionally assessed as Endangered, EN B1 ab(iii) +B2ab(iii).

Keywords: Cross-Sanaga River interval, epiphyllous, yellow-flowered.

INTRODUCTION

On the 13th September 2008, during 6 months botanising in the forest of Ebo, Littoral Region, Cameroon, the first author came across plants of a *Begonia* L. species that appeared to be new to science (*Lockwood* 61, K, YA, Fig. 1). Since it has upright stems, papery, indehiscent or irregularly dehiscent fruits, it clearly falls in sect. *Filicibegonia* A.DC. This was confirmed after study by microscope dissection in the herbarium when the following characters used in the global key to *Begonia* sections (Doorenbos et al. 1998: 60) led to Sect. *Filicibegonia*: locules 3, placental branches 1 per locule (vs 2 to 4), female flowers with 2 perianth segments (vs 3 to 6), anthers dehiscent with unilateral longitudinal anther slits, apex hooded, stems upright, wings subequal in fruit; fruit pendulous; venation pinnate; inflorescence monochasial, axes strongly reduced; androecium zygomorphic, filaments unequal, anthers longer than the filaments; styles fused less than halfway, 2-lobed,

Figure 1. *Begonia ebo.* Habit showing male and female flower. *Lockwood* 61 (K, YA). Photo by H. Lockwood.

caducous in fruit, stigma kidney-shaped, in a band and not spiralled.

Filicibegonia consists of "8 species (and probably some un-described ones)" and is restricted to Tropical Africa "from Guinea to eastern Dem. Rep. Congo and south to Angola." (Doorenbos et al. 1998). The centre of diversity is Gabon which has all but one of the described species, including three endemics. The known species of Sect. *Filicibegonia* are: *B. aspleniifolia* Hook.f. ex A.DC. (Gabon), *B. auriculata* Hook.f. (Gabon), *B. elatostemmoides* Hook.f. (Cameroon to DRC), *B. gossweileri* Irmscher (Republic of Congo and Cabinda), *B. macrocarpa* Warb. (W & C Africa), *B. minutifolia* N. Hallé (Gabon), *B. sciaphila* Gilg ex Engl. (Cameroon, Gabon, Cabinda) and *B. sessilifolia* Hook. f. (Cameroon to Congo including Bioko).

Lockwood 61 appeared to be a new species to science because it is the first known species of section *Filicibegonia* to have yellow flowers (vs pink or white), to have inflorescences that are epiphyllous, resting on and appearing to emerge from the upper leaf blade. Within *Filicibegonia,* using the key to *Filicibegonia* species in de Wilde et al. (2009), it keys out nearest to *B. sessilifolia* due to the 3-winged fruits, the entire (non-pinnate) leaf blades that are glabrous adaxially and >5 cm long, the narrowly oval (in fact elliptic-oblong) to rectangular bracts, petioles 2–20 mm long. It also has similarities with *B. gossweileri* of Republic of Congo and Cabinda, the only species of the section not included in de Wilde et al. (2009). See Table 1 for diagnostic differences between these species. In this paper we describe and name the new species as *Begonia ebo,* assess its extinction risk status, map and illustrate it, and discuss it in the context of other highly threatened species in the Ebo forest.

This species was only seen at one location during the first author's 6 months botanical survey at Ebo indicating that it is infrequent. Following the conclusion of the field visit, the specimen was matched with five other specimens from nearby in Ebo including one collected by the last author seven years later, and also with two other collections made outside the Ebo forest.

Begonia ebo is the first new species of the genus to be described from Cameroon for more than twenty years (IPNI continuously updated), the most recent being the point endemic *Begonia montis-elephantis J.J. de Wilde* (de Wilde 2001).

The genus *Begonia* is the fastest growing genus known among plants, with additions being made yearly (Ardi et al. 2022). The total count currently stands at 2151 species (Hughes et al. 2015–). In the years 2014 to 2019 an average of 60 new species were published in *Begonia* each year. The steepest increases in new species have been in SE Asia, with very few from tropical Africa (Hughes in Cheek et al. 2020). The genus is pantropical, and evidence supports tropical Africa as the origin of the genus, since the earliest branching lineages occur here (Forrest et al. 2005).

In Cameroon 49 species of *Begonia* are recorded (Onana 2011), while in neighbouring Gabon 55 species are listed, yet over 100 Gabonese specimens remain undetermined to species (Sosef et al. 2006).

MATERIALS & METHODS

This study is based on the study of live plants in natural habitat at Ebo by the authors, and herbarium specimens at K and YA. In the absence of a Flore du Cameroun account, the Flore du Gabon volume for Begoniaceae (de Wilde et al. 2009) was the principal reference work used to determine the identification of the specimens of what proved to be the new species. The material cited in this paper was also compared at the Kew herbarium (K) with specimens of all other species of its section. 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 in Ebo is given in Cheek & Cable (1997). Herbarium citations follow Index Herbariorum (Thiers *et al.* continuously updated), nomenclature follows Turland *et al.* (2018) and binomial authorities follow IPNI (continuously updated). Technical terms follow Beentje & Cheek (2003). The conservation assessment was made in accordance with the categories and criteria of IUCN (2012). Herbarium mate-

Table 1. Diagnostic features separating *Begonia ebo* from *B. gossweileri* and *B. sessilifolia*. Data for *B. gossweileri* from Irmscher (1961) and from *J.J.F.E de Wilde et al.* 11050 and 11054. Data for *B. sessilifolia* from de Wilde *et al.* (2009) and numerous specimens at K.

	Begonia ebo	*Begonia gossweileri*	*Begonia sessilifolia*
Stem branching (No. orders)	2–4	0	0(–1)
Leaf margin (nature and number of lobes/teeth on each side of the blade)	Slightly crenate to slightly denticulate/7–15	Dentate/5(–7)	Entire, sinuous to crenellate-denticulate distally/7–18
Leaf margin, dimensions of lobes/ teeth (mm long)	0.5(–2)	(1–)2–3	0–1
Bract dimensions (mm)/apex shape	(1.25–)4–5 × (0.1–)0.7/rounded or acute, bristles absent	2.5–3 × 0.5/acute with bristles	4–8 × 1–1.25/acute or with 2–3 bristles
Perianth colour	Yellow with red markings	White with basal red spot	White
Male pedicel length (mm)	3–5	6–7	5–7
Anther length (mm)	0.7–1.25	1.5–1.8	1.75–2
Style column length (mm)	0.5	1.5	1.5(–2)
Fruit, overall dimensions (2D, length x breadth, mm)	16–20 × 11–13	10–14 × 3.5–6	9–22 × 9–22
Fruit rostrum (mm)	0–1	3–4	3

rial was examined with a dissecting binocular microscope fitted with an eyepiece graticule measuring in units of 0.025 mm at maximum magnification. The map base data was sourced from Diva-GIS.org and compiled through ArcGIS (ESRI).

TAXONOMIC TREATMENT

Begonia ebo H.Lockwood **sp. nov.**

Type: Cameroon, Littoral Region, near Yabassi and Yingui, Ebo Forest, at plot on new trail to Masseng from Bekob camp, 04° 21' 50" N, 10° 25' 20" E, fl. fr. 18 Feb. 2006, *Cheek* 13052 (holotype K000593389; isotypes FT, YA). (Figure 1–3).

LSID:77349864-1

Diagnosis

Begonia ebo differs from all known species of *Begonia* Sect. *Filicibegonia* due to its yellow (not white or pink) perianth lobes, and also in the peculiar posture of the inflorescence, which lie along the groove of the adaxial petiole leaf-blade midrib, the flowers appearing superficially to arise from the middle of the leaf-blade (vs inflorescence sessile, or held above or below the leaf blades).

Description

Erect, perennial herb 25–50 cm tall, 10–30 cm wide, primary stems terete, 1.5–3.0 mm diam. at base, branching from the base or with a single stem from the base branching in the upper part, orders of branching 1–3, with 2 to 8 ultimate leafy branches per plant, leafy branches diverging at 60–70° from each other, each with 4–8 leaves, (Fig. 2A) sometimes with short, single-internode branches, internodes 0.4–1 cm long (flowering stems) or to 2 cm long (vegetative stems), epidermis pale brown, with fine longitudinal ridges, the distal 5–6 leafy internodes 80–100% covered in mid brown simple, multicellular (transversely banded), mainly adpressed hairs 0.55–1.10 mm long, 0.075 mm diam. at base, gradually tapering to a rounded or pointed apex, the distal ¼ to ½ of each hair sinuous, sometimes u-shaped or spreading; proximal stem nodes glabrescent. Stipules persisting for 4–6 nodes from the apex, narrowly oblong-elliptic, (1.5–)3–5 × (1.0–)1.5–2(–3) mm (largest at the stem apex), apex acute, terminating in a filament 0.3–1 mm long, margins entire or each side with 1–3 patent bristle-like teeth to 0.8 mm long, glabrous, brown. Leaves alternate, distichous, not peltate (Fig 2A); *petiole* terete, (1–)4 × 1 mm, often extending further to the blade on one side than the other, 20–50% covered in hairs, hairs as stem. *Leaf blade* held in a more or less horizontal position, upper surface dark green, contrasting with the purple-red midrib and secondary nerves, glossy; lower surface pale green, matt, asymmetric, slightly dimidiate, with one side wider and extending up to several mm further down the petiole than the other, lanceolate or narrowly oblong-elliptic, 4.7–9.5(–10) × 1.7–3.7(–5.3) cm, long-acuminate, base deeply to shallowly cordate on one side and obtuse or cuneate on the other, less usually subsymmetric and obtuse, margin slightly crenate to slightly denticulate, the lobes 7–15 on each side, lobes shallowly convex or rarely triangular, c. 0.5(–2)

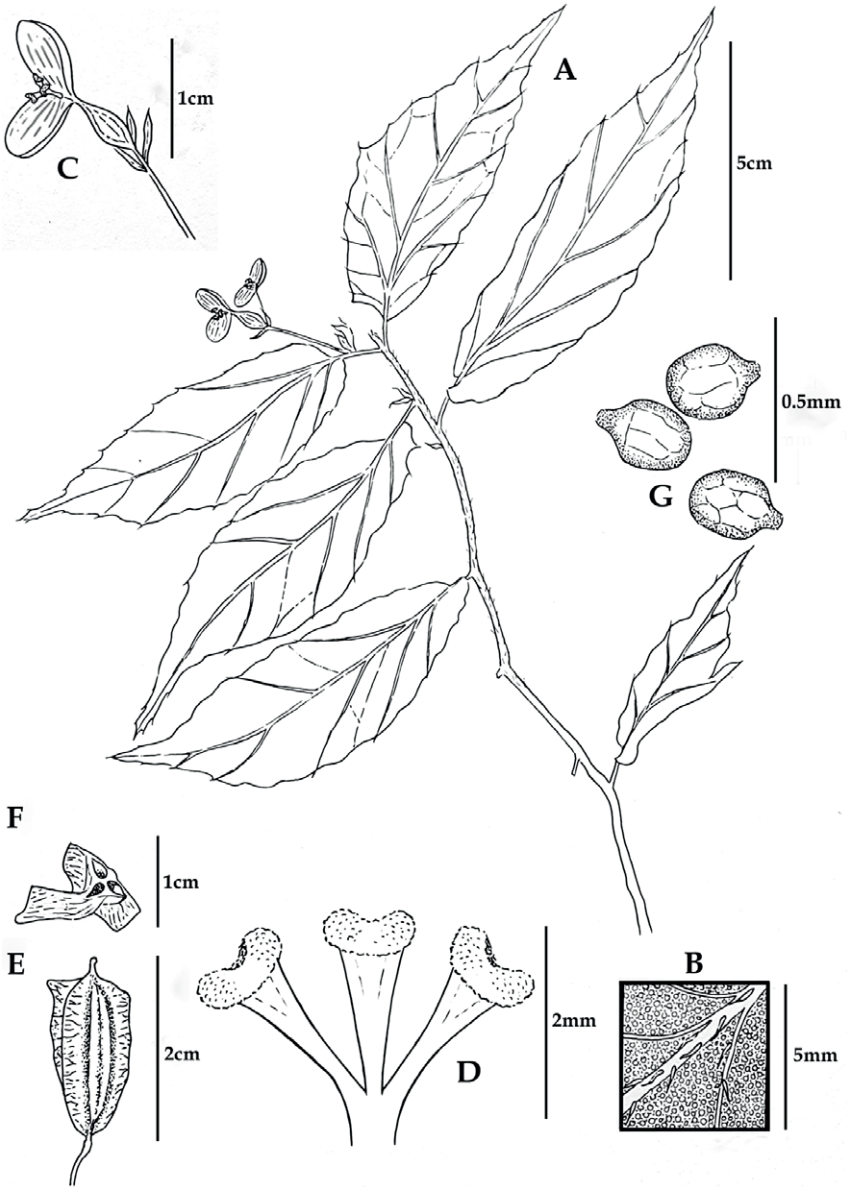


Figure 2. *Begonia ebo.* A habit, flowering stem; B. detail of abaxial blade surface showing midrib and hairs; C. female flower and inflorescence; D. style and stigmas; E fruit, side view showing unequal dorsal wing; F. fruit, transverse section showing locules; G. seeds, side view. All from *Lockwood* 61 (K). Drawn by H. Lockwood.

mm long, midrib and secondary nerves sunken above, prominent on lower surface; secondary nerves pinnate (3–)4(–6) on each side, arising at 40–60° from the midrib, straight, sometimes forked at midlength, terminating in a marginal tooth 0.2–0.25(–0.5) mm long, tertiary nerves indistinct, not prominent, hairs stiff, mainly adpressed, 1.0–1.2 mm long, as the stems, but white with a dark brown-red base, midrib 20–30 % covered, secondary nerves very sparsely hairy (Fig. 2B). Inflorescence axillary, one per axil, often in 2–3(–4) successive axils, monochasial, appearing to emerge from near the centre of the adaxial surface of the leaf-blade, pedunculate, rhachis unbranched, developing 1–22 male flowers and 1 final female flower. Peduncle lies along the adaxial surface of the petiole and proximal midrib of the subtending leaf and sometimes clasped in the sinus of the leaf-base, terete, 7.5–18.0 × 0.25 mm, red-brown, glabrous; rhachis angled at 40–60° from and above the peduncle, dorsiventrally flattened, 0.5–8 x 0.5 mm, glabrous, flowers borne on the adaxial surface on each side

in two ranks, ranks angled apart 40–50°, pedicel bases c. 0.3 mm apart, each subtended by a bract. Bracts erect, green, narrowly oblong-elliptic (1.25–)4–5 × (0.1–)0.71 mm, apex long acuminate (rarely rounded), entire, glabrous, persisting for a while after the flower has fallen (usually 3–6 bracts present at one time). Flowers developing in succession, with 1–2 flowers at anthesis at one time, and several more in bud, flowers falling soon after anthesis (except the female); all flowers are male, apart from the final female flower which terminates further inflorescence growth; flowers are held ±horizontally at anthesis. Male flower pedicel 3–5 mm long, red-brown, glabrous. Perianth segments 2, opening at c. 90° from each other, elliptic-obovate, apex rounded, base cuneate, 5.0–6.0 × 2.7–3.0 mm, yellow-orange both sides, with the centre of the upper segment turning orange-red in flower, the lower only slightly so, the inside of both segments with slightly darker orange nerves. Androecium zygomorphic, with 10–15 forward-facing stamens; filament column 0.1–1.3 × 0.25 mm; free filaments unequal in length, 0.5 mm (frontal stamens) to 2 mm (rear) long; anthers basifixed, elliptic-oblong, 0.7–1.25 × 0.9 mm long, yellow, apex retuse, dehiscing by lateral longitudinal slits. Female flower (Fig. 2C) similar to the male but pedicel 0.25 mm long, perianth segments orbicular to broadly elliptic-ovate, 7.0 × 2.9–6.0 mm, apex rounded, base cuneate. Styles 3, erect, 2.5–3.5 mm long, the proximal parts united in a column c.0.5 mm long; distal parts separated from each other by 40–50°, stigmata 'U'-shaped, c.1 mm wide, stigmatic band papillate, yellow (Fig. 2D). Ovary in outline ±narrowly elliptic-obovate to narrowly elliptic-ovate in side view, 3-winged, 5.17–7.2 × 2.07–2.4 mm, medium green-brown, glabrous, separated from the perianth by a rostrum c. 0.5 × 0.5 mm; wings unequal, the dorsal wing largest, c. 2.2 mm high, variably asymmetric, ±convex in profile, widest distally, distally truncate or nearly so, proximally tapering cuneately to the pedicel; the two ventral wings equal, symmetric, held at c. 180° from each other, and 90° from the dorsal wing, shallowly convex, c. 0.9 mm high. Fruit one per infructescence, long persistent, indehiscent until after decay starts, pale brown, glossy, papery, dry, 16–20 × 11–13 mm, wings accrescent, dorsal wing 5–7 mm high, ventral wings 2–3 mm high, longitudinal ridges 3, 1 equidistant between each wing, each 1 mm wide, raised by 0.5 mm; locular area elliptic-oblong c. 14 × 3 mm (in side view, measured on ventral surface) in transverse section equilaterally triangular, 3-locular, placentae minute, unbranched; rostrum 0–1 mm long. Seeds brown, numerous, straight, shortly ellipsoid, 0.3 × 0.2 × 0.2 mm, hilum end obconical, chalazal end rounded, surface coarsely reticulate.

Etymology

Named as a noun in apposition for the forest of Ebo, Littoral Region, whence most of the known specimens were found.

Distribution

Cameroon (Littoral and Centre Regions). Map 1.

Habitat & ecology

Understory of primary, lower submontane evergreen rainforest with closed canopy and sparse understory vegetation. Found on steep slopes, 750–1170 m altitude. Infrequent.

Phenology

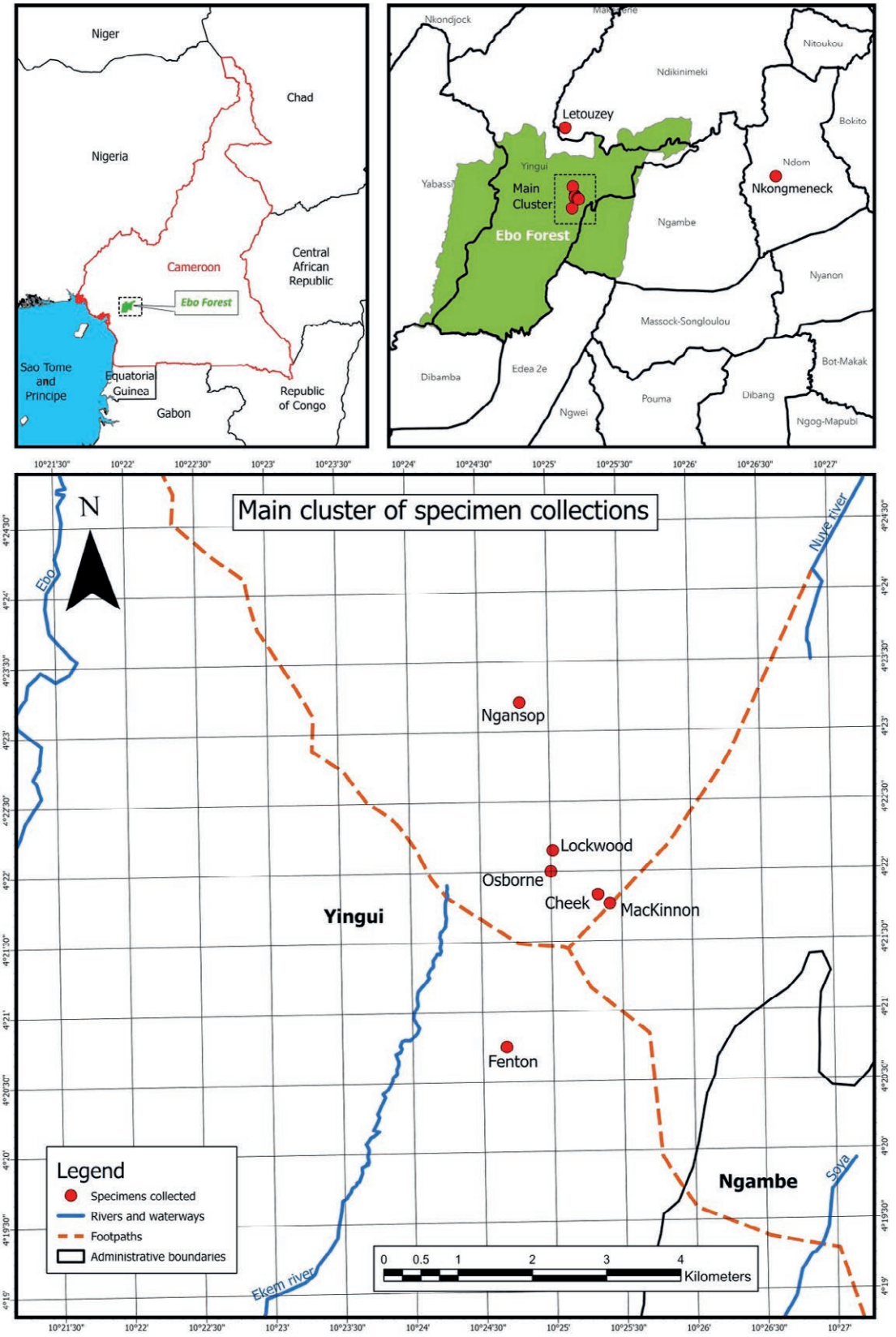
Flowering plants have been collected in most months from September to February inclusive, and plants in fruit from November to February inclusive.

Conservation status

Six of the eight known specimens of *Begonia ebo* are confined to the Ebo Forest of Littoral Region. Of the other two, *Letouzey* 11000 is immediately adjacent to the north, while a single record, *Nkongmeneck* 575 is c. 60 km to the east at Chaine de Nkohom. It is possible that the species will be found in other areas, however, extensive botanical surveys for conservation management to the SW, W, NW and NE of this area (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), resulting in many thousands of specimens, have so far failed to uncover additional records.

If *Begonia ebo* occurs elsewhere than is recorded in this paper, that is perhaps in the Bakossi area to the west of Ebo in SW Region, especially Mt Kupe since several threatened range-restricted species are confined to these two areas, e.g. *Costus kupensis* Maas & H. Maas (Maas-van der Kamer et al. 2016), *Coffea montekupensis* Stoff. (Stoffelen *et al.* 1997), *Microcos magnifica* Cheek (Cheek 2017) and *Impatiens frithii* Cheek (Cheek and Csiba 2002). However, since Mt Kupe has been intensively collected, we consider this unlikely.

It is considered by the authors that the known range may be close to reality. If so, the best hope for the survival of the species is likely at Ebo, where almost all the population has been recorded to date. However, plants at this location are severely threatened by logging, followed by plantation agriculture (Authors pers. obs. 2006–2023). At the Chaine de Nkohom location (*Nkongmeneck*



Map 1. *Begonia ebo.* Global distribution. Prepared by T. Lockwood.

575) the site for the species, near the village of Ndom (viewed on Google Earth Pro July 2024 using the time slider function), large areas of intact forest are being encroached by habitation from the direction of Yaoundé (from the east). It is only at the third location (*Letouzey* 11000) that habitat appears intact for the moment, however since the adjacent Ebo forest is threatened by logging and this location is less protected, it also cannot be considered safe from destruction from logging followed by plantation agriculture, likely oil palm. The area of occupancy is calculated as 20 km^2 using IUCN required 2 km x 2 km cells, and the extent of occurrence is calculated as 323 km^2 using the Google Earth polygon function. Since there are three locations, two with imminent major threats, we here assess *Begonia ebo* as Endangered, EN B1ab(iii) + B2ab(iii).

Within the Ebo forest *Begonia ebo* is known from six collections made from 2006–2013. These equate to four sites, two of the sites with two points separated by c. 100 m from each other. The first author only saw the species in only one location occupying c. 3 m x 3 m during a period of 6 months. At another site, at which it has been found in Ebo (*Cheek* 13052) it occupied about 8 m x 8 m (Cheek pers. comm. to Lockwood 2008) and was also only seen once by that collector over the course of visits to Ebo over several years and seasons. It is possible that the species also qualifies as Endangered under Criteria D of IUCN (2012) since there may be less than 150 mature individuals observed by collectors, however, the authors have not been able to contact all the collectors to verify the estimate.

Numerous other Cameroon species of *Begonia* are localised and threatened (Onana and Cheek 2011).

Notes

Within Ebo *Begonia ebo* may be confused with two other species of Sect. *Filicibegonia*, *B. sessilifolia* and *B. macrocarpa,* differing from both in the yellow not white to pink petals, and in that the aerial stems are branched, sometimes several times (vs unbranched). It further differs from the last species in having a moderately to densely hairy stem and petiole (vs glabrous), and in the bracts being oblong-elliptic with a bristle tipped acute apex (vs ± orbicular, apex rounded, entire). Additional differences with *B. sessilifolia* are given in Table 1.

Variation occurs in the species, *Ngansop* 192 having stem indumentum that is only moderately dense, covering about 50% of the surface (vs 90–100% in other specimens), and fruits with the larger, dorsal wing much more strongly asymmetric than in the other specimens. While all the specimens show branching, *Osborne* 49 was the most highly branched, with eight ultimate branches. However, this may be a function of the age of the plant, since this was also the tallest individual (c.50 cm tall).

Additional specimens examined

CAMEROON. **Littoral Region:** near Yabassi, Ebo forest, North Transect, 1176 m from Bekob camp, 04° 22’ 09” N, 10° 25’ 00” E, fl. 13 Sept. 2008, *Lockwood 61* (K001243603, YA); ibid, route Bekob-Locndeng, en allant vers la village Locndeng, 04° 23’ 12.6” N, 10° 24’ 47.7” E, fl. fr. 5 Dec. 2013, fl.fr. *Ngansop* 192 (K001243604, P, WAG, YA); ibid, 5200 m Wadja, 04° 20’ 45.0” N, 10° 24’ 40.0” E, fl. fr. 5 Nov. 2007, *Fenton 224* (K000745895, WAG n.v., YA n.v.); ibid, West transect - 1590m along transect, 04° 22’N, 10° 25’ E, fl.12 Sept. 2006, *Osborne 49* (K000593388, WAG n.v., YA); ibid, at plot on new trail to Masseng from Bekob camp, 04° 21’ 50” N, 10° 25’ 20” E, fl. fr. 18 Feb. 2006, *Cheek 13052* (holo. K (K000593389); iso. FT, YA); ibid., Muokaka-Mbom Trail 850 m from Bekob Trail, 04° 21’ 46” N, 10° 25’ 25” E, fl. 7 May 2008, *MacKinnon 129* (YA); Yingui, 15 km ESE, Massouan to Mosse, 04° 30’N, 10° 24’ E, fl.15 Jan. 1972, *Letouzey 11000* (P n.v., WAG n.v., YA). **Central Region:** Chaine de Nkohom a 42 km SSW Ndiki, near rock Massa Makin Ntom, 04° 24’N, 10° 48’ E, fl. 14 Nov. 1983, *Nkongmeneck 578* (P n.v., WAG n.v, YA).

DISCUSSION

In a phylogenetic analysis (Forrest et al. 2005), Sect. *Filicibegonia*, represented by *Begonia aspleniifolia* Hook.f. is sister to the yellow-flowered refuge *Begonia* Sections *Loasibegonia* A.DC. and *Scutobegonia* Warb. That *Begonia ebo* is the sole yellow-flowered species in Sect. *Filicibegonia* suggests that this character may be plesiomorphic and may indicate a basal position within the section. Molecular phylogenetic analysis with more comprehensive sampling of Sect. *Filicibegonia* is needed to test this hypothesis.

Within Sect. *Filicibegonia*, the affinities of *Begonia ebo* are difficult to discern. In only *B. macrocarpa, B. sciaphila* and perhaps the poorly known *B. gossweileri* do the number of flowers per inflorescence also exceed 10 (up to 23 in *B. ebo*). In only *B. auriculata* and *B. macrocarpa* does the pedicel of the male flowers also generally exceed 10 mm in length (in other species it is generally <5 mm long or nil), while only in *B. aspleniifolia* and *B. minutifolia* are the aerial stems often branched several times (in other species branching does not occur or is rare).

Biogeography

Begonia ebo is the first and only Cameroon-endemic species of Sect. *Filicibegonia*. However, neighbouring Gabon has three endemic species in this sect., all also restricted to highly species-diverse highland forested areas e.g. Monts de Cristal.

While Sect. *Filicibegonia* is widespread from Guinea in the west (Gosline et al. 2023) to eastern DRC in the east, all but one species (*Begonia macrocarpa*) is confined to Lower Guinea sensu White (1983), i.e. from the Cross River of SE Nigeria to the River Congo. Although the Cross-Sanaga interval has the highest plant species and generic diversity per degree square in all tropical Africa (Barthlott et al. 1996; Dagallier et al. 2020), with a very high number of endemics (Cheek et al. 2001), this is the first species of Sect. *Filicibegonia* that is endemic to the interval. The other species are either widespread within Lower Guinea (2/9 species) or endemic to the Sanaga-Congo interval (5/9 species).

The importance of the Ebo forest for plant conservation

The Ebo Forest, a former proposed National Park, covers c. 1,400 km² of lowland and submontane (cloud) 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 and Morgan 2008; Cheek et al. 2018a, Stone et al. 2023). Intensive botanical surveys at Ebo only began in 2005. Despite this, to date, over 100 globally threatened plant species have been documented including 23 species new to science, of which ten are globally narrowly endemic to Ebo, with many more near endemic (Murphy et al. 2023). These include species of large canopy trees e.g. *Crateranthus cameroonensis* (Lecythidaceae, Prance & Jongkind (2015) and *Talbotiella ebo* (Leguminosae, Mackinder et al. (2010); understorey trees e.g. *Piptostigma submontanum* (Annonaceae, Ghogue et al. (2017), Couvreur et al. 2022), *Kupeantha ebo* (Rubiaceae, Cheek et al. (2018b) and *Uvariopsis dicaprio* (Annonaceae, Gosline et al. (2022); climbers, *Dichapetalum korupinum* (Dichapetalaceae, Breteler (1996); large herbs e.g. *Pseudohydrosme ebo* (Araceae, Cheek et al. (2021); creeping herbs of the forest floor, *Ardisia ebo* (Primulaceae, Cheek & Xanthos (2012); inselberg herbs e.g. *Impatiens banen* (Balsaminaceae, Cheek et al. (2023a) and rheophytes of waterfalls, *Inversodicraea ebo* (Podostemaceae, Cheek et al. (2017).

Ebo was recently evidenced (Kew Science News, 2020) as an Important Plant Area (IPA). Of the 49 IPAs in Cameroon, Ebo has the highest number (23) of documented Critically Endangered (CR) plant species (IUCN global assessments), i.e. those with the highest level of global threat and closest to extinction, after the Ngovayang (Bipindi) IPA which has 24 (Murphy et al. 2023: 23, table 3). With the forthcoming publication of *Memecylon ebo* (Melastomataceae, Stone et al. 2023) and *Cryptacanthus ebo* (Acanthaceae, Darbyshire et al. in press) both also strictly endemic to Ebo and provisionally assessed as CR, Ebo will surpass Ngovayang in this respect. Additional endemic species in the course of preparation for publication from Ebo include those in the genera *Ardisia* Sw., *Chassalia* Comm. ex Poir., *Cola* Schott & Engl., *Keetia* E.Philipps and *Mitriostigma* Hochst. These will likely increase the number of CR species of Ebo further, possibly to the highest for any IPA in all of tropical Africa.

The publication in this paper of a further rare, localised and threatened plant species for the Ebo forest emphasises further the global importance of Ebo 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 global extinction of Cameroonian species such as *Oxygyne triandra* Schltr. (Thismiaceae, Cheek et al. 2018c) and *Afrothismia pachyantha* Schltr. (Afrothismiaceae, Cheek and Williams 1999; Cheek et al. 2019; Cheek et al. 2023b) are well known examples, recently joined by species such as *Vepris bali* Cheek (Rutaceae, Cheek et al. 2018d). 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 invisible to science, and only when they have a scientific name can their inclusion on the IUCN Red List be facilitated (Cheek et al. 2020). Most (77%) species named as new to science in 2023 were already threatened with extinction (Brown et al. 2023).

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. Important Plant Areas (IPAs) 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 are to be avoided of narrowly endemic, highly localised species such as *Begonia ebo*.

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