

A review of *Combretum falcatum* (Welw. ex Hiern)
Jongkind (Combretaceae) and related species
from Africa, including *Combretum baldwinii*
Jongkind, sp. nov., from Nigeria

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A review of *Combretum falcatum* (Welw. ex Hiern) Jongkind (Combretaceae) and related species from Africa, including *Combretum baldwinii* Jongkind, sp. nov., from Nigeria

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ABSTRACT

Several new *Combretum* Loebl. (Combretaceae) collections from Central Africa have revealed a taxonomical confusion in that genus. To correct these mistakes two species, *C. pellegrinianum* Exell and *C. littoreum* (Engler) Engler & Diels, are resurrected and one variety, *Quisqualis falcata* var. *mussaendiflora* (Engl. & Diels) Liben, is transferred again to species level as *C. mussaendiflorum* Engl. & Diels. The related *Combretum baldwinii* Jongkind, sp. nov. from Nigeria is here newly described. The species included in this review have in common that they have an upper receptacle that is several times as long as wide, stamens that are not or slightly exserted and a style that is conspicuously adnate to the upper receptacle for an important part of its length. All these species, except the new one, were formerly included in the genus *Quisqualis* L.

KEY WORDS

Combretaceae,
Combretum,
Africa,
resurrection,
new species.

RÉSUMÉ

Une revue de *Combretum falcatum* (Welw. Ex Hiern) Jongkind (Combretaceae) et des espèces apparentées d'Afrique, y compris *Combretum baldwinii* Jongkind, sp. nov., du Nigéria.

Plusieurs collections nouvelles de *Combretum* Loebl. (Combretaceae) d'Afrique centrale ont révélé quelques erreurs taxonomiques dans ce genre. Pour corriger ces erreurs deux espèces, *C. pellegrinianum* Exell et *C. littoreum* (Engler) Engler & Diels, sont ressuscitées et une variété, *Quisqualis falcata* var. *mussaendiflora* (Engl. & Diels) Liben, est transférée à nouveau sous le nom d'espèce *C. mussaendiflorum* Engl. & Diels. Le *Combretum baldwinii* Jongkind, sp. nov. du Nigéria est ici nouvellement décrit. Les espèces incluses dans cette revue ont en commun d'avoir un réceptacle supérieur plusieurs fois plus long que large, des étamines qui ne sont pas ou légèrement exsertes et un style qui est manifestement adné au réceptacle supérieur sur une partie importante de sa longueur. Toutes ces espèces, sauf la nouvelle, avaient précédemment été incluses dans le genre *Quisqualis* L.

MOTS CLÉS

Combretaceae,
Combretum,
Afrique,
résurrection,
espèce nouvelle.

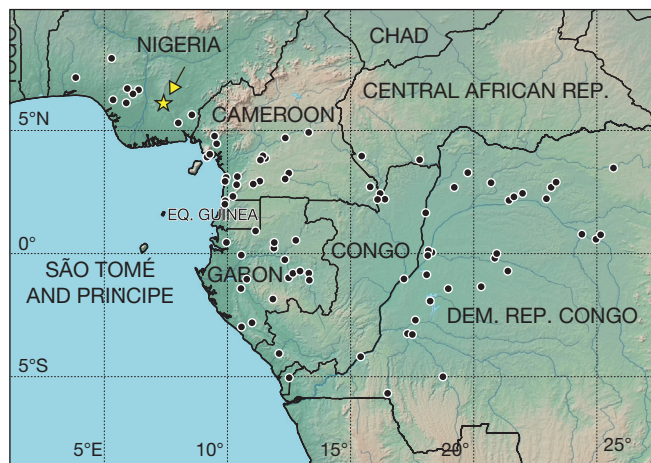


FIG. 1. — Geographic distribution of *Combretum baldwinii* Jongkind, sp. nov. (★) and *Combretum latialatum* Engl. & Diels (●).

INTRODUCTION

A few years ago several conspicuously red flowering *Combretum* Loebl. specimens were collected on and around Plateaux Batéké in eastern Gabon. With the Flore du Gabon (Jongkind 1999) they key out as *C. falcatum* (Welw. ex Hiern) Jongkind. However, the calyx lobes are not apiculate but more or less acute, and the inflorescence bracts are red, not whitish or green (Fig. 3A). An old specimen, collected in 1883 in the same area by Jacques de Brazza, shows exactly the same characters. This de Brazza specimen is the type of *C. pellegrinianum* Exell, a species synonymized by mistake with *C. falcatum* (Jongkind 1999: 42). After the publication of *C. pellegrinianum* by Exell (1929), based on that single specimen, no other specimens were identified. This species is resurrected here on base of the shape and colour of the inflorescence bracts and the shape of the calyx lobes (Table 1). In herbaria several more specimens from Congo Kinshasa were found under *C. falcatum*, often still as *Quisqualis falcata* Welw. ex Hiern. The geographical distribution of *C. pellegrinianum* goes from eastern Gabon to western Congo Kinshasa just like the related *C. inflatum* Jongkind (Figs 3B, 4).

Combretum pellegrinianum (Fig. 3A) should not be confused with *C. mussaendiflorum* Engl. & Diels (Fig. 5), a related species with red inflorescences from eastern Congo Kinshasa. *Combretum mussaendiflorum* has long and narrow inflorescence bracts between the flowers and characteristic long bristle-like hairs on the branchlets, while, at least part of, the inflorescence bracts of *C. pellegrinianum* are much wider and leaflike and bristle-like hairs are absent. Both species often have conspicuous leaves next to the inflorescence in the same colour as the bracts in the inflorescence. The distribution areas of these two species is separated by a gap of more than 800 km (Fig. 4A). *C. mussaendiflorum* was earlier included in *C. falcatum* as *Quisqualis falcata* var. *mussaendiflora* (Engl. & Diels) Liben (1968: 84),

an opinion that was later followed by the present author (Jongkind 1999: 42). The specimens identified and cited for Congo-Kinshasa by Liben as this variety are a mixture of *C. pellegrinianum* and *C. mussaendiflorum* (Liben 1968: 84). Working on the resurrection of *C. pellegrinianum*, it became clear to me that *C. mussaendiflorum* is also a distinct species. Apart from the red coloured inflorescence and the presence of the bristle-like hairs *C. mussaendiflorum* also differs from *C. falcatum* by a longer upper receptacle and a style that is for a larger part free from the receptacle (Table 1).

A species from more to the east in Africa, *C. littoreum* (Engler) Engler & Diels (Wickens 1973; Thulin 1993, both still as *Quisqualis littorea* (Engler) Exell), that was united with *C. falcatum* (Jongkind 1999: 42), is also without doubt distinct. That was already explained to the author some years ago by Quentin Luke, a specialist in the flora of East Africa, and this is even more obvious now we compare *C. littoreum* with *C. falcatum* s.s. (Table 1; Figs 6, 7, 8A). In *C. littoreum* the colour of the inflorescence is more or less the same as in *C. falcatum* but the petals are larger and the free part of the stamens is much longer. *Combretum littoreum* is the only species here that is exclusively found near the east coast of Africa.

The study of herbarium material from these related species did also reveal one specimen that clearly did not match any of them. *Combretum baldwinii* Jongkind, sp. nov. is described here to accommodate this specimen, *Baldwin* 13793, from south-east Nigeria. The new species is close to *C. latialatum* Engl. & Diels, with which it geographically overlaps (Figs 1, 8B), but it is much more hairy and the receptacle and free part of the style are longer (Fig. 2). Regrettably the type specimen lost most of its original colour and there are no field notes describing the colour of the flowers.

TAXONOMY

Family COMBRETACEAE R.Br.
Genus *Combretum* Loebl.

Combretum baldwinii Jongkind, sp. nov.
(Table 1; Figs 1, 2)

Combretum baldwinii Jongkind, sp. nov. resembles *C. latialatum* Engl. ex Engl. & Diels by the receptacle shape and length of the filaments free part, but differs most conspicuously by the petals, receptacle and bracts much more hairy outside and an upper receptacle more glabrous inside, a longer upper receptacle (> 10 mm) and a much longer free part of the style (c. 7 vs 3 mm).

TYPUS. — **Nigeria.** Enugu State, Awgu, 24.XI.1949, fl. *Baldwin* 13793 (holo-, K!; iso-, A[A-01895809]!, WAG[WAG.1477768]!)

DISTRIBUTION AND ECOLOGY. — Only known from the type locality near Awgu in Nigeria. The area was probably mostly forest in the time that the plant was collected and today part of this hilly area is still forest.

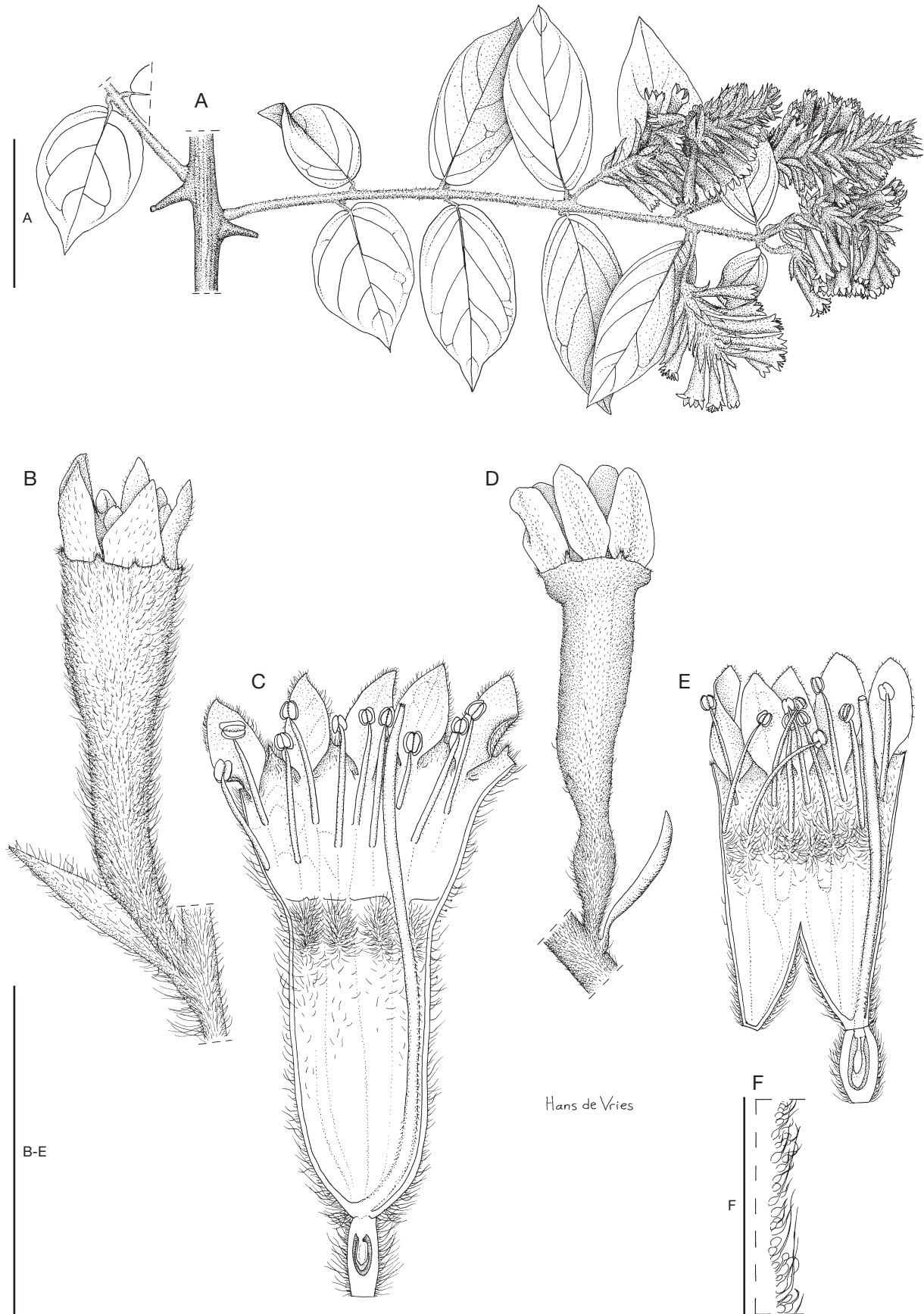


FIG. 2. — **A-C**, *Combretum baldwinii* Jongkind, sp. nov., J.T. Baldwin Jr. 13793 (WAG.1477768): **A**, branch with flowers; **B**, flower; **C**, flower, opened. **D-F**, *Combretum latialatum* Engl. & Diels, M.F. de Carvalho 5584 (WAG.1487413): **D**, flower; **E**, flower, opened; **F**, detail of indumentum on receptacle. Scale bars: **A**, 3 cm; **B-E**, 1 cm; **F**, 1 mm. Illustration by Hans de Vries.

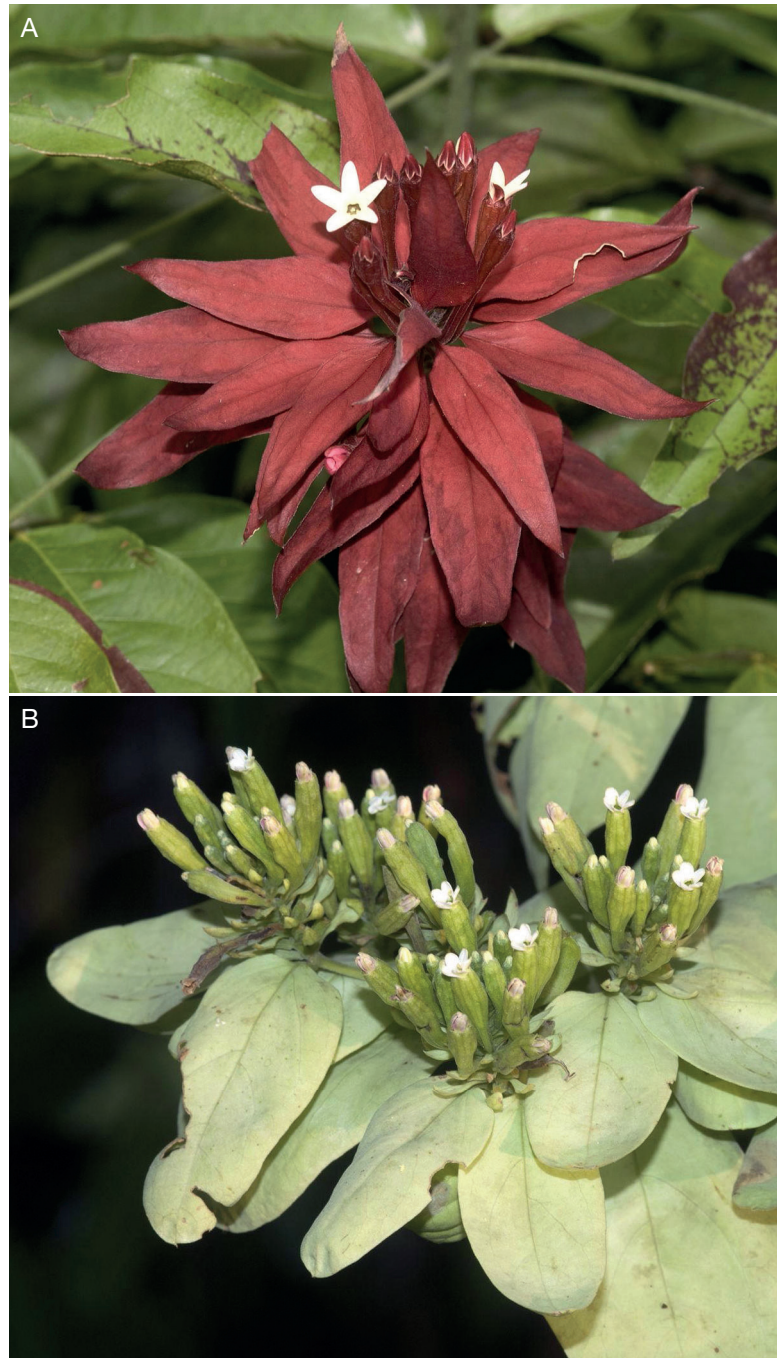


FIG. 3. — **A**, *Combretum pellegrinianum* Exell.; **B**, *Combretum inflatum* Jongkind; **A**, G.M. Walters et al. 1988; **B**, G.M. Walters et al. 2069. Photos: Jean Pierre Vande weghe, 2007.

CONSERVATION STATUS . — With only one specimen known that is collected without field notes more than 70 years ago the data are inadequate to perform an assessment. *C. baldwinii* Jongkind, sp. nov. is classified here as “Data Deficient” [DD] using the IUCN Red List Categories and Criteria (IUCN, 2012). The area where the new species is found is not known as a botanical “hotspot”. It is impossible to tell if this single specimen was the result of a lucky encounter with a widespread but hard to spot large liana or an easy collection of a locally common species in an area that no other botanist did visit in the right time of the year. There are several large *Combretum* forest liana species known from only very few collections with large distances in between.

DESCRIPTION

Liana. Branchlets hairy, soon glabrescent and smooth. Leaves more or less opposite; petiole 2-4 mm long, hairy, sometimes growing into woody climbing hooks; blade elliptic to oblong-elliptic, 3-5 × 2-3.5 cm, with many small erect hairs on both sides, soft to touch, with 3-5 pairs of main lateral nerves; base rounded to slightly cordate; apex acuminate. Inflorescence terminal on short side shoots or axillary, to 5 cm long, peduncle 0.5-2 cm long; bracts 5-7 × 1.5-2 mm, long acuminate, hairy. Flower 5-merous, sessile; lower re

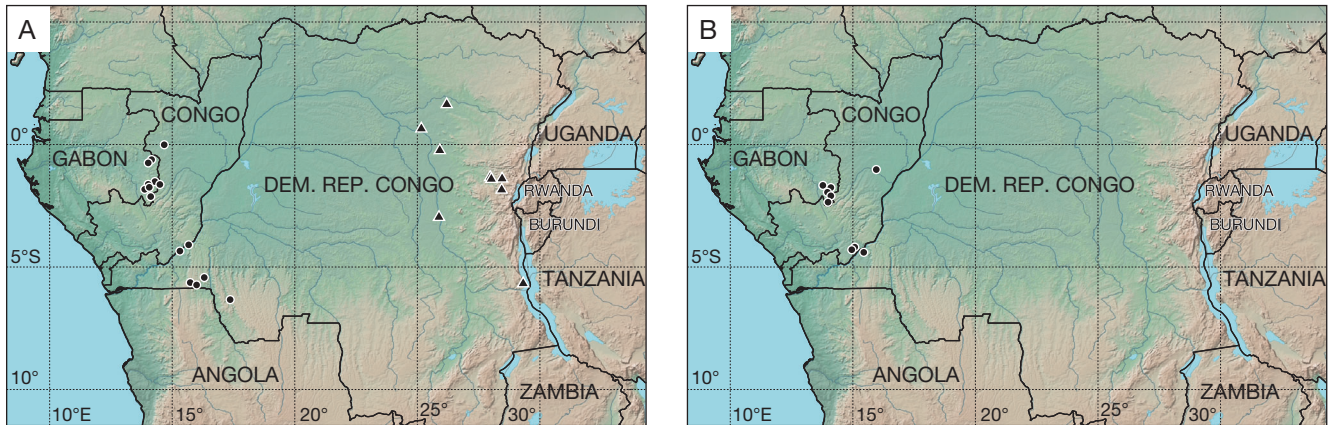


FIG. 4. — **A**, Geographic distribution of *Combretum pellegrinianum* Exell (●) and *Combretum mussaendiflorum* Engl. & Diels (▲); **B**, Geographic distribution of *Combretum inflatum* Jongkind (●).

TABLE 1. — Comparing inflorescence characters of *Combretum falcatum* (Welw. ex Hiern) Jongkind and six related African species. The species included in this table have in common that the upper receptacle is several times as long as wide, the stamens are not or slightly exserted and the style is conspicuously adnate to the upper receptacle for part of its length.

	Inflorescence bracts	Inflorescence bracts and receptacle	Upper receptacle Length	Calyx lobes	Petal	Free part filaments length	Free part style length
<i>C. baldwinii</i> , sp. nov.	5-7 × 1.5-2 mm	?	11-12 mm	0.5 mm long	3.5 × 1.3 mm	3.5 mm	7 mm
<i>C. falcatum</i>	9-20 × 1-2.5(-5) mm	Green-whitish	12-20 mm	1.5-2 mm long, apex attenuate	2.8-4 × 1.5-2 mm	1.5-2.5 mm	5.7-6.5 mm
<i>C. inflatum</i> Jongkind	7-15 × 3-6 mm	Green-whitish	8-14 mm	c. 0.4 mm long	1.5-2.5 × 0.5- 1 mm	0-1.5 mm	9-15 mm
<i>C. latialatum</i> Engl. & Diels	3-10 × 0.5-1.5 mm	Green-whitish	5-9 mm	c. 0.5 mm long	2-4 × 1-1.5 mm	2-3 mm	3 mm
<i>C. littoreum</i> (Engler) Engler & Diels	15-20 × 2-3 mm	Green-whitish	16-25 mm	1-1.5 mm long, apex attenuated	6-9 × 2-3 mm	4-6 mm	10-12 mm
<i>C. mussaendiflorum</i> Engl. & Diels	10-30 × 1-3 mm	Reddish	16-23 mm	c. 1.5 mm long, apex attenuate	2.5-4 × 1.5-2 mm	1-2 mm	7.5-10 mm
<i>C. pellegrinianum</i> Exell	18-40 × 3-13 (+) mm	Reddish	16-20 mm	c. 1 mm long, apex acute	5-6 × 2-2.5 mm	1-1.2 mm	6-6.5 mm

ceptacle c. 1.5 mm high, densely hairy; upper receptacle c. 12 mm high, densely hairy outside, inside with a hairy belt c. 3 mm wide and glabrous above and below this belt; calyx lobes c. 0.5 mm long; petals c. 3.5 × 1.3 mm, glabrous inside, densely appressed hairy outside, apex acute; stamens 2-seriate, inserted inside above the hairy belt, free part of the filaments c. 3.5 mm long, shortly exserted from the receptacle; anthers c. 0.5 mm long; style attached to the wall of the upper receptacle except for the last c. 7 mm, glabrous. Fruit not known.

Combretum pellegrinianum Exell
(Table 1; Figs 3A, 4A)

Journal of Botany 67: 177 (Exell 1929).

TYPUS. — **Congo Brazzaville**. Osika, VI.1883, fl., fr., *Jacques de Brazza* 83 (holo-, BM[BM000902264]!; iso-, P[P00391758, P00391759, P00391760]!).

ADDITIONAL MATERIAL EXAMINED. — **Gabon**. Kessala village, 29.II.2008, fl., *Dessein, Lachenaud, Janssens, Azizet Issembé & Nzabi* 2193 (BR, WAG); Département des Plateaux, Abumi, 9.XI.2012, fl., *Quiroz-Villarreal & Ombama-Obaka* 1902 (WAG); Plateaux Batéké National Park, near Wotogo River, 6 km east of Projet Protection des Gorilles, 6.III.2003, fl., *Walters & Niangadouma* 1255 (MO, WAG); Ekouyi-Mboma village, along Mbiari River, 2.X.2007, fl., *Walters & van de Weghe* 1988 (MO, WAG); Batéké Plateaux, Ebili forest, 23.III.2008, fl., *Walters* 2125 (MO, WAG); east side of Aboumi, 4.II.2008, fl., fr., *Wieringa, Hoekstra, Niangadouma & Boussiengui* 6421 (BR, E, K, LBV, MO, WAG).

Congo Brazzaville. Région d'Etoumbi, à 32 km sur la route de Kellé, 4.VIII.1961, fl., *Descoings* 8797 (P).

Congo Kinshasa. Route Menkao, 5.III.1970, imm.fr., *Breyne* 762 (BR, WAG); village Iye, 28.III.1975, fl., *Breyne* 2351 (BR); Ntau River, IV.1950, fl., *Callens* 2710 (BR); Mawanga, 29.IV.1953, fl., *Callens* 4038 (BR); route vers Maluku, 10.II.1968, fl., *Evrard* 6692 (BR); Bombo-Makuka, 20.V.1959, fl., *Pauwels* 3183 (BR); Wolter, VI.1959, fl., *Pauwels* 3422 (BR); Libulu, Zone de Kasangulu, 21.VII.1996, fl.bud., *Pohl* 96ZRE96 (WAG); Kwango, 1904, fl., *Rouy* 4 (BR).



FIG. 5. — *Combretum mussaendiflorum* Engl. & Diels, note the red leaves around the inflorescence and the bristle like hairs on the brachlets. Photo: Ruud de Block, 10th May 2016, in the large Greenhouse of Botanic Garden Meise.



FIG. 6. — *Combretum falcatum* (Welw. ex Hiern) Jongkind. N. Texier et al. 2254. Photo: Nicolas Texier.

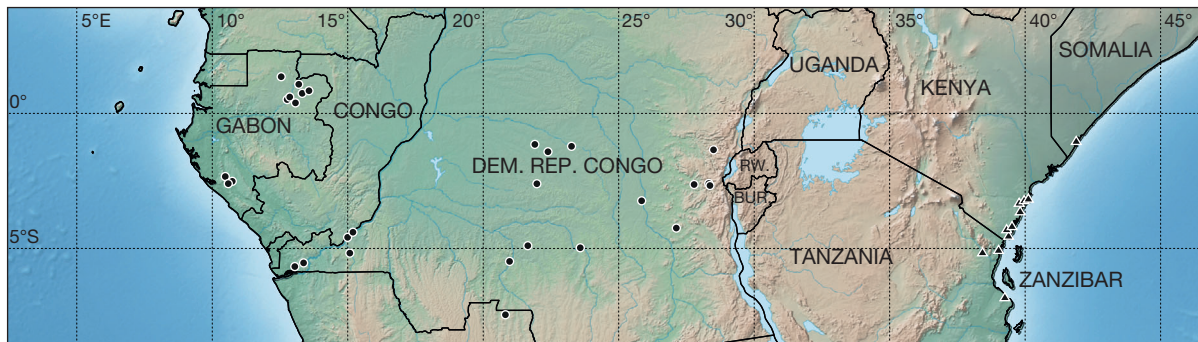


FIG. 7. — Geographic distribution of *Combretum falcatum* (Welw. ex Hiern) Jongkind (●) and *Combretum littoreum* (Engler) Engler & Diels (▲).

DISTRIBUTION AND ECOLOGY. — *Combretum pellegrinianum* is found in between the large closed forest areas of Gabon in the west and Congo Kinshasa in the east, in an area with an often more open vegetation with savanna and gallery forest (Fig. 4A). It differs in ecology from the related *C. mussaendiflorum* that is only found in the (originally) closed forest in the east of Congo Kishasa.

NOTE

Quisqualis pellegriniana Keay (1954: 275), *Talbot* 498 (BM), represents *Griffonia physocarpa* Baill.

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REFERENCES

- ENGLER A. & DIELS L. 1899. — *Monographien afrikanischer Pflanzen Familien und Gattungen* 3, Combretaceae-Combretum. W. Engelmann, Leipzig.
- EXELL A. W. 1929. — New and noteworthy species of *Combretum* from western tropical Africa. *Journal of Botany* 67: 176-179.
- EXELL A. W. 1931. — The genera of the Combretaceae. *Journal of Botany* 69: 118-128.
- IUCN 2012. — *IUCN Red List Categories and Criteria: Version 3.1*. Second edition. IUCN, Gland and Cambridge.
- JONGKIND C. C. H. 1999. — Combretaceae, in MORAT P. (ed.), *Flore du Gabon*. Vol. 35. Muséum national d'Histoire naturelle, Paris, 115 p.
- KEAY R. W. J. 1954. — Combretaceae, in *Flora of West Tropical Africa*. 2nd Edition, Volume 1, part 1. Crown Agents for Oversea Governments and Administrations, London: 264-281.
- LIBEN L. 1968. — Combretaceae, in *Flore du Congo, du Rwanda et du Burundi*. Jardin botanique national de Belgique, 109 p. <https://www.floredafriquecentrale.be/family/F50916>
- THULIN M. 1993. — Combretaceae, in *Flora of Somalia*. Vol. 1. Royal Botanic Gardens, Kew: 247-254.
- WICKENS G. E. 1973. — Combretaceae, in POHLHILL R. M. (ed.), *Flora of East Tropical Africa*. Crown Agents for Oversea Governments and Administrations, London: 99 p.

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FIG. 8. — **A**, *Combretum littoreum* (Engler) Engler & Diels; **B**, *Combretum latialatum* Engl. & Diels, Dessein et al. 1860. Photos: **A**, Quentin Luke, Kenya; **B**, Steven Dessein.