

# New species of *Cladoceras* and *Rutidea* (Rubiaceae) from Gabon and Equatorial Guinea

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## Abstract

**Background and aims** – During the preparation of the Rubiaceae-Pavetteae treatment for the Flore du Gabon, three new species were identified in the genera *Cladoceras* and *Rutidea*.

**Material and methods** – This paper is based on examination of herbarium collections of the new species and their relatives. Normal practices of herbarium taxonomy have been applied. Two of the species were also studied in the field. The conservation statuses of the new species were assessed following the IUCN Red List Categories and Criteria.

**Key results** – The three new species are described and illustrated. *Cladoceras longisepalum* sp. nov., occurring in Gabon and Equatorial Guinea, differs from *C. leonardii* by its longer corolla with a different indumentum, laxer inflorescence with distinctly pedicellate (vs sessile) flowers and fruits, and longer subulate calyx lobes which are the longest recorded in the genus. *Rutidea viridiflora* sp. nov. and *R. wieringae* sp. nov. are both endemic to Gabon. The former species resembles *R. hispida* but differs by its shorter and green corolla (vs white), and fewer-flowered inflorescences; the latter resembles *R. lujae* but differs by its inflorescences with fulvous rather than yellowish hairs, its corolla glabrous or sparsely hairy externally, and its leaves with 7–10 pairs of secondary veins. *Cladoceras longisepalum* and *R. viridiflora* are assessed as Vulnerable (VU) and *R. wieringae* as Endangered (EN).

## Keywords

Africa, Flore du Gabon, Pavetteae, *Tarenna*, taxonomy

## INTRODUCTION

The genera *Cladoceras* Bremek. and *Rutidea* DC. belong to tribe Pavetteae of the Rubiaceae family (De Block et al. 2015, 2025), all members of which have left-contorted corolla aestivation and fleshy fruits. Both genera occur in tropical Africa, excluding Madagascar and neighbouring islands.

*Cladoceras* remained for a long time a monotypic East African genus (e.g. Bridson and Verdcourt 1988) until a second species was described by Darbyshire et al. (2022). More recently, its delimitation has been considerably enlarged, as a result of molecular phylogenetic studies that led to the dismantling of the genus *Tarenna* Gaertn.

(De Block et al. 2025). Most African representatives of *Tarenna*, as delimited by Degreef (2006) in his continental revision, have been transferred to *Cladoceras*, now including 40 species and occurring from Senegal to South Africa, while the remainder found a position in the new genera *Alatostigma* De Block (4 species) and *Sonbridia* De Block (2 species). Another new genus, *Nesotarenna* De Block, includes the species from Madagascar and other Indian Ocean islands, while *Tarenna* is now exclusively Asian. As now delimited, *Cladoceras* is quite variable in habit (shrubs, trees, or lianas) and fruit colour (white, black, or orange). Among the African genera of Pavetteae, *Cladoceras* differs from *Sonbridia* mostly by its relatively short stamen filaments (less than half as long

as the anthers) and fruiting pedicels not thickened at the apex, and from *Alatostigma* by lacking the characteristic winged stigma and densely bearded corolla throat of the latter (hairs are often present inside the corolla, but not as dense) as well as by its seed testa cells with wavy (not straight) margins. *Cladoceras* also differs from *Rutidea* by its fruits usually with two or more seeds, which always have an entire endosperm and are not enclosed in a pyrene, and its stipules not or shortly acuminate and more or less thickened in their central part.

*Rutidea* is characterised by a lianescent habit, long-acuminate stipules, and orange fruits with a single, deeply ruminant seed. The genus was last revised by Bridson (1978) who recognized 22 species (two of them imperfectly known). It is strongly supported as monophyletic and sister to *Nichallea* Bridson (De Block et al. 2015). The latter genus also has 1-seeded fruits but differs by its shrubby habit, black fruit colour at maturity, seeds with a single ventral groove, and a peculiar type of branching with leaves often appearing pseudo-ternate, while those of *Rutidea* are opposite.

While studying material of *Rutidea* in view of its treatment for the Flore du Gabon, we came across two new species of this genus, both endemic to the country, which are described here as *R. viridiflora* Jongkind and *R. wieringae* O.Lachenaud. In her generic revision, Bridson (1978) had already recognised the latter species as possibly new; she referred the at that time single specimen of the former to *R. hispida* Hiern, while noting some unusual characters of the material. A new species of *Cladoceras* from Gabon and Equatorial Guinea, *C. longisepalum* O.Lachenaud, is also included in this paper: it was already recognised as a new taxon by Degreef (2006) but not described then, since only fruiting material was available.

## MATERIAL AND METHODS

This paper is based on a study of herbarium collections in BM, BR, BRLU, K, LBV, P, and WAG, as well as on field studies by the second author in Gabon. The descriptions are based on dried herbarium material, field photographs when available, and information derived from the specimen labels. All specimens cited have been seen unless otherwise stated.

The conservation status of the new taxa was assessed following the IUCN Red List Categories and Criteria (IUCN 2012, IUCN Standards and Petitions Committee 2024). The extent of occurrence (EOO) and area of occupancy (AOO) were calculated using GeoCAT (Bachman et al. 2011) with a cell size of 2 km<sup>2</sup> used for AOO, following the recommendation of IUCN Standards and Petitions Committee (2024). The number of “locations” (as defined by IUCN 2012) was calculated with regard to the kind of threats, such that a single location may encompass more than one adjacent subpopulation.

## TAXONOMIC TREATMENT

*Cladoceras longisepalum* O.Lachenaud, sp. nov.

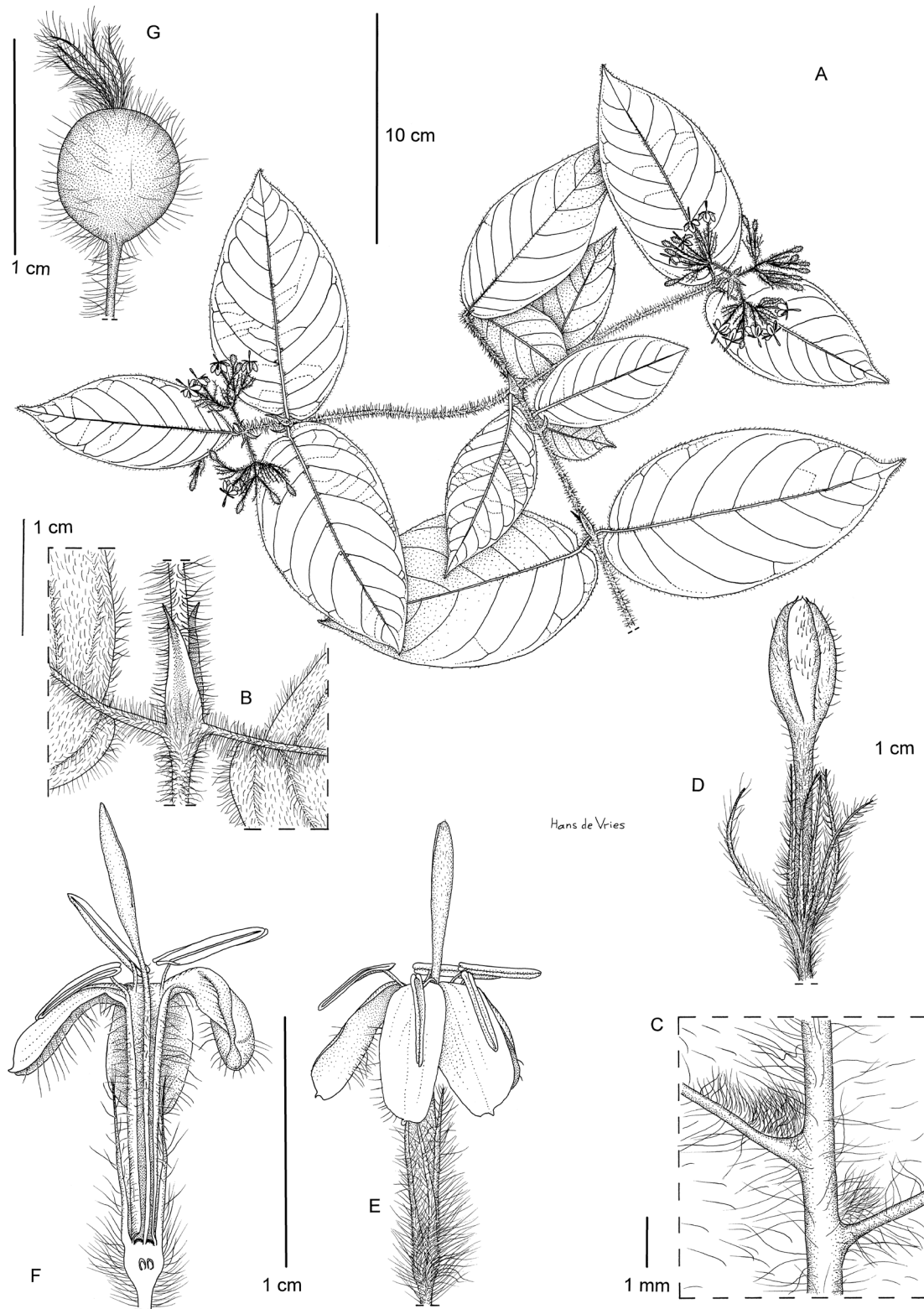
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Figs 1–3; Table 1

**Type.** GABON – Ogooué-Lolo • km 24 Lastoursville – Koulamoutou; 0°58'18.0"S, 12°34'30.4"E; 6 Mar. 2008; fl.; *Dessein, Lachenaud, Janssens, Issembé & Nzabi 2392*; holotype: BR [BR0000013201128]; isotypes: LBV, WAG.

**Diagnosis.** *Cladoceras longisepalum* differs from *C. leonardii* (N.Hallé) De Block by its longer corolla tube (10 vs 5.5 mm), corolla lobes externally villose on the part exposed in bud (vs on median axis only) and internally glabrous (vs basally pubescent on median axis), laxer inflorescence with pedicels 1–3(–5) mm long (vs flowers and fruits sessile) and subulate calyx lobes (2.5–)3.5–7.0 mm long (vs lanceolate, 1.7–2.5 mm long).

**Description.** Woody *liana* (shrubby when juvenile) up to 10(–30) m high. *Branchlets* opposite, patent, cylindrical, ca 1.5 mm thick, hirsute with long straight patent to slightly retrorse rufous to whitish hairs 1.5–3.0 mm long. *Stipules* interpetiolar, 7–12.5 × 3–5 mm, mitriform, shortly sheathing at base for ca 1 mm, acuminate at apex for 2.5–3.5 mm, shiny and thickened in their central part, sparsely hirsute at base and glabrous elsewhere, persistent. *Leaves* opposite; petiole 0.3–0.7 cm long, hirsute like the branchlets; leaf blade elliptic to ovate, 7–14 × 3.3–7.0 cm, rounded to subcordate and often slightly unequal at base, acuminate at apex, thinly papery, bullate above in life, hirsute on both sides, drying olive green to olive brown; midrib and secondary veins bullate above, the latter 6–11 pairs, strongly curved and ascending, arching 1.5–3.0 mm before the leaf margin; tertiary veins scalariform, lax but prominent on the lower surface, 3–6 mm apart; domatia present as conspicuous hairy tufts in the main vein axils. Inflorescences terminal, cymose, hemispherical, 3.3–4.0 × 6–8 cm, densely hirsute; bracts linear, 6–13 × 0.4–0.7 mm, entire or shortly dentate, hirsute, persistent. *Flowers* 5-merous; pedicel 1–3(–5) mm long, slender, hirsute. *Ovary* ca 1 mm long, hirsute, with 2 placentas bearing 3–4 ovules each. *Disk* cylindrical, ca 0.3 mm long, glabrous. *Calyx* tube very short, ca 0.5 mm long, hirsute outside, glabrous inside, lobes subulate, (2.5–)3.5–7.0 mm long, hirsute on both sides. *Corolla* tube pale pink, 10 × 0.7 mm, almost cylindrical, villose outside with ± retrorse hairs, glabrous inside, lobes pale green outside and greenish white inside, elliptic, 5 × 2.3–2.7 cm, rounded at apex, outside villose with patent hairs on the part exposed in bud, glabrous on the part covered in bud, entirely glabrous inside; flower bud claviform with elliptic head, rounded at apex. *Stamens* spreading, not reflexed, glabrous, filaments ca 1 mm long, anthers completely exerted, pinkish white, linear, 3.5–4.0 × 0.4 mm. *Style* white, ca 15 mm long (including stigma), ca 6 mm long exerted, sparsely villose in the median 1/4<sup>th</sup>, otherwise glabrous, stigma narrowly spindle-shaped, 3.5–4.0 mm long. *Fruits* white to greenish-white (mature?),



**Figure 1.** *Cladoceras longisepalum*. A. Flowering twig. B. Node with stipules. C. Detail of two domatia. D. Flower bud. E. Flower. F. Same in longitudinal section. G. Fruit. A–F from *Dessein et al.* 2392 (BR); G from *Breteler & Lemmens* 8307 (BR). Drawing by Hans de Vries.

**Table 1.** Differences between *Cladoceras longisepalum* and *C. leonardii*.

	<i>C. longisepalum</i>	<i>C. leonardii</i>
Calyx lobes	Subulate, (2.5–)3.5–7.0 mm long	Lanceolate, 1.7–2.5 mm long
Inflorescences	Lax, pedicels 1–3(–5) mm long	Contracted, flowers and fruits sessile
Corolla tube length	ca 10 mm	ca 5.5 mm
Corolla lobes (outside)	Villose on part exposed in bud	Villose on median axis only
Corolla lobes (inside)	Glabrous	Basally pubescent on median axis
Altitudinal range	50–720 m	1140–2000 m
Distribution	Equatorial Guinea, Gabon	D.R.Congo (Kivu), Burundi

globose, 5.0–7.5 mm in diameter when dry, hirsute, with persistent calyx. Seeds 2 per fruit, hemispherical, 4.5 mm in diameter, shiny, smooth, with a deep circular ventral excavation; testa cells with wavy margins.

**Distribution and ecology.** *Cladoceras longisepalum* occurs sporadically in central and north-western Gabon, and adjacent south-eastern Equatorial Guinea, and grows in evergreen forest on drained soils, usually in degraded areas (gaps, clearings, roadsides), ca 50–720 m in elevation. The species is evidently uncommon: although it is easily recognisable in the vegetative state, the second author only found it twice during his numerous botanical inventories in Gabon.

**Etymology.** The specific epithet, *longisepalum*, refers to the long calyx lobes which are the longest recorded in the genus.

**Preliminary IUCN conservation assessment.** This species is known from six specimens collected between 1986 and 2020, which represent six occurrences, all of them presumably still extant, and six subpopulations. The extent of occurrence (EOO) is estimated to be 35,331

km<sup>2</sup>, above the threshold for Vulnerable status under subcriterion B1, and its area of occupancy to be 24 km<sup>2</sup>, within the limit for Endangered status under subcriterion B2. The only occurrence in Equatorial Guinea, which coordinates are approximative, is located near the town of Nsork, on the limit of Altos de Nsork National Park; whether it falls outside or just inside the protected area is unclear, but due to the proximity of the town, a decline in habitat extent and quality is expected. Of the five occurrences in Gabon, one (east of Ndjolé) is situated very close to a national road, and potentially at risk from a projected renovation of the road. The remaining four are in former (one) or current (three) logging concessions; whether this represents a threat to the species is unclear, since it seems to tolerate well the level of disturbance induced by selective logging. In view of the above, a decline in habitat extent and quality, number of locations, number of individuals, and AOO is projected. The six occurrences represent six locations in the sense of IUCN with regards to the main threat (roads), and the species qualifies for VU B2ab(ii,iii,iv,v).



**Figure 2.** Flowers of *Cladoceras longisepalum*. Photo by Steven Dessein (from Dessein et al. 2392).

**Notes.** The earliest collection of *Cladoceras longisepalum*, Breteler & Lemmens 8307, was already identified by Degreef (2006: 96) as representing a new taxon related to *C. leonardii* (then *Tarenna leonardii* N.Hallé), which he did not describe in the absence of flowers. The new species indeed closely resembles *C. leonardii* in most of its characters, especially the scandent habit, very long and narrow bracts, and hirsute indumentum covering most of its organs (including both sides of the leaves) but differs by the size and indumentum of the corolla, the development of the pedicels, and the usually longer calyx lobes (Table 1) – which are the longest recorded in the genus, hence the specific name. Although Degreef (2006) mentions calyx lobes up to 3.5 mm long in *C. leonardii*, this appears to be an error (possibly a slip for 2.5 mm, which is the maximum size we have observed for this species). The two species are apparently inseparable in the vegetative state but have widely separate ranges and different habitats (Table 1).

Several collections from Liberia, first referred to as *Rutidea* sp. A (Hepper 1963: 146), then as *Tarenna* sp. (Bridson 1978: 277) or *Tarenna* sp. A (Hawthorne and Jongkind 2006: 602) are very close to *C. longisepalum*. Their leaves, inflorescences and calyces are apparently identical, but differences have been noted in the number of ovules (one per locule, as far as seen) and indumentum of the stipules (pubescent externally near the margins). Considering these differences, their widely separate range, and the incomplete state of the Liberian material – with calyces/young fruits only, but no corollas – they might conceivably represent another new taxon, and flowering material would be required to elucidate their status. The concerned specimens are *Baldwin* 9509 (K) from Sanniquellie [“Sanokwele”]; *Whyte* s.n. (K) from Sinoe Basin; *Yallah* 133 (K) from Mt Nimba; and *Jongkind* & *Kpadeyeah* 14834 (BR) from Grand Gedeh, 6°10.3'N, 8°37.7'W. Degreef (2006) did not discuss these specimens and apparently did not see them, probably because the material then available was on loan at the time of his work.

**Additional specimens examined.** EQUATORIAL GUINEA – **Rio Muni** • Masaha (Nsork); 22 Aug. 2001; imm. fr.; *Esono et al.* 285; BRLU [BRLU0041452].

GABON – **Estuaire** • 12 km N of road Libreville-Kango, former concession SOGACEL; c. 0°17'N, 10°05'E; 2 Oct. 1986; fr.; *Breteler & Lemmens* 8307; BR [BR000016641556], LBV [LBV0002505], WAG [WAG.1173258]. – **Moyen-Ogooué** • Route Ndjolé - Alembé entre Camp 5 et Nzamata (au nord de la route); 0°07'07"S, 10°49'32"E; 7 Nov. 2020; st.; *Lachenaud et al.* 3294; BR [BR000020471613], BRLU [BRLU0040045], LBV, MO. – **Ngounié** • Evouta village, nord-est du village, nord du Parc National de Waka; 4 Jul. 2006; fr.; *Mayombo et al.* 1640; LBV • c. 45 km ESE Ikobey; 1°09.92'S, 11°19.68'E; 4 Apr. 2004; fl. buds; *Wieringa et al.* 5257; LBV [LBV0035427], WAG [WAG.1206427, WAG.1206428].

***Rutidea viridiflora* Jongkind, sp. nov.**

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Figs 3, 4

*Rutidea hispida* auct. non Hiern, Bridson (1978: 261) p.p. (*Le Testu* 8156).

**Type.** GABON – **Ogooué-Ivindo** • Lope Reserve, SEGC Eaux et Forêts Transect, c. 200 m; 2 Jul. 1993; fl., fr.; *White* 902; holotype: WAG [WAG.1457883]; isotypes: LBV, MO n.v.

**Diagnosis.** *Rutidea viridiflora* resembles *R. hispida* Hiern but differs in its inflorescence with fewer flowers (< 30 vs often > 60) and by its greenish corolla (not white) with a shorter tube (8–11 vs 12–18 mm long).

**Description.** Slender liana up to 3 m high. Branchlets with fulvous setose hairs up to 3 mm long. Stipules interpetiolar, 5–15 × 1.5–4.0 mm, triangular at base and narrowing to a subulate acumen, entire, pilose. Leaves opposite; petiole 4–16 mm long, indumentum like branchlets; blade elliptic to ovate-elliptic, (4.2–)5–15 × (1.9–)2.5–6.0 cm, rounded to narrowly cordate at base, acuminate at apex, papyraceous and distinctly bullate in life, pilose on both sides but especially on the larger veins below, ciliate on the margin; (5–)7–12 pairs of conspicuous secondary veins nearly reaching the leaf margin, without hairy tufts in the axils, often with a few shorter and less conspicuous intersecondary veins in between; tertiary veins conspicuous, subparallel, 0.5–3.0 mm apart. Inflorescence with < 30 flowers, terminal, up to 8.5 cm long, trichotomous, usually with one pair of lateral branches more or less perpendicular to the main axis, densely hirsute, flowers crowded at the end of the branches, bracts and bracteoles linear-lanceolate, hirsute on both sides, bracts 8–10 × 1.0–1.5 mm, bracteoles 5–6

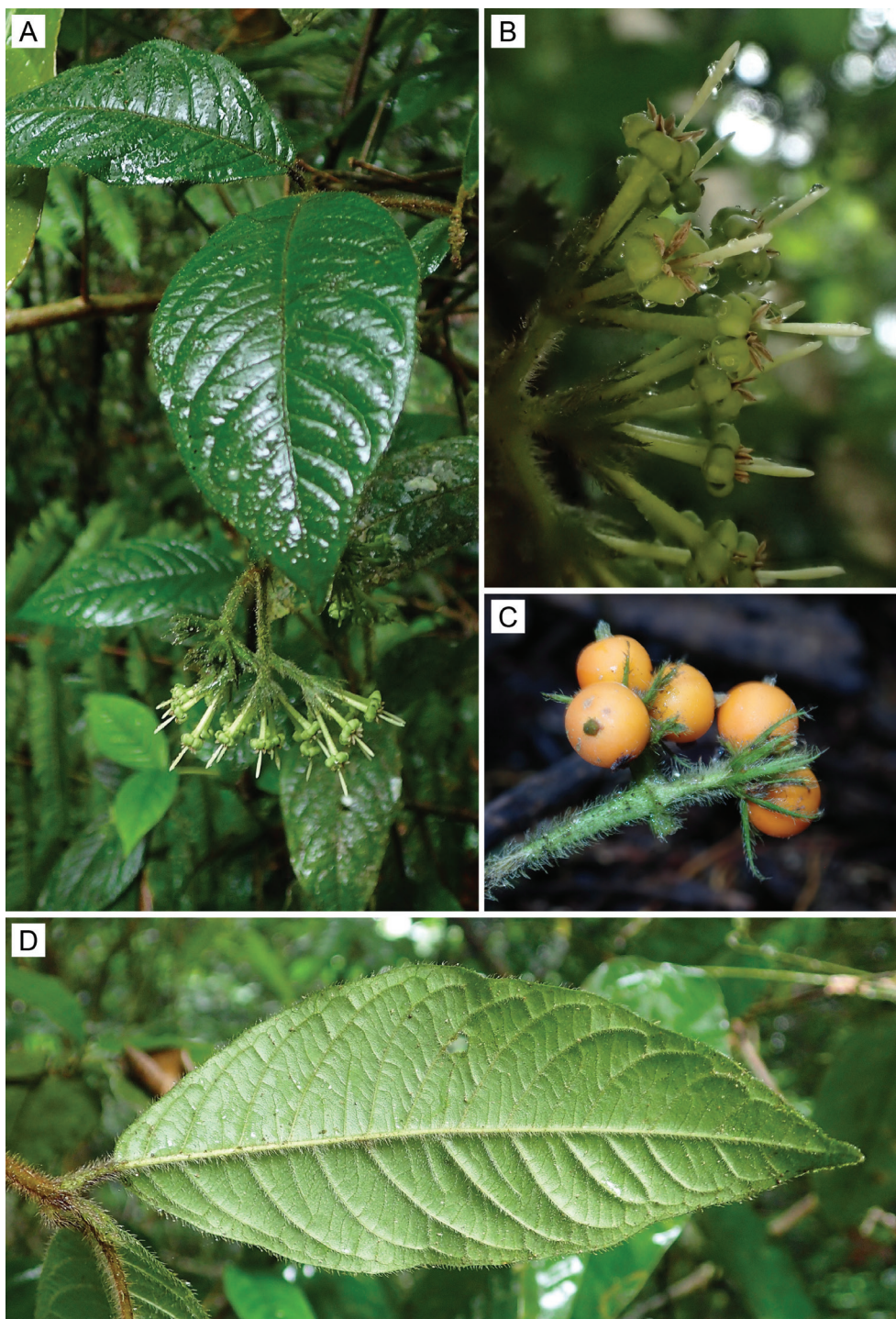


**Figure 3.** Distribution map of *Cladoceras longisepalum* (triangles), *Rutidea viridiflora* (solid circles), and *Rutidea wieringae* (empty circles) with (a) Altos de Nsork NP, (b) Ivindo NP, (c) Lope NP, (d) Waka NP, (e) Birougou NP, and (f) Moukalaba-Doudou NP.

× 0.6 mm, much longer than calyx. Flowers 5-merous, almost sessile. Ovary < 1 mm long, almost glabrous. Calyx densely appressed hairy outside, lobes triangular, ca 1 × 0.8 mm. Corolla greenish, tube 8–11 mm long, 1–2 mm wide at apex, almost cylindrical but slightly widening at the throat, hirsute outside, inside with a few scattered hairs in the lower half, lobes ovate, 3 × 1.5–2.0 mm, apex acute, hirsute outside, glabrous inside. Stamens spreading, not reflexed, glabrous; filaments very short; anthers almost completely exserted, oblong, 2–3 mm long, attached near

the base, shortly apiculate. Style greenish white, glabrous, ca 17 mm long (stigma included), 4–5 mm exserted, stigma fusiform. Fruit globose, 6.0–6.5 mm in diameter when dry, green turning orange, glabrous, sessile, with persistent calyx hidden in a dense tuft of hairs, including a single pyrene, seed ruminant.

**Distribution and ecology.** Only known from Gabon (but to be expected in the Republic of Congo), relatively widespread in the south and centre of the country, occurring in Moyen-Ogooué, Ngounié, Nyanga, Ogooué-



**Figure 4.** *Rutidea viridiflora*. A. Flowering twig. B. Flowers. C. Mature fruits. D. Leaf from below. Photos by Nicolas Texier (A, B, D, from Texier 1259) and Patricia Barberá (C, from Barberá 3450).

Ivindo, and Ogooué-Lolo provinces; in the understorey of closed evergreen forest, secondary forest and in forest edges, on drained soils or along streams, from 70 to 730 m elevation.

**Etymology.** The specific epithet, *viridiflora*, refers to the flowers that are almost completely green (except for the anthers), whereas most species of *Rutidea* have white corollas.

**Preliminary IUCN conservation assessment.** This species is known from 11 specimens collected between 1907 and 2023 (6 of them in the last 10 years), representing 11 occurrences and 10 subpopulations. On recent satellite images none of the vegetation where they came from seem to be destroyed so far, apart from the location of the old specimen from “Lastoursville” (*Le Testu* 8156) that did most likely disappear under the expanding town. Its extent of occurrence (EOO) is estimated to be 50,675 km<sup>2</sup>, far above the threshold for Vulnerable status under criterion B1. Based on a 2 × 2 km cell size, the area of occupancy (AOO) of this species is estimated to be 44 km<sup>2</sup>, below the upper threshold for Endangered under criterion B2. The species is found in two protected areas, Ivindo National Park and Lopé National Park, and may be expected in Moukalaba-Doudou National Park since it has been collected close to its limits. Because of its small size and inconspicuous flowers, it can be easily overlooked and is likely to be undercollected. It grows often in transition zones where forest changes in more open vegetation and it is even found once on a rocky island in a stream (*Texier* 1259), so it is clear that it could profit from a certain amount of disturbance. With its small size, it might be able to react relatively quickly to changes in its environment. However, at the same time it is clear that it is not common. Huge oil palm plantations, comparable to the one near Mouila, close to where *Barberá* 3450 was collected, that stretches for about 100 km, might be too much disturbance for this species. The 2 occurrences from Mabounié (*Stévant* 4186, 4483), potentially at risk from a mining project, are seen as one location. With ≤ 10 locations, of which some are threatened, the species is assessed as VU B2ab(ii,iii).

**Note.** Bridson (1978) cited *Le Testu* 8156, the only specimen of this species in 1978, under *R. hispida* but mentioned that the inflorescence was smaller and with fewer flowers.

**Additional specimens examined.** GABON – **Moyen-Ogooué** • Mabounié, between the Ngounié and the camp; 5 May 2012; fl. bud; *Stévant & Azizet Issembé* 4186; BRLU, LBV, MO [MO-2971350] • Mabounié, along the Ngounié, Camp Somima; 10 May 2012; fr.; *Stévant et al.* 4483; BRLU, LBV, MO, P [P00855052]. – **Ngounié** • Concession OLAM, Lot 3, village Moutassou; 6 May 2023; fr.; *Barberá et al.* 3450; MO. – **Nyanga** • Concession EBDG au sud-est de Pégnoundou; 16 Oct. 2021; fl. bud; *Lachenaud et al.* 3623; BRLU, LBV, MO • Doussala–Murindi; 15 Feb. 2023; fr.; *Mbading Mbading et al.* 872; BRLU, MO. – **Ogooué-Ivindo** • CFAD Rougier Ivindo, Ouest du Parc National de l’Ivindo, 330 m; 16 Mar. 2009; fr.; *Dauby et al.* 1744;

BR [BR0000005691654], LBV, MO • Ivindo National Park; 0°06’31”S, 12°29’13”E; 730 m; 9 Apr. 2017; fl., fr.; *Texier et al.* 1259; BRLU [BRLU0015236], LBV, MO, P [P01193703] • Lope Reserve, SEGC; 13 Jul. 1971; fl. buds; *White* 581; LBV, MO. – **Ogooué-Lolo** • CFAD EGG Pana Ouest, secteur nord, 7 km ouest de Pana; 3 Mar. 2022; *Klein* 1011; MO • SIAEFG logging concession, 30 km north of Pana, Monts Birougou; 599 m; 10 Dec. 2017; fr.; *Texier et al.* 1582; LBV, MO • Lastoursville; 15 Jul. 1930; fl.; *Le Testu* 8156; BM [BM014608045].

*Rutidea wieringae* O.Lachenaud, **sp. nov.**

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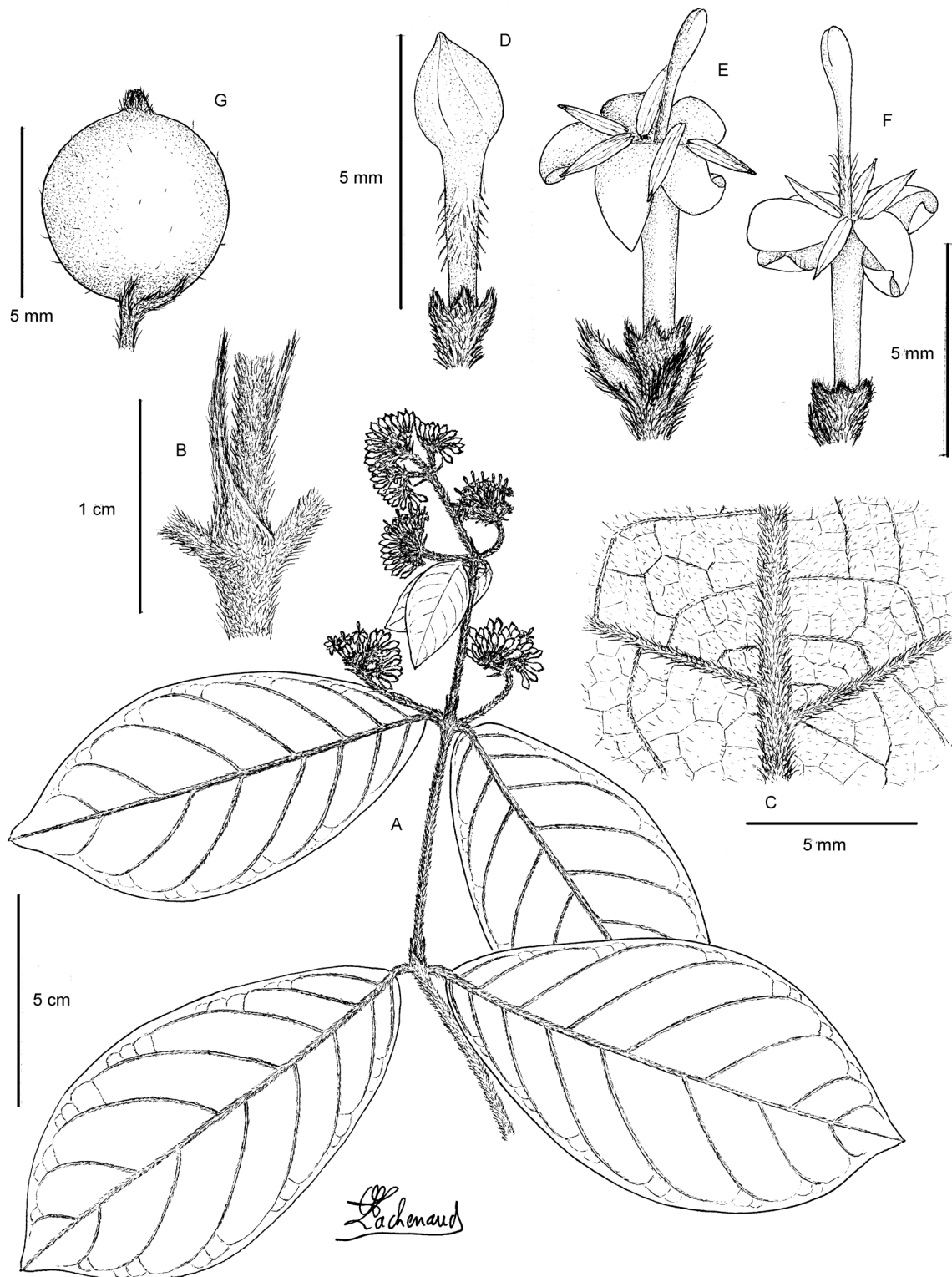
Figs 3, 5; Table 2

*Rutidea* sp. aff. *lujae* De Wild., sensu Bridson (1978: 268).

**Type.** GABON – **Ngounié** • Fougamou, 17 km on forestry road following Bendolo river; 1°15.0’S, 10°29.5’E; 200 m; 30 Oct. 1994; fl.; *Wieringa, van Nek, Hedin & Moussavou* 2993; holotype: LBV; isotype: WAG [WAG.1458297].

**Diagnosis.** Differs from *R. lujae* De Wild. by the fulvous (vs yellowish) indumentum of the inflorescences, corolla glabrous or sparsely hairy externally (vs densely hairy) and usually more numerous secondary leaf veins (7–10 vs 5–7 pairs); and from *R. ferruginea* Hiern by the bracteoles not exceeding the calyx (vs long exceeding it) and the upper leaf surface glabrous between the veins (vs sparsely scabrid-hairy).

**Description.** Liana, ca 1 m high. Branchlets densely pubescent, with straight fulvous appressed to half-erect hairs 0.3–1.0 mm long, intermixed with shorter uncinat hairs. Stipules interpetiolar, 7–11 × 2.5–5.0 mm, triangular at base and narrowing to a subulate acumen, entire, pubescent like branchlets. Leaves opposite; petiole 3–16 mm long, pubescent like branchlets; blade elliptic to obovate, (5–)7.5–21 × (2.7–)3.7–10 cm, obtuse to rounded at base, shortly acuminate at apex, papyraceous, glabrous above except the midrib (and sometimes the secondary veins) with short appressed hairs, pubescent on the main veins below (and very sparsely between them) with indumentum similar to branchlets, drying olive green to olive brown; 7–12 pairs of secondary veins irregularly connecting near the margin; tertiary veins laxly reticulate, quaternary veins densely reticulate but hardly distinct; domatia present as hairy tufts in the main vein axils. Inflorescence terminal, pyramidal, 1.5–9.0 cm long, with 1–4 pairs of main lateral branches, the basal ones often themselves branched, ramifications bearing flowers crowded at their end; bracts deeply 2–3-fid, or entire and lanceolate, 2.5–5.0 × 0.5–1.0 mm, pubescent with fulvous appressed hairs outside; bracteoles elliptic to lanceolate, 1.0–1.5 × 0.25–0.5 mm, at most equalling calyx, entire or shortly dentate towards their base, pubescent like the bracts outside. Flowers 5- or more rarely 4-merous, sessile. Ovary hemispherical, ca 0.5 mm long, densely pubescent. Calyx tube ca 0.5 mm long, lobes broadly triangular, ca 0.5 mm, densely villose outside, glabrous inside. Corolla white or cream-white, tube 3.0–4.5 mm



**Figure 5.** *Rutidea wieringae*. A. Flowering twig. B. Node with stipules. C. Detail of lower leaf surface. D. Flower bud. E. 5-merous flower and bracteoles. F. 4-merous flower and one bracteole. G. Fruit. A–E from *Le Testu 1825* (P), F from *Le Testu 1221* (P), G from *Florence 1569* (P). Drawing by Olivier Lachenaud.

**Table 2.** Differences between *Rutidea ferruginea*, *R. gracilis*, *R. lujae*, and *R. wieringae*.

	<i>R. ferruginea</i>	<i>R. gracilis</i>	<i>R. lujae</i>	<i>R. wieringae</i>
Upper side of leaf blade	Sparsely scabrid-hairy	Sparsely scabrid-hairy	Glabrous except veins	Glabrous except veins
Secondary leaf veins	7–12 pairs	4–6 pairs	5–7 pairs	7–10 pairs
Inflorescence	Pyramidal	Usually hemispherical	Pyramidal	Pyramidal
Inflorescence indumentum	Fulvous	Yellowish	Yellowish	Fulvous
Bracteoles	Much longer than calyx	± equalling calyx	± equalling calyx	At most equalling calyx
Corolla outside	Sparsely hairy on tube + apex of lobes	Densely hairy all over	Densely hairy all over	Glabrous or sparsely hairy on tube + apex of lobes
Ovary	Glabrous to densely hairy	Glabrous	Densely hairy	Densely hairy
Distribution	S Cameroon to NW Gabon	E Gabon to D.R.Congo	D.R.Congo	S & E Gabon

long, 0.5–1.0 mm wide, almost cylindrical, glabrous or sparsely hirsute outside, villose inside in the upper third, lobes ovate, 1.5–2.5 × 1.0–1.3 mm, acuminate to obtuse at apex, glabrous or very sparsely hirsute outside, glabrous inside; flower bud acute to acuminate at apex. **Stamens** spreading, not reflexed, glabrous; filaments ca 0.25 mm long; anthers fully exerted, white, narrowly ovate, ca 1 mm long, attached near the base, shortly apiculate. **Style** greenish white, glabrous or sparsely villose in median third, 6.5–8.5 mm long (including the stigma), 1.5–2.2 mm exerted, stigma fusiform. **Fruit** globose to depressed, 4.5–5.0 × 4.5–7.0 mm when dry, green turning orange, glabrous, sessile, with persistent calyx, including a single pyrene, seed ruminant.

**Distribution and ecology.** Endemic to Gabon, where uncommon and sparsely distributed in Nyanga, Ngounié, and Ogooué-Ivindo provinces; in the understory of evergreen forest, both along rivers and on drained soils, including degraded areas along roads, 100–500 m in elevation.

**Etymology.** The new species is named after Dr Jan Wieringa, collector of the type specimen and of many other interesting African plants.

**Preliminary IUCN conservation assessment.** This species is known from 9 specimens collected between 1907 and 2022, representing 6 occurrences and 5 subpopulations. Its extent of occurrence (EOO) is estimated to be 31,400 km<sup>2</sup>, above the threshold for Vulnerable status under subcriterion B1, and its area of occupancy (AOO) to be 24 km<sup>2</sup>, within the limit for Endangered status under subcriterion B2. One of the occurrences is in a protected area, Ivindo National Park. Another, around Tchibanga, is seriously threatened by urban expansion and shifting agriculture, if not already extirpated. Two occurrences near Mourindi are potentially at risk from shifting agriculture. The remaining two occurrences are in different logging concessions, but do not seem particularly at risk, the species being somewhat heliophilous and appearing to tolerate well the level of

disturbance induced by selective logging. In view of the above, a past, present, and future decline in EOO, AOO, habitat extent and quality, number of subpopulations, and number of individuals is inferred. The six occurrences represent five locations with regards to the main threat (shifting agriculture), and the species qualifies for EN B2ab(i,ii,iii,iv,v). Considering the generally low collection density in most of its range, the species is likely to be more widespread, in which case this assessment may have to be revised in the future.

**Note.** The earliest collections of this species (*Le Testu* 1221 & 1825) were cited as *R. aff. lujae* by Pellegrin (1938: 26) who noted their less pubescent corollas. Bridson (1978: 268) also listed them as *R. sp. aff. lujae*, noting they showed intermediate characters between *R. lujae* and *R. ferruginea*, and might represent a new species. The examination of additional material confirms this hypothesis. The three species appear to have separate ranges; differences between them, and also with the related *R. gracilis* Bridson, are summarised in Table 2. All four species share sessile flowers and fruits, a short corolla tube, and densely pubescent stems.

Flower characters are somewhat variable in *R. wieringae*. Of the three flowering specimens, *Le Testu* 1825 has 5-merous flowers with a short corolla tube (3.0–3.5 mm long) and a glabrous style; *Le Testu* 1221 has 4-merous flowers with a longer corolla tube (4.5 mm long) and a pubescent style; *Wieringa et al.* 2993 also has a pubescent style but its corolla is similar to *Le Testu* 1825. The occurrence of 4- and 5-merous flowers in the same *Rutidea* species is exceptional, since Bridson (1978) even separated two subgenera based on this character; but the collections are otherwise so similar that their conspecificity makes little doubt. Indeed, both Pellegrin (1938) and Bridson (1978) regarded *Le Testu* 1825 and *Le Testu* 1221 as representing the same taxon.

The type specimen is described as a shrub, which is presumably an error, since other collections are recorded as lianas, and all *Rutidea* species are normally scandent.

**Additional specimens examined.** GABON – **Ogooué-Ivindo** • Makokou, vers le plateau d'Ipassa; 30 Jun. 1970; fallen fr.; *Farron* 7578; P [P04019141] • Station d'Ipassa, 10 km S de Makokou; 22 Jul. 1978; fr.; *Florence* 1569; P. – **Nyanga** • Concession AEH, 29–30 km à vol d'oiseau au NE de Mayumba; 29 Nov. 2022; fl. buds; *Lachenaud* & *Nguimbit* 4060; BR, BRLU, LBV, MO • Dabilila; 12 Nov. 1907; fl.; *Le Testu* 1221; BM [BM014619466], P [P04019136, P04019139] • Tchibanga; 31 Oct. 1914; fl.; *Le Testu* 1825; BM [BM014619467], BR [BR0000024875509], P [P04019137, P04019138, P04019140, P04019142] • Monts Doudou, brigade de la Moukalaba à Mourindi; 2°34'S, 10°44'E; 100 m; 19 Mar. 2000; fr.; *Sosef et al.* 846; LBV, P, WAG [WAG.1325923] • *ibid.*; 5 Apr. 2000; fr.; *Sosef et al.* 1102; LBV, WAG • Monts Doudou, à 2 km au Nord de Mourindi; 2°33'S, 10°44'E; 120 m; 18 Apr. 2000; fr.; *Sosef et al.* 1330; LBV [LBV0036618].

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