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The inclusion of *Akeassia* in *Grangea* (Asteraceae) and description of a new species from Gabon: *Grangea ogoouensis*

Henk Beentje & Olivier Lachenaud

Abstract

BEENTJE, H. & O. LACHENAUD (2020). The inclusion of *Akeassia* in *Grangea* (Asteraceae) and description of a new species from Gabon: *Grangea ogoouensis*. *Candollea* 75: 311–319. In English, English and French abstracts. DOI: <http://dx.doi.org/10.15553/c2020v752a12>

The discovery of a new Gabonese species of *Asteraceae* leads us to reevaluate the distinction between the genera *Grangea* Adans. and *Akeassia* J.-P. Lebrun & Stork. The differences between the two genera proving unreliable, *Akeassia* is included in *Grangea*, resulting in the new combination *Grangea grangeoides* (J.-P. Lebrun & Stork) Beentje & O. Lachenaud. A key to the ten species of *Grangea* is presented, as well as complete morphological descriptions for the three species occurring in Gabon: *Grangea grangeoides*, *Grangea maderaspatana* (L.) Desf., and the new species *Grangea ogoouensis* O. Lachenaud & Beentje. The new species differs from *Grangea grangeoides* by its pinnatifid lower leaves and more numerous pappus-bristles, and from *Grangea maderaspatana* by its free pappus bristles and smaller phyllaries. It appears to be endemic to Gabon, and its conservation status is assessed as “Vulnerable”.

Résumé

BEENTJE, H. & O. LACHENAUD (2020). Inclusion de *Akeassia* dans *Grangea* (Asteraceae) et description d'une nouvelle espèce du Gabon: *Grangea ogoouensis*. *Candollea* 75: 311–319. En anglais, résumés anglais et français. DOI: <http://dx.doi.org/10.15553/c2020v752a12>

La découverte d'une nouvelle espèce gabonaise d'*Asteraceae* amène à reconsidérer la distinction entre les genres *Grangea* Adans. et *Akeassia* J.-P. Lebrun & Stork. Les différences entre ces deux genres s'avérant inconstantes, *Akeassia* est mis en synonymie de *Grangea*, d'où la nouvelle combinaison *Grangea grangeoides* (J.-P. Lebrun & Stork) Beentje & O. Lachenaud. Une clé des dix espèces de *Grangea* est présentée, ainsi que des descriptions morphologiques détaillées des trois espèces présentes au Gabon: *Grangea grangeoides*, *Grangea maderaspatana* (L.) Desf. ainsi que la nouvelle espèce *Grangea ogoouensis* O. Lachenaud & Beentje. La nouvelle espèce diffère de *Grangea grangeoides* par ses feuilles inférieures pinnatifides et son pappus à soies plus nombreuses, et de *Grangea maderaspatana* par les soies du pappus libres et les bractées plus petites. Elle est apparemment endémique du Gabon, et son statut de conservation est évalué comme «Vulnérable».

Keywords

ASTERACEAE – *Akeassia* – *Grangea* – *Microtrichia* – Africa – Gabon – Ogooué – Taxonomy – New species

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Introduction

Among tropical African *Astereae* (Asteraceae), the genera *Grangea* Adans., *Microtrichia* DC. and *Akeassia* J.-P. Lebrun & Stork have been the object of much taxonomic confusion, caused in large part by a long-standing misapplication of the name *Microtrichia perrottetii* DC. This species, which is the type of the genus *Microtrichia*, was recognised by FAYED (1979) as identical with *Grangea ceruanoides* Cass., and *Microtrichia* thus became a synonym of *Grangea*. However, material treated under the name *M. perrottetii* in most of the African floras (e.g. OLIVER & HIERN, 1877; ADAMS, 1963; LISOWSKI, 1991) proved to represent a different taxon, which was later described by LEBRUN & STORK (1993) as a new genus and species, *Akeassia grangeoides* J.-P. Lebrun & Stork. The genus *Akeassia* has since remained monotypic, and has generally been accepted as distinct from *Grangea*, which includes 8–10 species in Africa, Madagascar and Asia (FAYED, 1979; BEENTJE, 2002; NESOM & ROBINSON, 2007). The two genera are closely similar in habit and ecology: both contain small annual herbs of open damp places, with heterogamous capitula of tubular yellow florets: the outer female, the inner hermaphrodite.

Between 2011 and 2016, the second author and colleagues conducted a botanical inventory of the Ogooué delta in Gabon, with the aim to produce a book on the biodiversity of the area (VANDE WEGHE & STÉVART, 2017) and while doing so collected several specimens (*Bidault et al.* 1822, *Boupoya et al.* 461, *Stévant & Boupoya* 4501) that appeared to be intermediate between *Akeassia grangeoides* and *Grangea maderaspatana* (L.) Poir. This led us to re-examine the differences between the two genera. Based on a morphological study, we came to the conclusion that *Akeassia* should be included in *Grangea*, which makes a new combination for its type species necessary, and that the specimens cited above represent a new species, here described as *Grangea ogoouensis* O. Lachenaud & Beentje. A key to the species of *Grangea* is presented, as well as morphological descriptions of the three species occurring in Gabon.

Material and methods

This taxonomic treatment is based on the study of more than 200 herbarium specimens from the following herbaria, either in situ or on loan: BR, BRLU, K, LBV, MO, P, WAG. Type specimens from other herbaria were consulted online. Herbarium specimens cited in this revision have all been seen.

The conservation status of the new species was assessed according to the IUCN Red List Categories and Criteria (IUCN, 2012, 2019). Its extent of occurrence (EOO) and area of occupancy (AOO) were calculated using GeoCAT (Geospatial Conservation Assessment tool; BACHMAN et al., 2011) with a cell size of 2 km².

The status of *Akeassia* vs. *Grangea*

When describing the genus *Akeassia*, LEBRUN & STORK (1993) did not compare it specifically with *Grangea*, but stated that it differed from related genera (“diffère des genres apparentés de la tribu”) by the following characters: 1) shortly pedunculate capitula in terminal groups of 3–6; capitula heterogamous and disciform; phyllaries subequal, arranged in about two series; 2) style branches of hermaphrodite florets short and with a broadly triangular apex; 3) pappus of a few, (3–)5–8, free linear bristles in a single series.

From the generic and specific descriptions a few more characters stand out. The leaves, although sessile, are narrowed at base into a ‘false’ winged petiole, and the leaf margin is dentate in the distal ⅓. The florets are yellow, glandular outside and with 4 short triangular lobes; the outer florets are female and 1–3-seriate, the inner hermaphrodite and numerous. The achenes are sparsely glandular.

When we compare this to FAYED’s (1979) genus description of *Grangea*, the following differences (at least as stated by the authors mentioned) between the genera emerge:

- *Akeassia*: leaves simple, dentate; *capitula* in terminal cymes; *pappus* of 5–8 free bristles.
- *Grangea*: leaves pinnatifid; *capitula* solitary (axillary or terminal) or in terminal cymes; *pappus* consisting of a coroniform ring (in African species) or of basally connate bristles (in Madagascar).

None of these characters, however, is entirely reliable. The *leaf* character, “simple and dentate versus pinnately divided” is not consistent. Most *Grangea* species indeed have pinnatifid leaves, but in *G. madagascariensis* Vatke and *G. jeffreyana* Fayed the leaves are only shallowly dentate; several specimens of *Akeassia grangeoides* have leaves with one or two basal lobes (e.g. *Espirito Santo* 1473 from Guinea-Bissau); while our new species *G. ogoouensis*, which otherwise matches *Akeassia*, has lyrate-pinnatisect to lyrate-pinnatifid leaves.

The *number of capitula* character does not work to separate the genera. While *Akeassia* always has multiple capitula, the situation in *Grangea* is quite variable: the capitula in this genus are most commonly solitary – either terminal or axillary to the upper leaves – but in *G. anthemoides* O. Hoffm. are always arranged in terminal groups of 3–6, while in several other species (*G. ceruanoides*, *G. madagascariensis*, *G. maderaspatana*, *G. zambesiaca* Fayed) their arrangement may vary on the same plant (solitary, or in groups of 2–3, sometimes up to 6 in *G. maderaspatana*).

The *pappus* character of “free bristles versus coroniform ring” is only valid for continental Africa, where *Akeassia* always has bristles, and *Grangea* always has a coroniform ring; but all three endemic Madagascan *Grangea* taxa have almost free bristles (*G. gossypina* (Baker) Fayed, *G. lyrata* (DC.) Fayed) or connate bristle-scales (*G. madagascariensis*).

NESOM & ROBINSON (2007) separated the genera on the same characters as did LEBRUN & STORK (1993), but added to the description of *Akeassia* that the achenes have an indumentum of setulae with anchor-shaped tips. These anchor-shaped tips to the achene hairs occur in *Grangea* as well, e.g. in *G. maderaspatana*. NESOM & ROBINSON (2007) description of the pappus in *Grangea* is incomplete, as it omits the Madagascar species with bristle-pappus.

Since no reliable characters remain to separate the two genera, as currently circumscribed, two options are open: 1) merging the two, which would make a new combination in *Grangea* necessary for the existing *Akeassia* taxon; 2) keeping them apart, which would mean excluding the endemic Madagascar species from *Grangea* (based on the pappus character) and transferring them either to *Akeassia* or to a new genus.

Considering that *Grangea* and *Akeassia* closely resemble each other, that comparable diversity in pappus shape occurs in other genera (*Dichrocephala* DC., *Leucanthemum* Mill., *Anisopappus* Hook. & Arn. or *Ageratum* L.) and that *Grangea* s.str. already shows such diversity to a lesser degree (pappus obsolete, or a lacerate coroniform ring, or toothed), the first option seems greatly preferable; as we have great respect for the late Professor Laurent Aké Assi, it is with some sadness that we see the genus dedicated to him disappear into synonymy of *Grangea*.

Grangea in this new circumscription is a well-defined genus, which differs considerably from other genera in the subtribe *Grangeinae* sensu NESOM & ROBINSON (2007), such as *Dichrocephala* DC. (which has achenes lacking indumentum, apart from glands, anthers more squat and more obtuse at apex, and style branches with sterile lanceolate appendages longer than the receptive part) and *Grauanthus* Fayed (which has resin channels on the achenes and lacks any pappus, while in *Grangea* there are no resin channels and a pappus is usually present). The latter genus is probably the closest relative of *Grangea*. Phylogenetic work in this and most other African *Asteraceae* is still sadly lacking.

Key to the species of *Grangea*

(Species occurring in Gabon are in bold).

1. Pappus a coroniform ring with dentate or lacinate margin (the ring sometimes very short in *G. ceruanoides* but then outer florets in a single series) 2
- 1a. Pappus of free bristles, or bristle-scales briefly connate at base, or absent; outer florets in several series 6
2. Leaves shallowly dentate (teeth to 2 mm deep), long-attenuate at base; achenes glandular, without hairs; endemic to Burundi *G. jeffreyana*
- 2a. Leaves pinnatifid, or if shortly toothed then auriculate at base; achenes mostly hairy (sometimes glabrous in *G. maderaspatana*) and often glandular as well 3
3. Capitula 3–6 together in terminal corymbs; hairs on achenes simple and uncinatate at apex; pappus margin very shortly and irregularly toothed; erect herb; Angola, Zambia, Zimbabwe, Namibia, Botswana *G. anthemoides*
- 3a. Capitula, at least the majority of them, solitary; hairs on achenes (when present) either bifid, or if simple then not uncinatate; pappus margin lacinate with \pm linear teeth; erect or decumbent herbs 4
4. Outer florets in one series; achenes eglandular, compressed; Sahelian region from Senegal to South Sudan *G. ceruanoides*
- 4a. Outer florets in several series; achenes glandular, compressed or quadrangular 5
5. Achenes strongly quadrangular in cross section; pappus ring less than 0.5 mm high; phyllaries 2–3 mm long; plant low and very compact, c. 10 cm tall; endemic to Zambia *G. zambesiaca*
- 5a. Achenes compressed, elliptic and weakly 2(–4)angled in cross-section; pappus ring to 1.3 mm high; phyllaries 3–7 mm long; plant very variable in habit, usually taller; widespread in tropical and subtropical Africa, Madagascar, and tropical Asia *G. maderaspatana*
6. Marginal florets almost urceolate, often red; phyllaries to 4 mm; achenes without hairs; pappus absent or consisting of 1–2 free bristles; Madagascar *G. lyrata*
- 6a. Marginal florets with narrow cylindric base, always yellow; phyllaries to 3 mm long; achenes with hairs; pappus present (sometimes caducous in *G. gossypina*) 7
7. Pappus of relatively broad bristle-scales to 1 mm long, shortly connate at base; leaves shallowly dentate; Madagascar *G. madagascariensis*
- 7a. Pappus of smaller and filiform free bristles; leaves shallowly dentate to pinnatifid 8
8. Capitula solitary, on peduncles 1–3 cm long; hairs on achenes uncinatate with bifid tips; creeping herb; Madagascar *G. gossypina*
- 8a. Capitula (at least the majority of them) in groups of 2–8, on short peduncles < 5 mm long; hairs on achenes simple, not uncinatate; erect or clambering herbs 9
9. Leaves all shallowly dentate with teeth to 3 mm deep; phyllaries 1.2–1.5(–2) \times 0.3–0.4 mm; pappus bristles of outer florets in number 0–3(–5), of inner florets 4–9(–12); widespread in West and Central Africa ... *G. grangeoides*
- 9a. Leaves, at least the lower ones, deeply pinnatifid to pinnatifid; phyllaries 1.2–2.5 \times 0.5–1.2 mm; pappus bristles of outer florets in number 6–16, of inner florets 12–18; endemic to west-central Gabon *G. ogoouensis*

Taxonomy

Grangea Adans., Fam. Pl. 2: 121. 1763.

Type: *Grangea maderaspatana* (L.) Desf. (= *Artemisia maderaspatana* L.)

= *Pyrarda* Cass. in Cuvier, Dict. Sci. Nat., ed. 2, 41: 120. 1826. = *Grangea* sect. *Pyrarda* (Cass.) DC., Prodr. 5: 373. 1836. **Type:** *Pyrarda ceruanoides* (Cass.) Cass. (= *Grangea ceruanoides* Cass.).

= *Microtrichia* DC., Prodr. 5: 366. 1836. **Type:** *Microtrichia perrottetii* DC. (= *Grangea ceruanoides* Cass.).

= *Akeassia* J.-P. Lebrun & Stork in Candollea 48: 332. 1993, **syn. nov.** **Type:** *Akeassia grangeoides* J.-P. Lebrun & Stork (= *Grangea grangeoides* (J.-P. Lebrun & Stork) Beentje & O. Lachenaud).

Herbs, annual or perennial, often prostrate. *Leaves* alternate, entire to pinnatifid. *Capitula* terminal or leaf-opposed, solitary or laxly corymbose, globose, heterogamous, disciform; phyllaries 1–3-seriate, subequal, the inner with membranous margins; receptacle hemispheric or conical, epaleate. *Florets* dimorphic; outer florets in 1–several rows, female, narrowly tubular, 2–4-dentate; central florets many, hermaphrodite, 4–5-lobed; anther bases obtuse; style-branches with short triangular appendages. *Achenes* slightly compressed, sub-cylindrical or ellipsoid, pubescent; pappus of free bristles, basally connate scaly bristles, a coroniform ring, or rarely absent.

Distribution. – A paleotropical genus with ten species, of which six restricted to subsaharan Africa, three to Madagascar, and one (*G. maderaspatana*) occurring widely in Africa, Madagascar and tropical Asia.

Notes. – The generic type of *Grangea* is another source of confusion. Although ADANSON (1763), when describing the genus *Grangea*, did not mention any species, he based it on the same source (“Absinthium. Pluk. t. 257. f. 3”) as *Artemisia maderaspatana* L. (LINNAEUS, 1753: 849), i.e. PLUKENET (1691: tab. 1, fig. 2, 1696: 2, 1705: 3). The generic type is therefore *Grangea maderaspatana* (L.) Desf., a combination first published by DESFONTAINES (1804).

Grangea grangeoides (J.-P. Lebrun & Stork) Beentje & O. Lachenaud, **comb. nov.**

= *Akeassia grangeoides* J.-P. Lebrun & Stork in Candollea 48: 332. 1993.

Holotypus: CONGO REPUBLIC: Île M'Bamou-Sinoa, 13.II.1969, F. Hallé 1674 (P [P025765] image seen; iso-: ALF, K!).

Annual herb 3–15(–38) cm; stem sparsely pilose-scabrid. *Leaves* slightly obovate, (3–)8–50(–90) × 3–24(–35) mm, base long-attenuate with very base half-clasping stem, margin dentate in upper 2/3 with teeth to 3 mm deep, apex acute; sparsely pilose to minutely hispid, more densely so on midrib, veins and sometimes the margin, occasionally also sparsely glandular between hairs. *Inflorescence* of 3–8 capitula in a tight shortly stalked group axillary to upper leaves and/or terminal; capitula 1.8–3 mm high, 2–4.5 mm in diameter; stalks of individual capitula 1–1.5 mm long; phyllaries 24–28 in two rows, green when fresh, elliptic to slightly obovate, 1.2–1.5(–2) × 0.3–0.4 mm, the outer with multicellular hairs and sometimes pectinate. *Florets* 34–50, yellow to orange; outer florets female, in 2–4 rows, widest at base and ending in a very narrow minutely 3–4-toothed apex, 0.3–0.7 mm long; inner florets 20–28, bisexual, slightly infundibuliform, 0.8–1.2 mm long of which the four lobes 0.1–0.2 mm, glandular and apparently without trichomes. *Achenes* of outer florets slightly obovoid, 0.5–0.8 mm long, glandular and sometimes minutely pilose, with 0–3(–5) sub-plumose or barbellate pappus bristles, rapidly caducous, 0.2–0.4 mm long; achenes of inner florets 0.6–0.9 mm long, scattered-glandular, with 4–9(–12) flattened to almost cylindrical barbellate pappus bristles 0.3–0.7 mm long.

Distribution and ecology. – This species is widespread in West and Central Africa, occurring from Senegal to the Democratic Republic of Congo, and grows on river-banks just above water level; recorded altitudes are 50–480 m in Gabon, and down to sea level elsewhere.

Notes. – A line drawing of this species is available in LEBRUN & STORK (1993) and a colour photograph in VANDE WEGHE et al (2016: 755). LEBRUN & STORK (1993) cited three collections from Gabon, two of which (*Fleury in Chevalier* 26242 and *Anton-Smith* 278) actually belong to our new species *G. ogoouensis*. In their description, they mentioned capitula up to 4.5 mm high and 7 mm in diameter, and a pappus with up to 15 free bristles, characters which may refer to *G. ogoouensis*; the abundant material of *G. grangeoides* that we have seen constantly shows smaller capitula and fewer pappus-bristles.

Grangea maderaspatana (L.) Desf., Tabl. Ecole Bot.: 95. 1804.

= *Artemisia maderaspatana* L., Sp. Pl. 2: 849. 1753.
= *Cotula maderaspatana* (L.) Willd., Sp. Pl., ed. 4, 3: 2170. 1803. = *Grangea adansonii* Cass., Dict. Sci. Nat., ed. 2, 19: 304. 1821 [nom. illeg.].

Lectotypus (designated by FAYED, 1979: 452): [INDIA]: “habitat in India”, s.d., *Herb. Linn.* 988.47 (LINN-HL n° 988-47 image!).

- = *Tanacetum aegyptiacum* Juss. ex Jacq., Hort. Bot. Vindob. 3: 46, tab. 88. 1777. = *Grangea aegyptiaca* (Juss. ex Jacq.) DC., Prodr. 5: 373. 1836. **Typus:** Jacq., Hort. Bot. Vindob. 3: tab. 88. 1777.
- = *Cotula sphaeranthus* Link, Enum. Hort. Berol. Alt. 2: 344. 1822. = *Grangea sphaeranthus* (Link) Koch in Bot. Zeitung (Berlin) 1: 41. 1843. **Typus:** COUNTRY UNKNOWN: “ad fluvium Congo”, s.d., *Anon. s.n.* (B†).
- = *Grangea strigosa* Gand. in Bull. Soc. Bot. France 65: 42. 1918. **Syntypi:** INDIA: Goghat, s.d., *Nusker 33* (P); *ibid. loco*, s.d., *Prain s.n.* (P).
- = *Grangea hispida* Humbert in Mem. Soc. Linn. Normandie 25: 37. 1923. **Lectotypus** (designated by FAYED, 1979: 465): MADAGASCAR: Majunga, VI.1879, *Hildebrandt 3028* (P [P00435134] image!; isolecto-: BM [BM000903807] image!).
- = *Grangea glandulosa* Fayed in Mitt. Bot. Staats. München 15: 466. 1979. **Holotypus:** ZAMBIA: Mbereshi-Luapula, river swamp, 14.I.1960, *Richards 12352* (K [K000273547]!).
- = *Grangea mucronata* Buch.-Ham. ex Wall. [nom. nud.].

Annual or short-lived perennial *herb*, with taproot, procumbent or with erect stems to 40 cm high, aromatic. *Leaves* pale green, sessile, in outline obovate to oblanceolate, 1–9.5(–15) × 0.3–4 cm, base half-amplexicaul, margins lyrate-pinnatifid with serrate-crenate lobes or less often just lobed, apex obtuse, pubescent to pilose on both surfaces and glandular. *Capitula* solitary and axillary or leaf-opposed, or terminal and 2–3 together in leafy corymbs, individual capitula subglobose, 4–12 mm long, 6–14 mm in diameter, erect in flower, nodding in fruit; phyllaries ± 17, 2–3-seriate, ovate to elliptic, the outermost 3–7 mm long. *Florets* many (50+), corollas pale to golden yellow; outer florets female, in 2–4 rows, narrowly tubular with the tube 1.3–1.5 mm long, sparsely glandular, widening near mouth, with 2–4 lobes, lobes 0.2–0.3 mm long; inner florets many, bisexual, shortly (0.5–1 mm) stalked, sparsely glandular, tube 1–1.2 mm long and widening towards mouth with 4–5 triangular lobes 0.3–0.5 mm long. *Achenes* yellow, narrowly obovoid, those of outer florets slightly smaller than those of inner, but all slightly compressed, with 2(–4) marginal veins, 1.2–2 mm long, sparsely hairy or less often glabrous, always glandular; pappus of outer florets a crown-shaped ring with lobes 1–2 mm long, of inner florets a larger coroniform ring, laciniate, 0.2–0.5 mm long.

Distribution and ecology. – A very widespread species in tropical and subtropical Africa, Madagascar, and tropical Asia; river-banks and sandbanks in rivers, swampy grassland, where may be mat-forming or covering large areas; 5–150 m in Gabon, elsewhere 0–1350 m.

Conservation status. – This species was assessed as “Least Concern” [LC] by BEENTJE et al. (2020).

Notes. – See under *G. ogoouensis*. This species is highly polymorphic in habit (erect or procumbent), leaf shape, density of indumentum, and to some degree in pappus shape (the pappus ring tends to be shorter in specimens from Western and Central Africa compared to those from Eastern and Southern Africa). In the Sahelian region it may be mistaken for the widely sympatric *G. ceruanooides*; the latter differs by characters listed in the key above, and also by its smaller phyllaries (< 3 mm long).

The original description of *G. hispida* (HUMBERT, 1923) is based on three syntypes, *Douliot s.n.*, *Hildebrandt 3028* and *Perrier de la Bâthie 2951*; FAYED (1979: 465) cited the P sheet of *Hildebrandt 3028* as holotype, which is treated as an error to be corrected to lectotype (TURLAND et al., 2018: Art. 9.10).

Grangea ogoouensis O. Lachenaud & Beentje, **sp. nov.** (Fig. 1, 2).

Holotypus: GABON. **Moyen-Ogooué:** Lac Onangué, 22.X.2014, *Bidault et al. 1822* (BR [BR0000016174702]!; iso-: BRLU!, LBV!, MO!, P [P00854719]!, WAG!).

Grangea ogoouensis O. Lachenaud & Beentje is closest to *G. grangeoides* (J.-P. Lebrun & Stork) Beentje & O. Lachenaud but differs by its mostly pinnatifid leaves (vs. leaves all shallowly toothed), larger phyllaries 1.2–2.5 × 0.5–1.2 mm (vs. 1.2–1.5(–2) × 0.3–0.4 mm) and fewer pappus bristles, 6–16 in outer florets and 12–18 in inner florets (vs. 0–3(–5) and 4–9(–12), respectively). It also resembles *G. maderaspatana* (L.) Desf., but differs from this species by its pappus with free bristles (vs. pappus a coroniform ring), smaller phyllaries 1.2–2.5 mm long (vs. 3–7 mm long) and capitula mostly terminal and in groups of 2–5 (vs. mostly solitary and axillary).

Annual *herb*, clambering or erect, 5–40 cm tall; stem branched from near base, hispid-pubescent with multicellular hairs to 1 mm. *Leaves* obovate in outline, 15–50(–100) × 5–23(–54) mm, mostly lyrate-pinnatifid to pinnatifid (deepest and to 12 mm in proximal part, the lobes dentate) but the upper ones more shallowly dentate, base long-attenuate but the very base slightly widened and clasping the stem; apex mucronate-acute; sparsely hispid-pilose, more densely so near margins. *Capitula* solitary and stalked in upper leaf axils, or more commonly in groups of 2–5 near stem apex (the whole may look like a several-headed cyme when leaves are closely set); peduncle or stalk 1–5 mm long; capitula 2.5–4.5 mm high, 4–7 mm in diameter; phyllaries 22–24 in number, in 2 rows, 1.2–2.5 × 0.5–1.2 mm, pilose and pectinate to ciliate; receptacle convex, domed. *Florets* many (50+), corollas yellow; outer florets female, in 1–3 rows, cylindrical to narrowly infundibuliform, corolla 0.8–1.1 mm long, with a few trichomes (but no glands), (3–)4-lobed, lobes



Fig. 1. – *Grangea ogoouensis* O. Lachenaud & Beentje.
A. Entire plant in habitat; **B.** Capitula and upper leaves; **C.** Capitula.
 [Bidault et al. 1822] [Photos: E. Bidault]

0.15–0.3 mm long; inner florets many, bisexual, funnel-shaped, corolla 0.8–1.3 mm long, of which the lobes 0.2–0.3 mm, with a few hairs (and sometimes a few glands). *Achenes* 3-angular or (?when young) flattened, 0.8–1.2 mm long, slightly pilose, with a few glands; the *outer* with caducous pappus of 6–16 bristles 0.2–0.3 mm long; the *inner* with pappus of 12–18 slightly broad-based bristles 0.3–0.6 mm long.

Uses. – The plant sap is used to treat sinusitis (*Quiroz-Villareal et al.* 1523).

Distribution and ecology. – This species is endemic to west-central Gabon, where it is mostly found in the lower Ogooué basin (Fig. 3). It occurs in ephemeral vegetation on seasonally flooded rocky or sandy banks of rivers and lakes, 10–106 m in elevation, and is locally common in this habitat, in association with other annual herbs such as *Oldenlandia capensis* L.f. and *Pentodon pentandrus* (Schumach. & Thonn.) Vatke (*Rubiaceae*), *Melochia corchorifolia* L. (*Malvaceae*) and *Euploca katangensis* (Gürke ex De Wild.) E.L.A.N. Simons & Wieringa (*Boraginaceae*). It has been collected in flower from March to May and from August to October, corresponding to periods of moderate water levels.

Conservation status. – The extent of occurrence of *Grangea ogoouensis* is estimated to be 25177 km², above the limit for Vulnerable status under criterion B1, and its area of occupancy to be 44 km², within the limit for Endangered under criterion B2. The species is endemic to Gabon and occurs in ephemeral vegetation along lakes and rivers, mostly in the Ogooué river system. It is known from 13 specimens representing 11 occurrences, only one of which occurs in a protected area (Lopé National Park). One occurrence is in a mining concession (Mabounié) where its habitat is at risk from the building of infrastructure associated with mining activities, and another in an oil concession (near Rabi) where similar disturbance is expected due to oil exploitation. Furthermore, there are projects to dredge the Ogooué river between Lambaréné and Port-Gentil to facilitate navigation, which would seriously affect the water regime and consequently the habitat of the species. For all these reasons, a decline in habitat extent and quality and number of mature individuals is projected. The 11 occurrences represent eight locations in the sense of IUCN (2019) – all occurrences on the Ogooué downstream of Lambaréné being treated as a single location since they are at risk from the same event – and the species thus qualifies for “Vulnerable” [VU B1ab(iii,v)+B2ab(iii,v)] using the IUCN Red List Categories and Criteria (IUCN, 2012).

Notes. – The earliest collections of this species were cited as *Akeassia grangeoides* by LEBRUN & STORK (1993); see the note under *G. grangeoides*. The plant illustrated as *G. maderaspatana* in WHITE & ABERNETHY (1996: 21, fig. a) is presumably *G. ogoouensis*.

Grangea ogoouensis is, as far as known, the only species of *Asteraceae* endemic to Gabon. SOSEF et al. (2006) record *Erlangea plumosa* Sch. Bip. as endemic to the country, but this species also occurs in the Republic of Congo.

Paratypes. – GABON. **Moyen-Ogooué:** env. village Olamba, 9.VIII.2011, Boupoya et al. 461 (BRLU, WAG); Lambaréné, 21.III.1989, Boubou 55 (LBV); Ogooué river 3–4 km downstream from Ndjolé, 28.IX.1994, Breteler & Breteler 13066 (BR, LBV, WAG); Mabounié, 10.V.2012, Stévant & Boupoya 4501 (BRLU, LBV, MO); env. de Lambaréné, sur l'Ogooué, 1.VIII.1912,



Fig. 2. – *Grangea ogoouensis* O. Lachenaud & Beentje. **A.** Plant in flower; **B.** Basal leaf; **C.** Upper leaf; **D.** Capitula; **E.** Outer phyllary; **F.** Inner phyllary; **G.** Outer (female) floret; **H.** Inner (hermaphrodite) floret.
 [Bidault et al. 1822, BR] [Drawing: O. Lachenaud]

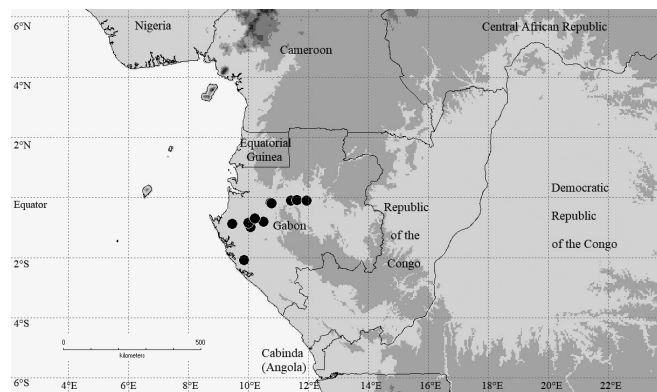


Fig. 3. – Distribution map of *Grangea ogoouensis* O. Lachenaud & Beentje.

Fleury in Chevalier 26242 (P); Ndjolé, banks of now very low Ogooué, 4.IX.1992, *Wieringa & van de Poll* 1585 (LBV, WAG). **Ogooué-Ivindo:** Booué, 26.VIII.1957, *Anton-Smith* 278 (P); Lopé, en-dessous du pont sur l'Ogooué, 0°06'17"S 11°24'56"E, 9.III.2010, *Bissengou et al.* 1088 (LBV, WAG); PN de la Lopé, gallery forest of the Ogooué river, 0°05'02"S 11°36'43"E, 1.IX.2012, *Quiroz-Villarreal et al.* 1523 (WAG); Lopé, Ogooué-Airstrip beach, 29.VIII.1993, *L. White* 1019 (LBV). **Ogooué-Maritime:** M'Paga (or M'Paya), banks of Ogooué, 12.IV.1986, *Pauly* 257 (BR); near Echira oilfield, 30.IX.1994, *Wieringa & Nzabi* 2817 (BR, LBV, P, WAG).

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