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The identity and geography of *Cola cauliflora* Mast. (Malvaceae formerly Sterculiaceae) and its substitute for Gabon and the Republic of the Congo

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ABSTRACT

While preparing a publication concerning some new *Cola* Schott & Endl. species for the Gabonese flora, it was discovered that the lectotype of *Cola cauliflora* Mast. does not fit the treatment of this species for the Flore du Gabon. As a consequence a new *Cola* species, *C. elegans* Pierre ex Breteler, sp. nov. is described which replaces *Cola cauliflora* occurring in Cameroon, neither in Gabon nor in the Democratic Republic of the Congo. The *Mann* collection from Amba Bay, Cameroon, to which the name *Cola cauliflora* was erroneously adhered at Kew, proves to represent *Cola micrantha* K. Schum.

KEY WORDS

Malvaceae,
Sterculiaceae,
Cola,
Gabon,
new species.

RÉSUMÉ

Novitates Gabonenses 81. L'identité et la répartition de Cola cauliflora Mast. (Malvaceae, autrefois Sterculiaceae) et son vivariant pour le Gabon et la République du Congo.

Durant la préparation d'une publication sur quelques espèces nouvelles de *Cola* Schott & Endl. pour la Flore du Gabon, il a été découvert que le lectotype de *Cola cauliflora* Mast. n'était pas conspécifique avec l'espèce traitée sous ce nom dans la *Flore du Gabon*. En conséquence une nouvelle espèce est décrite, *C. elegans* Pierre ex Breteler, sp. nov., remplaçant *Cola cauliflora* qui, en effet, est une espèce signalée au Cameroun, mais ni au Gabon, ni dans la République du Congo. La collection de *Mann* de Amba Bay au Cameroun à laquelle le nom *Cola cauliflora* fut attribué par l'Herbier de Kew, correspond en fait à *Cola micrantha* K. Schum.

MOTS CLÉS

Malvaceae,
Sterculiaceae,
Cola,
Gabon,
espèce nouvelle.

INTRODUCTION

Masters (1868) based his *Cola cauliflora* on three syntypes as follows: “Upper Guinea, Gaboon river, river Kongui, and Amba Bay, Mann! ”. These collections are present at Kew and bear the *Mann* numbers 967, 1789, and 772 respectively. All the material is used for the protologue, the numbers 967 and 772 very distinctly so. Masters notes about this species: “The specimens from Amba Bay have nearly sessile leaves and smaller flowers than others”. (At present there is only one specimen from Amba Bay at K.). He continues saying “I cannot look on this as of specific importance, as in some of the other specimens both sessile and stalked leaves may be found, and also considerable difference in the shape of the leaves on the same specimen. The size of the flowers is also notoriously variable in this genus”. It is evident that Masters was well aware of the differences between the three syntypes of his *Cola cauliflora*. And indeed, they represent three different *Cola* species. Baker (1913) assigned the name *Cola cauliflora* to the first-mentioned syntype from the Gaboon river (*Mann* 967), and added: “The plant from river Kongui is *Cola flavo-velutina* K. Schum., and the plant from Amba Bay is *Cola micrantha* K. Schum.”, which may be considered as a lectotypification ‘avant la lettre’. However, *Mann* 772 from Amba Bay is treated at Kew (Hutchinson & Dalziel 1927; Keay 1958) as the true *Cola cauliflora*, and the specimen is classified accordingly in a type-cover bearing this name. The other two *Mann* collections, number 967 and 1789, share one type-cover named: “*Cola flavo-velutina* K. Schum. (including *C. cauliflora* Mast., as to *Mann*’s R. Kongui and Gaboon R. plants)”. The naming on both type-covers is in Brenan’s handwriting, who, together with Keay, is the author of the nine new *Cola* species published in 1956. The specimens *Mann* 967 and 1789, however, are not conspecific: 967 from the Gaboon river, represents the element with sessile and stalked leaves of Master’s description, and 1789 from the Kongui river, is in fact *Cola flavo-velutina* K. Schum., as Baker (1913) had identified it. The choice made at Kew, i.e. adhering Masters’ name to *Mann* 772 from Amba Bay, cannot be considered as a proper lectotypification.

Hallé (1962) lectotypified Master’s name when he treated *Cola cauliflora* for the *Flore du Gabon*. He noted (Hallé 1962: 69): “Le type de l’espèce est de la rivière Gabon, Mann (K); il est très probable que la forme que nous avons étudiée correspond à celle du type; elle est différente de celle d’Amba Bay citée comme co-type, et de celle décrite par K. Schumann sous le nom de *C. micrantha*”. *Mann* 967 from the Gaboon river, is not duplicated at P nor were there photographs of it available, otherwise Hallé would have seen that the species he described and depicted as *C. cauliflora* for the *Flore du Gabon* is not conspecific with *Mann* 967. It is in fact a new species that is described hereafter.

Identification of *Mann*’s Gaboon river specimen with Hallé’s key of the *Flore du Gabon* failed and, moreover, there is no specimen alike from Gabon, neither in P nor in WAG. The label on *Mann* 967 saying Gaboon river, is a printed one. The label on the same sheet in *Mann*’s handwriting, however, says: “N 967 shrub Batanga June 1861”. Although there are several localities called Batanga along the coast between Kribi in Cameroon and the Gaboon river and even further South (there is a Batanga on the Gabon coast South of the the Gaboon river), it is most likely that Batanga in Cameroon near Kribi is the collecting locality of *Mann* 967. *Mann* 1038, representing *Dracaena braunii* Engl., is also from Batanga, dated June 1861. Moreover, *Mann*’s letter to Kew, dated June 1861, reports about his arrival in the European settlement of the Gaboon river the day before, and having nothing to collect “as if all my old plants had accompanied me here”. Batanga near Kribi in Cameroon is also very likely the collecting locality of *Mann* 967 because there are a few unidentified *Cola* collections from that area that represent undoubtedly the same species. This leads to the following conclusions:

- *Mann* 967 is the lectotype of *Cola cauliflora* Masters, a species occurring in Cameroon not in Gabon nor in the Republic of the Congo;
- *Cola cauliflora* sensu N. Hallé represents an undescribed species;
- *Cola cauliflora* sensu F.W.T.A. ed. 1 & 2 and sensu Cheek (2002) may no longer bear this name and must be replaced by the name *Cola micrantha* K. Schum.

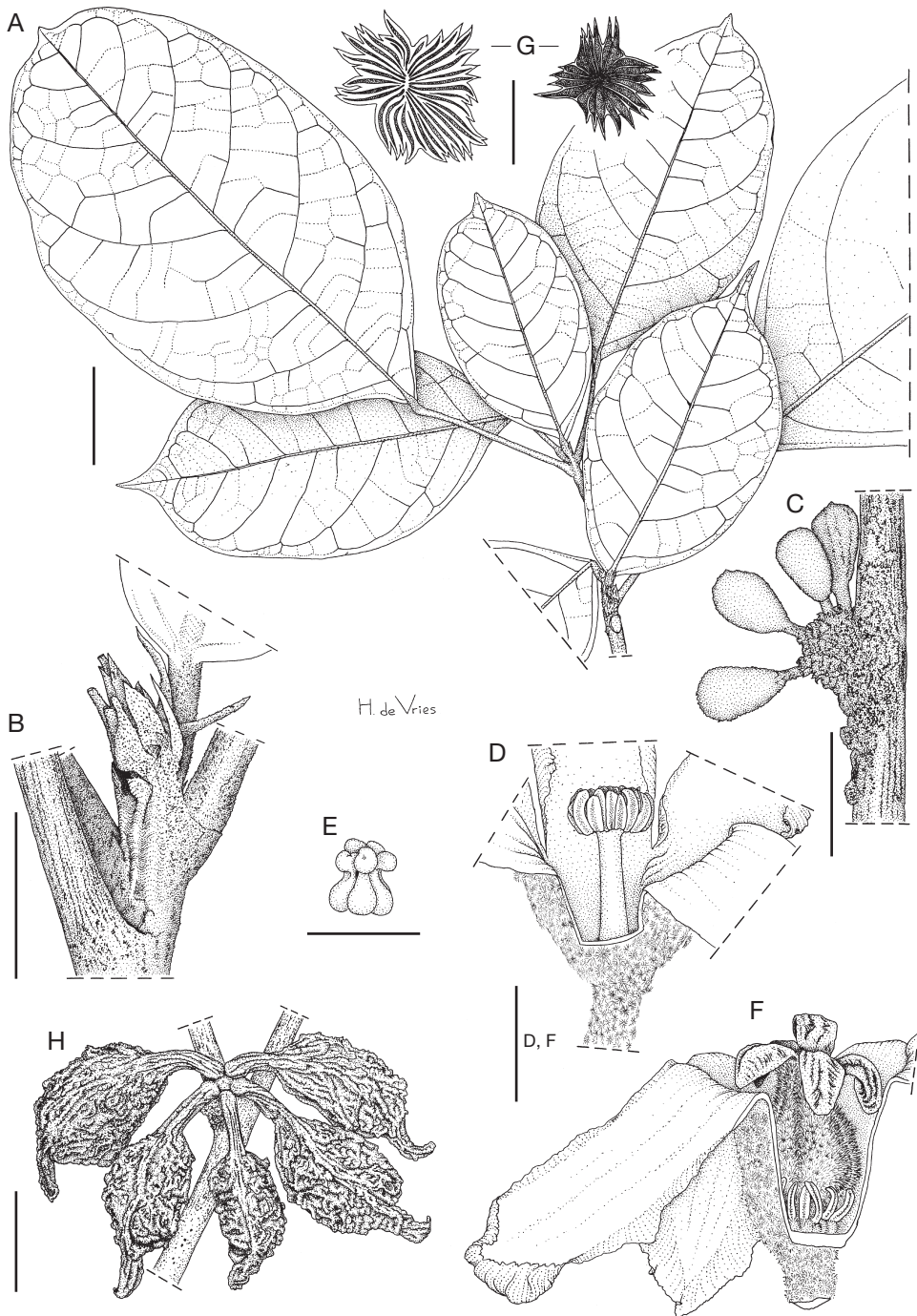


FIG. 1 — *Cola cauliflora* Mast.: **A**, leafy branch; **B**, apex of branchlet showing stipules; **C**, inflorescence; **D**, opened up male flower, sepals partly removed; **E**, pistillodium of male flower; **F**, opened up female flower, 1 sepal removed; **G**, stellate hairs from female calyx; **H**, carpels in fruit. **A**, **D**, **F**, **G**, *Mann* 967; **B**, **C**, **E**, *Bos* 5425 ; **H**, *Bos* 7094. Scales: **A**, **H**, 3 cm; **B**, **C**, 1 cm; **D**, **F**, 3 mm; **E**, 1 mm; **G**, 0.25 mm. Drawn by H. de Vries.

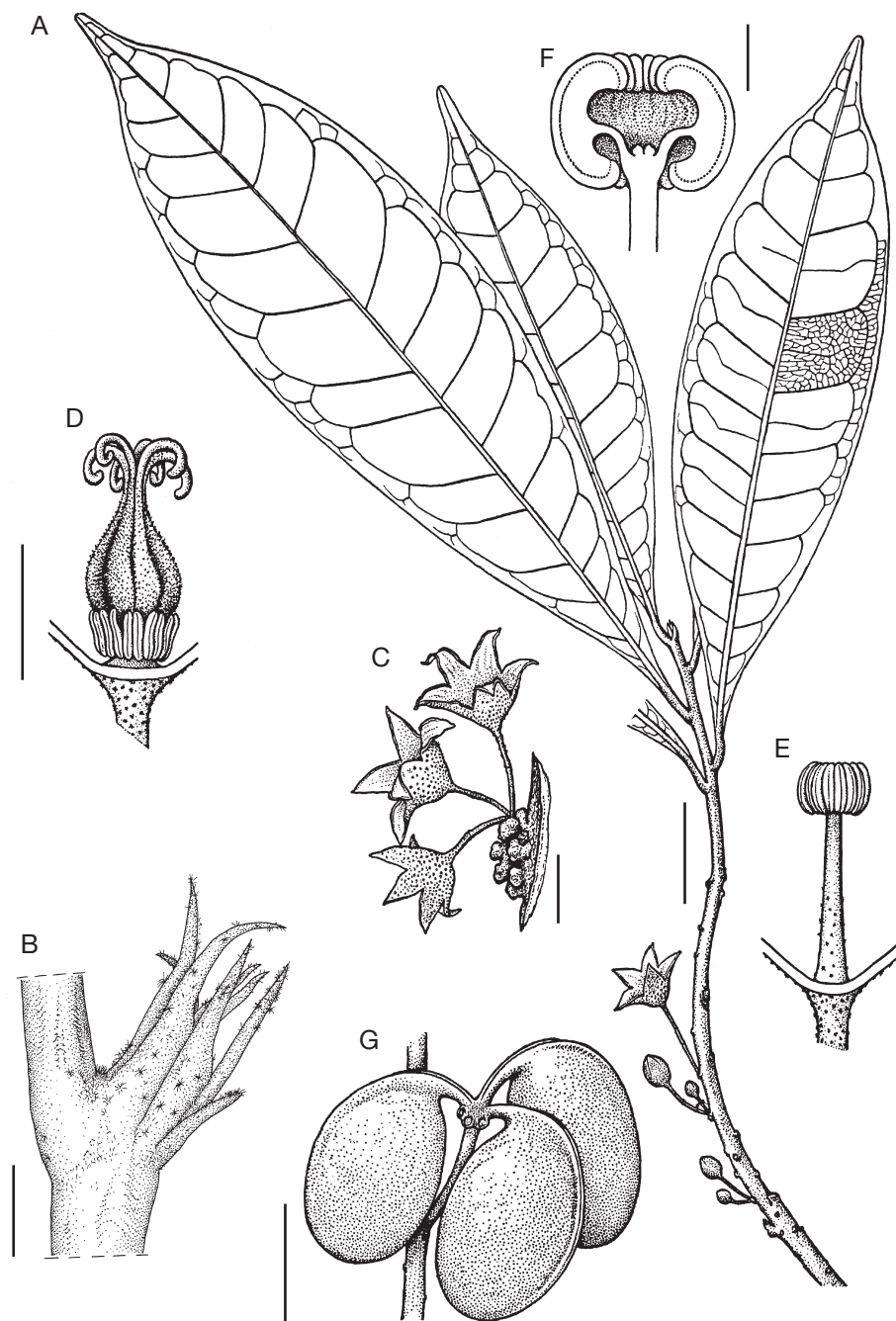


FIG 2. — *Cola elegans* Pierre ex Breteler, sp. nov.; **A**, flowering branch; **B**, apex of branchlet showing stipules; **C**, inflorescence; **D**, gynoecium of female flower with ring of sterile anthers at base; **E**, androecium of male flower; **F**, ring of anthers cut lengthwise; **G**, carpels in fruit. **A**, *Klaine* 3292; **B**, *Sosef et al.* 2746; **C-F**, *Thollon* 1322; **G**, *Klaine* 3477. Scales: **A**, 2 cm; **B**, 2 mm; **C**, 1 cm; **D**, **E**, 5 mm; **F**, 1 mm; **G**, 2 cm. **A**, **C-G**, drawn by N. Hallé, reproduced with permission from *Flore du Gabon* 2. **B** drawn by H. de Vries.

Cola cauliflora Mast., now properly based on *Mann* 967, is a poorly known species. Therefore a short description follows, together with an illustration and a list of specimens investigated. It is followed by the description, illustration and examined specimens of *Cola elegans* Pierre ex Breteler, sp. nov., that replaces *Cola cauliflora* sensu N. Hallé.

***Cola cauliflora* Mast.**

(Figs 1; 3)

In Oliver, *Flora of Tropical Africa* 1: 221 (1868).

TYPUS. — **Cameroon.** Batanga, VI.1861, fl., *Mann* 967 (lecto-, K!, designated by N. Hallé [1962]).

OTHER MATERIAL EXAMINED. — **Cameroon.** South Province, just E of Kribi, 29.IX.1969, fl., *Bos* 5425 (BR!, C, K, MA, MO, P[P00583494], PRE, SRGH, WAG!, YA); 6 km S of Kribi, 17.VIII.1970, fr., *Bos* 7094 (WAG!); Campo Ma'an area, 18.II.2000, fr., *Elad et al.* 1340 (WAG!); Campo Ma'an area, Biboulman, 24.XI.2002, fl., *Tchouto et al.*, *Bibox* 94 (WAG!).

ECOLOGY AND DISTRIBUTION. — Primary and secondary forest in the South Province of Cameroon between Kribi and Campo. Alt. up to 600 m.

DESCRIPTION

Shrub-treelet, 3–4 m tall. Branchlets, stipules, and petioles tomentose, hairs $\pm$ scaly, stellate, soon glabrescent or not. Stipules soon deciduous, narrowly triangular, slightly boat-shaped, 5–8 mm long. Leaves: petiole subterete, 0.4–5 (–10) cm long; lamina elliptic to slightly obovate, (1.5–)2–2.5 (–3) times as long as wide, (8–)11–25 (–31) $\times$ (4–)7–11 (–14) cm, cuneate to rounded to subcordate at base, shortly acuminate at the apex, the acumen 0.5–1.5 (–3) cm long, glabrous both sides, the midrib and the (5–)7–8 (–9) pairs of main lateral nerves prominent both sides. Flowers fasciculate, cauliflorous or axillary, stellate-hairy. Pedicel 2–4 (–6) mm long, stellate-hairy, the male slightly longer than the female. Calyx 13–15 mm long, stellate-hairy outside; lobes spreading to somewhat reflexed, $\pm$ oblanceolate, 6–10 mm long, $\pm$ fringed, glabrous inside. Androphore 4–5 mm long, glabrous; anthers 8–10, sessile, 1–1.5 mm long. Carpels 4–5, ovoid with recurved stigma, stellate-hairy, with a ring



FIG. 3. — Sampling points of *Cola cauliflora* Mast. (○) and of *Cola elegans* Pierre ex Breteler, sp. nov. (☆).

of indehiscent anthers at base. Fruit scarlet at maturity, 4–5 folliculate; follicles subellipsoid-ovoid, 1–1.5 cm beaked, 1.5–2 cm stipitate, slightly flattened, sparsely scaly, stellate-hairy, very irregularly ruminately ridged, 3–5 $\times$ 2–3 $\times$ 1.5 cm, exclusive of stipe and beak.

***Cola elegans* Pierre ex Breteler, sp. nov.**

(Figs 2–4)

Cola elegans Pierre, nomen in sched., *Klaine* 2453.

Cola pauciflora Pierre, nomen in sched., *Klaine* 3292.

Cola cauliflora N. Hallé *non* Mast., *Flore du Gabon* 2: 67, pl. XII, 6–11 (1961).

Colae mayimbensis *Pellegrin maxime simile petiolis brevibus et structura floris, sed differt foliis multo majoribus, nervis lateralibus numero pluribus, basi folii anguste cuneatis et pedicellis longissimis.*

TYPUS. — **Gabon.** Near Libreville, IV.1903, fl., fr., *Klaine* 3292 (holo-, P[P00751709, P00751711, P00751712, P00751714]!).

PARATYPES. — **Gabon.** Near Libreville, Coniquet Island, 28.IX.1912, *Chevalier* 26823 (P[P00751707, P00751710]!); Sibang near Libreville, 4.X.1901, fl., *Klaine*



FIG. 4. — Fruit of *Cola elegans* Pierre ex Breteler, sp. nov., Lachenaud 1249 (Île Coniquet, near Libreville, III.2011, LBV). Photo Olivier Lachenaud.

2453 (P[P00751716]!). — Near Libreville, 9.III.1904, fr., Klaine 3477 (P[P00751705, P00751708]!); 12.IX.1904, fl., Klaine 3498 (P[P00751701, P00751702, P00751704]!). — Nyanga, Réserve des Monts Doudou, 15 km SSW of Doussala, 19.V.2000, Sosef et al. 1558

(WAG!). — Near Libreville, Coniquet Island, 20.XII.2010, fr., Sosef et al. 2746 (WAG!).

Republic of the Congo. Kouilou (Niari), Mayombe forest, X.1888, fl., Thollon 1322 (P[P00751706]!).

ECOLOGY AND DISTRIBUTION. — Primary and secondary forests in West Gabon and in West Republic of the Congo.

DESCRIPTION

Shrub or treelet up to 9 m tall. Branchlets appressed stellate-hairy, glabrescent. Stipules narrowly triangular, 4–5 mm long, early caducous, hairy as branchlets. Leaves: petiole 3–11 (–14) mm long, hairy as the branchlet, glabrescent; lamina oblong-elliptic, 8–30 × (2–)4–7 cm, long-cuneate at base, acuminate at apex, with (8)10–15 (–20) pairs of main lateral nerves, sparsely stellate-hairy when young, soon glabrescent. Flowers fasciculate on the main stem and branches and/or axillary. Pedicel slender, 9–14 mm long, stellate-hairy, articulated in the middle or slightly above. Flowers white, 7–20 mm in diameter. Calyx shortly campanulate, with 4–6 oblong-triangular lobes with thin puberulent margin, stellate-hairy outside, papillate inside. Male flower with 5–6 mm long, glabrous to sparsely pubescent androphore; anthers 8–10, uniseriate. Female flower: ovary (3–)5–6 (–7) carpellate, pubescent, with a ring of indehiscent anthers at base; carpels narrowly ovoid, tapering towards the apex into a free, recurved stigma. Fruit 1–6 carpellate; carpels globose to slightly oblongoid, 2.5–4 × 2 cm, red at maturity, glabrous to sparsely stellate-hairy, 1–2-seeded. Seeds *c.* 15 mm long.

Key to the species *C. elegans* Pierre ex Breteler, sp. nov. and *C. cauliflora* Mast.

1. Leaves short-and long-petioled; lateral nerves (5–)7–8 (–9) pairs; pedicel 2–4 (–6) mm long; fruiting carpels rostrate; Cameroon, South Province, between Kribi and Campo *C. cauliflora* Mast.
- Leaves only short-petioled; lateral nerves (8–)10–15 (–20) pairs; pedicel 9–14 mm long; fruiting carpels not rostrate; Gabon, Libreville-area and southwards in the coastal area of Gabon and the Republic of the Congo *C. elegans* Pierre ex Breteler, sp. nov.

CONSERVATION STATUS

Based on the large area of distribution and occupation, *Cola elegans* Pierre ex Breteler, sp. nov., following the IUCN (2011) guidelines, may be classified as Least Concern (LC). It is true, that

in some collecting localities of the past near Libreville, the species may no longer occur, but recent collections from the Coniquet Island near Libreville and from the Doudou Mts prove its status.

NOTE

Cola elegans Pierre ex Breteler, sp. nov. may be separated from *Cola cauliflora* by the key provided p. 118.

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