Three new species of *Craterispermum* (*Rubiaceae*) from the Lower Guinea Domain

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**Key words**
Cameroon  
*Craterispermum*  
*C. deblockianum*  
*C. rumpianum*  
*C. sonkeanum*  
Equatorial Guinea  
Gabon  
*Rubiaceae*

**Abstract**  
Three species of *Craterispermum* are described from Cameroon, Equatorial Guinea and Gabon. Detailed descriptions and distribution maps are provided for each species, their conservation status is assessed and their taxonomic affinities are discussed. An identification key for the *Craterispermum* species present in Cameroon, Equatorial Guinea and Gabon is given.

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**INTRODUCTION**

The genus *Craterispermum* (*Rubiaceae*) is distributed in tropical Africa, Madagascar and the Seychelles (Robbrecht 1988). *Craterispermum* can easily be diagnosed at genus level by the presence of raphides, by its axillary or supra-axillary, often condensed, inflorescences generally borne on stout flattened peduncles and by its small white heterostylovous flowers. The ovary is bicollumar with a single, apically attached, pendulous ovule in each locule. One ovule aborts and the fleshy fruit contains a single, asymmetrical bowl-shaped seed, the seed-coat of which is discontinuous and comprised of isolated cells with ring-like thickening (Igersheim 1992). Typical for *Craterispermum* is also the accumulation of aluminium in leaf and stem tissue, which gives the characteristic yellowish green foliage in dried condition (Jansen et al. 2000).

Because no recent monograph of the genus exists, it is currently very difficult to identify at species level the several thousand existing herbarium specimens. The taxonomic position of the genus *Craterispermum* within the *Rubiaceae* family is not clear. Sometimes *Craterispermum* is considered to belong to a monogenic tribe of uncertain affinity (*Craterispermeae* Verdc.; Verdcourt 1958). Alternatively, it is considered closely related to *Morindeae* Miq. s.l. and *Schradereae* Bremek. (Robbrecht & Manen 2006), or to *Prismatomerideae* Y.Z.Ruan. (Razafimandimbison et al. 2008). More recently, Bremer & Eriksson (2009) maintained the tribal status of *Craterispermeae*. *Gaetnereae* Bremek. ex Darwin, *Morindeae*, *Psychotrieae* Cham. & Schltdl. and *Schradereae* belong to the *Psychotrieae* alliance.

Herbicular material of *Craterispermum* is often poor, generally carrying only residual inflorescences. Because of the compact structure of the inflorescences, flowers and fruits fall easily during collecting, pressing, drying and the assembly in the herbarium. Moreover, flowers are short-lived and ripe fruits do not remain on the plant for long, making identification of species in the field easier but still difficult. The above-mentioned reasons make new *Craterispermum* species hard to describe. We are currently undertaking the revision of the genus for continental Africa. The examination of the available material allowed us to highlight the existence of several new species. Next to the 16 species currently known to science (Govaerts et al. 2011), several new species exist, both in continental Africa (e.g. Sosef et al. 2006) and in Madagascar (Verdcourt 1973, Randriamboavony & De Block 2010, Taedoumg pers. obs.). Hitherto, we have described two new species from continental Africa, bringing the total up to 18 (Taedoumg et al. 2011). The present paper describes three species from Cameroon, Gabon and Equatorial Guinea, *C. deblockianum*, *C. rumpianum* and *C. sonkeanum*. An identification key for the *Craterispermum* species present in Cameroon, Equatorial Guinea and Gabon is also given.

**MATERIALS AND METHODS**

Herbicular specimens from BR, BRLU, MO, P, WAG and YA (abbreviations after Holmgren et al. 1990) were examined. Measurements, colours and other details are based on the study of herbicular specimens, material conserved in alcohol, and data derived from field notes. In the descriptions, inflorescence size does not include the corollas, and colours (except for flower colours) given are for dried material. Descriptive terminology follows Robbrecht (1988) and Anonymous (1962). Specimens are cited per country, alphabetically by collector. The conservation status was assessed by applying the IUCN Red List Category criteria (IUCN 2001) using the Conservation Assessment Tools extension in ArcView 3.3.

**IDENTIFICATION KEY TO THE SPECIES OF CRATERISPERMUM PRESENT IN CAMEROON, EQUATORIAL GUINEA AND GABON**

1. Tertiary and especially quaternary venation obscure; leaf blades coriaceous .................................................. 2  
2. Tertiary and quaternary venation conspicuous; leaf blades coriaceous or papyraceous ........................................ 3

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2. Inflorescences 25–65 mm long, not very compact, consisting of 2 branches up to 60 mm long; leaf blades 7–23 mm long; leaf blades 11–35 by 6–13.5 cm; corolla tube 6–8 mm long. — Cameroon, Equatorial Guinea, Gabon


4. Stipules 5–11 mm long, with short narrowly triangular tips; leaf blades 6.7–14 by 2–4.8 cm. — Equatorial Guinea, Gabon, C. sonkeanum

5. Stipules with conspicuous narrowly triangular tip, tip 2–8 mm long; fruits pedicellate; venation ± regularly reticulate with secondary veins parallel and ± perpendicular to midrib. — 6

6. Stipules persistent; leaf blades papyraceous to subcoriaceous, pale green or brown or fawnish, with surface granular. Stipules caducous; basal portion 2–3 mm long; tip narrowly triangular, 2–7 mm long. Leaves petiolate; petioles canalicate, 8–20 mm long; leaf blades narrowly obovate or more rarely, narrowly elliptic, 8.5–25 by 3.2–7.5 cm, subcoriaceous, pale green or pale greenish brown above, not discolorous or slightly paler below; base cuneate; apex acuminate, acumen 9–16 mm long; midrib prominent below; secondary and tertiary venation prominent on both surfaces, 14–16 pairs of secondary veins, tertiary and higher order venation ± regularly reticulate. Inflorescences supra-axillary, borne 1–3 mm above the nodes, paired and opposite, erect, subcapitate, very compact, 2.8–8 by 2.5–5.5 mm, with several to many flowers; peduncle flattened, 0.5–5 mm long; bracts broadly triangular, keeled, acuminate, 1–4 mm long; bracteoles broadly triangular, acuminate, c. 0.2 mm long. Flowers presumed heterostylosous (but only longistylous morph known), 4-merous, subsericeous. Longistylos flowers: calyx creamy white; tube 0.8–1 mm long; lobes triangular, 0.2–0.4 mm long. Corolla white; tube narrowly cylindrical, 3.5–4 mm long, sparsely to densely pubescent at throat and upper quarter of the tube inside; lobes c. 3.5 mm long, finely pubescent in the lower half inside, apex acute. Stamens with anthers only 1/3 included in corolla tube, c. 1 mm long; filaments c. 0.4 mm long. Ovary 0.8–1 mm long. Style exserted for c. 3 mm, stigma bilobed, stigmatic lobes c. 1.5 mm long. Fruits pedicellate with pedicels 2.5–5 mm long, subglobose, asymmetrical, 5–7 mm diam, crowned with persistent calyx, purple or violet when ripe.

Habitat & Ecology — Craterispermum deblockianum occurs in primary or old forest on sandy soil, often near a stream. Altitude 50–400 m. Flowers: December–January; mature fruits: April.

Distribution — Craterispermum deblockianum is endemic to Gabon and is restricted to the ‘Province du Moyen-Ougoué’.

The species is mostly collected from the Njolé area.

Conservation status — Endangered. See Table 1

Critical remarks — Flowers and fruits are rare on the specimens of C. deblockianum. Only longistylos flowers were seen and measurements were based on only two flowers.

Taxonomic affinities — The affinities of Craterispermum deblockianum appear to lie with C. caudatum in sharing stipules with long narrowly triangular tips, long acuminate leaves, subcapitate inflorescences and long pedicillate fruits. However,
C. deblockianum differs from C. caudatum in having the following main characters: the number of secondary veins (14–16 pairs in C. deblockianum vs 6–10 pairs in C. caudatum), the texture of the young branches (with surface granular in C. deblockianum vs smooth with decurrent ridges in C. caudatum), the size of leaf blades (8.5–25 by 3.2–7.5 cm in C. deblockianum vs 5–14.5 by 1.7–5.3 cm in C. caudatum) and the length of the peduncles (0.5–5 mm long in C. deblockianum vs 4–9 mm long in C. caudatum).


**Craterispermum rumpianum** Taedoumg & Hamon, sp. nov. — Fig. 2; Map 1

C. Schweinfurthii Hiern propter inflorescentias subcapitatas et nervos intersecundarios subtilliter reticulatos proximum, sed ab illo differt inflorescentis sessilibus, stipulis caducis atque corollarum tubis longioribus (6.5–8 mm vs 3.7–5.8 mm in C. Schweinfurthii). — Typus: Letouzey 14521 (holo P; iso YA), Cameroon, Monts Rumpi, près de Lokando, 30 km NNW de Kumba (N4°52' E9°17'), 23 Mar. 1976.
Etymology. The species is named after the type locality.

Shrub 1–2 m tall; all vegetative and generative parts glabrous; twigs pale brown, decurrently ridged. Stipules caducous, keeled; basal portion 4.5–6 mm long; tip narrowly triangular or needle-like, 1–1.5 mm long. Leaves petiolate; petioles canalicate, 10–18 mm long; leaf blades obovate, 11.5–14.8 by 4.5–6.1 cm, subcoriaceous, yellowish brown above, paler below; base cuneate; apex acuminate, acumen 8–10 mm long; midrib prominent below; secondary venation prominent below and moderately prominent above, 8–9 pairs of secondary veins, tertiary and higher order venation conspicuous, closely and irregularly reticulate on both sides. Inflorescences sessile, axillary, paired, opposite, very compact cymes consisting of three subcapitate parts, the central part sessile and less developed and the lateral ones larger and borne on short axes < 1 mm long, 9–16 by 3–10 mm, several-flowered; bracts and bracteoles very congested, triangular to ovate, c. 1.5 mm long, apex acute or obtuse. Flowers presumed heterostylyous (but only longistylos morph known), 5-merous, sessile. Longistylos flowers: calyx creamy white tinged violet; tube c. 0.6 mm long; lobes triangular, c. 0.3 mm long. Corolla white; tube narrowly cylindrical, 6.5–8 mm long, sparsely to moderately pubescent

Fig. 2 Craterispermum rumpianum Taedoumg & Hamon. a. Flowering branch; b. stipule; c. node carrying inflorescences with ovaries, calyces and flower bud; d. longistylos flower (calyx, corolla, style and stigma) (a, d: Letouzey 14521, P; b, c: Dessein, Lachenaud, Lemaire, Sonké & Taedoumg 2584, BR). — Drawn by Antonio Fernandez.
### Table 1: Conservation status of Craterispermum species

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<thead>
<tr>
<th>Species</th>
<th>IUCN criteria and status of Craterispermum species</th>
<th>Other information</th>
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<tr>
<td><strong>Craterispermum rumpianum</strong></td>
<td>B2 – total area of occupancy (AOO) 0.386816 km²</td>
<td>a – existing at no more than 5 locations (11 collections from localities)</td>
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<td>B2 – total area of occupancy (AOO) 3.43 km²</td>
<td>b – continuing decline of habitat and area extent</td>
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<td>B1 – total extent of occurrence (EOO) 3692.02 km²</td>
<td>i) extent of occurrence (EOO) 6 locations (11 collections inferred or projected for:</td>
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<td>a) occurrence (EOO) 5 locations (11 collections inferred or projected for:</td>
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<td>b) area of occupancy (AOO) 6 cells of 3.16 km²</td>
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<td>ii) area of occupancy (AOO) based on 6 cells of 3.16 km²</td>
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<td>iii) quality of habitat and area extent</td>
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#### Additional specimens examined

### Craterispermum sonkeanum

*Taedoung & Hamon, sp. nov.*

C. aristatum Wernham proper bracteas bracteolaegae aristaes proximum, sed ab illo differt stipulas acicularibus, foliorum laminis multinetris (cum nervis lateralis in 10–12 paribus, vs 5–6 paribus), floribus 4-meris (vs 5-meris), calycis lobiis inaequalibus (vs aequalibus) et nervis tertiariis dense regulariterque reticulatis (vs laxe irregulariterque in *C. aristatum*). — Typus: *De Wilde JIFE, Arends, Louis AM, Bouman & Karper 98* (holo BR; iso MO, WAG), Cristal Mountains, forest exploitation Leroy, 20 km NW of Asok (N0°53'E10°12'), 20 Jan. 1983.

**Etymology.** The species is named after Professor Doctor Bonaventure Sonké, specialist of Rubiaceae and Director of the Plant Systematic and Ecology Laboratory in Higher Teacher’s Training College of the University of Yaoundé I in Cameroon, for his contribution to the knowledge of African Rubiaceae.

Shrub up to 3 m tall; all vegetative and generative parts glabrous; twigs greenish grey or brown, smooth but each internode with two decurrent ridges in line with the stipular tip. *Stipulas* persistent; basal portion 2–3 mm long; tip narrowly triangular, 4–13 mm long. *Leaves* petiolate; petals canaliculate, 5–10 mm long; leaf blades narrowly obovate 6.7–14 by 2–4.8 cm, subcoriaceous, greenish above, paler green below; base cuneate; apex acuminate-caudate, acumen 7–15 mm long; midrib prominent below; secondary venation slightly to moderately prominent on both surfaces, 10–12 pairs of secondary veins, secondary, inter-secondary and tertiary venation ± parallel and almost perpendicular to the midrib; quaternary venation ± obscure. *Inflorescences* pedunculate, axillary to slightly supra-axillary, borne 1–2 mm above the nodes, paired, opposite, subcapitate, 9–16 by 3–10 mm, few-flowered; peduncle flattened, 3–4 mm long; bracts and bracteoles very congested, triangular to ovate with long aristate apex, sometimes sparsely ciliate; bracts 5–9 mm long; bracteoles c. 4 mm long. *Flowers* presumed heterostylos (but only brevistylous morph known), 4-merous, sessile. *Brevistylous flowers* calyx green; tube c. 1–1.5 mm long; lobes linear, opposite lobes equal in length, largest pair c. 2 mm long and smallest pair 1–1.2 mm long, at throat and in upper half of corolla tube inside: lobes c. 6 mm long, finely pubescent in the basal half, apex acute and thickened with a subapical spike-like protuberance. *Stamens* with anthers only half exserted from corolla tube, inserted below the level of the throat, c. 2.5 mm long, white; filaments c. 0.2 mm long. *Ovary* c. 2 mm long. *Style* exserted for c. 5 mm; stigma bilobed, stigmatic lobes c. 2.5 mm long. *Young fruits* dark purple.

**Habitat & Ecology.** *Craterispermum rumpianum* occurs in submontane forest with low canopy (15–20 m). Altitude 900–1400 m. *Flowers*: March; *fruits*: April (immature fruits).

**Distribution.** *Craterispermum rumpianum* is endemic to Cameroon and only known from the Rumpi Hills in the Southwest Region.

**Conservation status.** Critically endangered. See Table 1.

**Critical remarks.** *Craterispermum rumpianum* has only been collected twice. Brevistylous flowers and mature fruits were not available for description.

**Taxonomic affinities.** *Craterispermum rumpianum* and *C. schweinfurthii* share subcapitate, compact inflorescences and closely, irregularly reticulate venation. However, *C. rumpianum* differs from *C. Schweinfurthii* by its sessile inflorescences (vs pedunculate in *C. schweinfurthii*), its caducous stipules (vs persistent in *C. schweinfurthii*) and the size of the corolla tube (6.5–8 mm long in *C. rumpianum* vs 3.7–5.8 mm long in *C. schweinfurthii*).

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**Craterispermum sonkeanum** Taedoung & Hamon, sp. nov.

— Fig. 3; Map 1
margins densely ciliate, sparse collectors present in the sini. Co-
rola white; tube narrowly cylindrical, 5–6.5 mm long, sparsely
to densely pubescent at throat and in upper half of tube inside;
lobes c. 3 mm long, moderately to densely pubescent inside,
tips acute and thickened. Stamens with anthers completely
exserted from corolla tube, inserted in the throat, c. 1.3 mm
long, white; filaments c. 1.3 mm long. Ovary c. 1 mm long.
Style and stigma included in the corolla tube, c. 5.5 mm long;
stigma bilobed, stigmatic lobes c. 1.5 mm long. Fruits sessile,
subglobose, asymmetrical, 8–7 mm diam (immature), crowned
with persistent calyx, dark violet to black when ripe.

Habitat & Ecology — *Craterispermum sonkeanum* occurs
in humid forest on terra firma. Altitude 185–750 m. Flowers:
November to February; fruits recorded in: January, August and
October.

Distribution — *Craterispermum sonkeanum* occurs in
the continental part of Equatorial Guinea and in Gabon. The spe-
cies is mostly collected from the National Park of Monte Alén
and ’Monts de Cristal’.

Conservation status — Endangered. See Table 1.

Critical remarks — Flowers and fruits are rare on the speci-
mens of *C. sonkeanum*. Only a few brevistyloous flowers
were available and measurements were based on two of them.

Taxonomic affinities — *Craterispermum sonkeanum* and
*C. aristatum* share long aristate bracts and bracteoles, short
peduncles and subcapitate inflorescences. However, *C. sonke-
anum* differs from *C. aristatum* by the following characters:

- stipules with long narrowly triangular tips in *C. sonkeanum* vs
  short and broadly triangular tips in *C. aristatum*.
- 10–12 pairs vs 5–6 pairs of secondary veins, 4-merous vs 5-merous flowers,
unequal vs equal calyx lobes, closely and ± regularly reticulate vs laxly and irregularly reticulate higher order veins and by the smaller leaf blades (6.7–14 by 2–4.8 cm in *C. sonkeanum* vs 11–25.5 by 4–8 cm in *C. aristatum*).


Note — The plants from Gabon show more conspicuous decurrent ridges on the young branches and stipules with a less-developed tip than the plants from Equatorial Guinea.

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