

# Novitates Gabonenses 33. A new species of *Pseudocalyx* (Acanthaceae) from Gabon with a synopsis of all species of this genus

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## KEY WORDS

*Pseudocalyx*,  
Gabon,  
biodiversity.

## ABSTRACT

*Pseudocalyx pasquieri* is described from Gabon and illustrated. A key to the species is given and their distribution, demonstrating once more Gabon's biodiversity, is mapped. All species of *Pseudocalyx* are illustrated.

## MOTS CLÉS

*Pseudocalyx*,  
Gabon,  
biodiversité.

## RÉSUMÉ

*Pseudocalyx pasquieri* du Gabon est décrit et illustré. Une clé des espèces est donnée, ainsi que leur distribution qui démontre une fois de plus la haute biodiversité du Gabon. Toutes les espèces du genre *Pseudocalyx* sont illustrées.

A few years ago a new species of *Pseudocalyx*, *P. libericus*, was published (BRETELER 1994). This publication was accompanied by some notes on the generic delimitation of *Pseudocalyx* and by a key to the five species which were then recognized.

New collections from Gabon have revealed the presence of a new species, *P. pasquieri*, as well as,

for the first time, flowering material of *P. aurantiacus* Benoist, hitherto only known from the type material collected by LE TESTU.

The number of species recognized in the following key remains five because *P. africanus* S. Moore is united with *P. saccatus* Radlk., the type species.

## Key to the species

1. Pedicel up to 5 mm long (Liberia) ..... **P. libericus**  
 1'. Pedicel at least 10 mm long ..... 2  
 2. Corolla 9-15 mm long; anthers ca. 5 mm long (Gabon) ..... **P. macrophyllus**  
 2'. Corolla at least 20 mm long; anthers at least 10 mm long ..... 3  
 3. Flowers drooping at anthesis, axillary or arranged in mostly stout, (sub-)erect inflorescences; pedicel 1-1.5 cm long (Congo Kinshasa, Madagascar, Mozambique, Tanzania, Zambia, Zimbabwe) ..... **P. saccatus**  
 3'. Flowers drooping at anthesis, arranged in long, pendent, aphyllous inflorescences; pedicel (1.5-)2-3.5 cm long (Gabon) ..... 4  
 4. Leaves cuneate at base; flowers solitary (i.e. at most 2 per node); calyx distinctly 5-lobed, 6-8 mm long; stamens inserted 14 mm above base of corolla; style erect and straight in lower part, gently curved in upper part ..... **P. aurantiacus**  
 4'. Leaves obtuse to subcordate at base; flowers more than 2 per node; calyx irregularly lobed to dentate, 1-2 mm high; stamens inserted 8 mm above base of corolla; style sharply bent just above ovary ..... **P. pasquieri**

## Brief treatment of the species

**Pseudocalyx aurantiacus** Benoist

Bull. Soc. Bot. France 85: 678 (1938); Notul. Syst. (Paris) 11: 149 (1944); Heine, Acanthaceae, Flore du Gabon 13: 55 (1966); Breteler, Kew Bull. 49: 810 (1994).—Type: *Le Testu 7790*, Gabon, Nzila, Lastoursville region (holo-, P; iso-, BM, BR, K).—Figs. 1, 6.

SPECIMENS EXAMINED.—GABON: *Breteler & Jongkind 10652*, Bambidie, ca. 30 km E of Lastoursville, fl. buds Nov. (WAG); *F.J. & B.J.M. Breteler 12575*, fl. Dec. (WAG); *Le Testu 7790*, Nzila, Lastoursville region, fl. buds Dec., type (BM, BR, K, P); *Le Testu 7790 bis*, eod. loc. (BR).

NOTES.— The following description of the corolla, the stamens, and the pistil is made from *F.J. & B.J.M. Breteler 12575*, the only specimen with open flowers.

Corolla white, ca. 4 cm. long, sparsely stellate-hairy mainly on both surfaces of the lobes and with simple, subappressed hairs pointing downwards on the upper part of the tube inside; lobes rounded apically, 2 broad ones of 3 × 5-7 mm and 3 narrow ones of 10 × 3 mm; stamens attached 14 mm from the base of the corolla, anthers deeply and narrowly sagittate at base, 10-11 mm long, the thecae long-papillate adaxially, opening by an apical pore, filaments ca. 7 mm long, glabrous; staminode minute, glabrous; disc firm, smooth, glabrous, ca. 1 mm thick; pistil 32 mm

long, glabrous; ovary subellipsoid, laterally compressed, ca. 2.5 mm long; style usually protruding, curved in upper part, shortly 2-lobed apically.

HEINE (1966), contrary to BENOIST and the description given above, described the ovary as densely covered by stellate hairs, but in the illustration accompanying his description a glabrous ovary is depicted.

**Pseudocalyx libericus** Breteler

Kew Bull. 49: 809 (1994).—Type: *van Meer 269*, Liberia, Bomi Hills, Gola-Yoma Nat. Forest (holo-, WAG; iso-, BR).—Figs. 2, 6.

SPECIMENS EXAMINED.—LIBERIA: *Bos 2320*, Bomi Hills, Gola Nat. Forest, fl. Dec. (WAG); *Goll 54*, 9 miles N of Bomi Hills, fl. Nov. (WAG); *van Meer 269*, Bomi Hills, Gola-Yoma Nat. Forest, fl. Dec., type (BR, WAG).

**Pseudocalyx macrophyllus** McPherson & A.M. Louis

Bull. Mus. Natl. Hist. Nat., B, Adansonia 13: 57 (1991); Breteler, Kew Bull. 49: 810 (1994).—Type: *McPherson 13826*, Gabon, Lopé Reserve (holo-, MO; iso-, BR, G, WAG).—Figs. 3, 6.

SPECIMENS EXAMINED.—GABON: *Breteler & Jongkind 10938*, 5-30 km NNW of Ndjolé, fl. Apr. (BR, C, G, K, LBV, MA, MO, NY, P, PRE, WAG); *11063*, fl. Apr. (BR, C, G, IEC, K, LBV, MA, MO, NY; P, PRÉ, W, WAG); *McPherson 13826*, Lopé Reserve, fl. Mar., type (BR, G, WAG).

NOTE.—MCPHERSON & LOUIS noted in the original description that the staminode was absent. In the flowers analyzed for this study the staminode was always present (see Fig. 3M).

**Pseudocalyx pasquieri** Bretelet, *sp. nov.*

*P. aurantiaco* Benoist *affinis*, *foliis basi obtusis vel subcordatis, calyce brevioris irregulariter lobato, staminibus tubo magis basaliter insertis, stylo acute flexo prope basin, differt.*

TYPE.—*F.J. & B.J.M. Bretelet 12202*, Gabon, ca. 35 km E of Lastoursville (holo-, WAG; iso-, BR, K, LBV, MA, MO, P, PRE).

Liana. Branches densely stellate-hairy, glabrescent. Leaves: petiole 1-2.5 cm long, stellate-hairy,

glabrescent; blade subcoriaceous, obovate-elliptic, (6-)12-15(-22) × (2-)5-7(-11) cm, (1-)1.5-3 times as long as wide, obtuse to subcordate at base, shortly and abruptly acuminate at apex, the acumen ca. 5 mm long, with 6-9 main lateral nerves on each side of the midrib, sparsely stellate-hairy, more densely so on midrib especially above, glabrescent. Inflorescence pendent, aphyllous, orange-red (main axis as well as pedicels), densely stellate-hairy (scabrid), with up to 12 flowering nodes, with 3 or more flowers per node, the internodes 3-4.5 cm long in the basal part, decreasing to 2 cm long in apical part; pedicel (2.5-)3-3.5 cm long, hairy as bracteole; bracteoles ovate-elliptic, 20-25 × 12-17 mm, stiffly coriaceous, densely orange-red stellate-hairy outside, sparsely so inside. Calyx rather thin, 1-2 mm

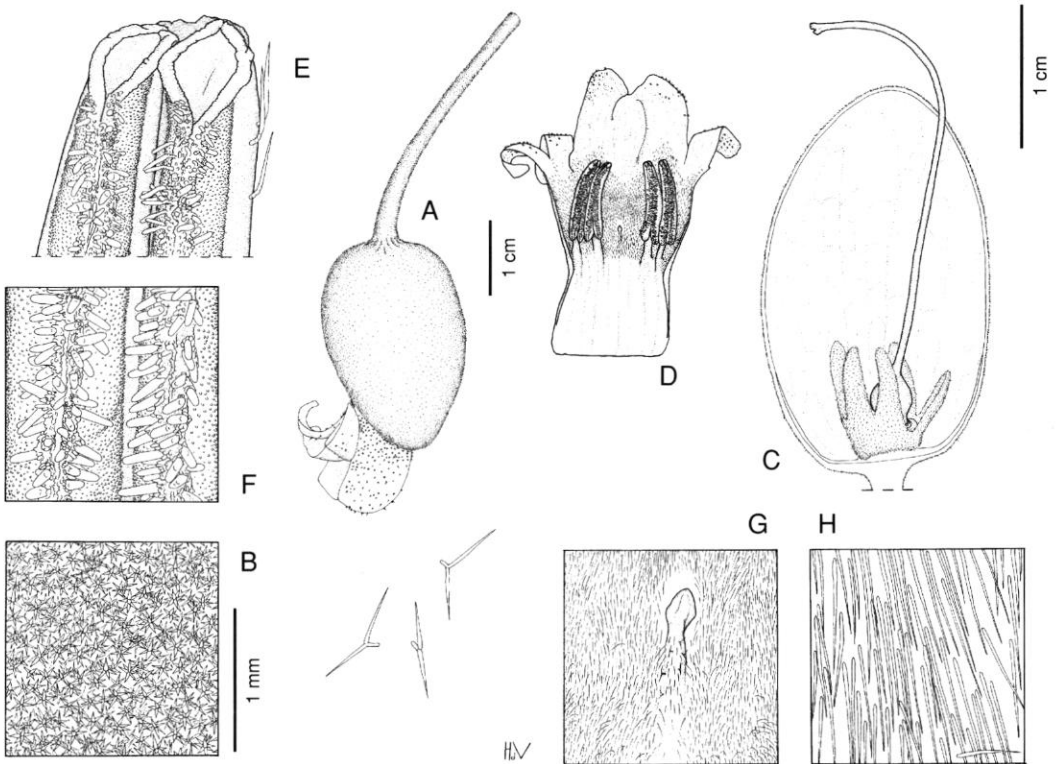


Fig. 1.—*Pseudocalyx aurantiacus*: A, flower; B, detail indumentum of bracteole outside; C, bracteole inside with calyx and pistil; D, corolla inside; E, apical part of anther; F, detail of anther adaxially; G, staminode; H, detail of indumentum of corolla inside; I, detail of hairs on base of staminode. (A-H, *F.J. & B.J.M. Bretelet 12575*). Drawing by H. DE VRIES.

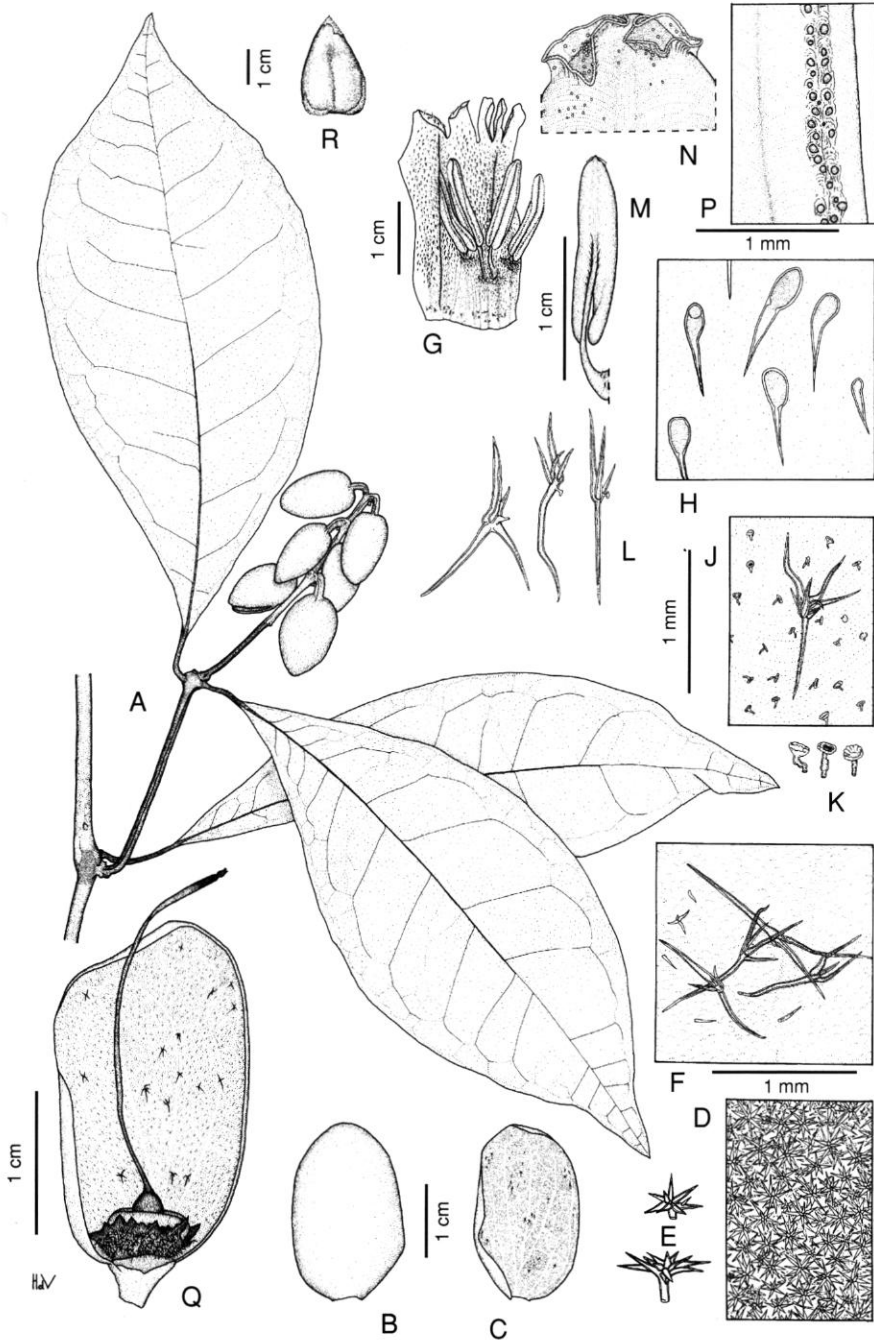


Fig. 2.—*Pseudocalyx libericus*: A, flowering branch; B, C, bracteole both sides; D, detail of bracteole indumentum outside; E, individual hairs detail of D; F, detail of bracteole indumentum inside; G, open corolla; H, detail of corolla hairs inside; J, detail of corolla indumentum outside; K, stalked capitate glandular hairs; L, hairtype of calyx and corolla showing point of attachment; M, stamen outside; N, apex of anthers from inside showing pores; P, detail of anther cell with glandular hairs; Q, pistil with disc and calyx and bracteole; R, fruit with remnants of indumentum. (A-Q, van Meer 269; R, Bos 2320). Drawing by H. DE VRIES.

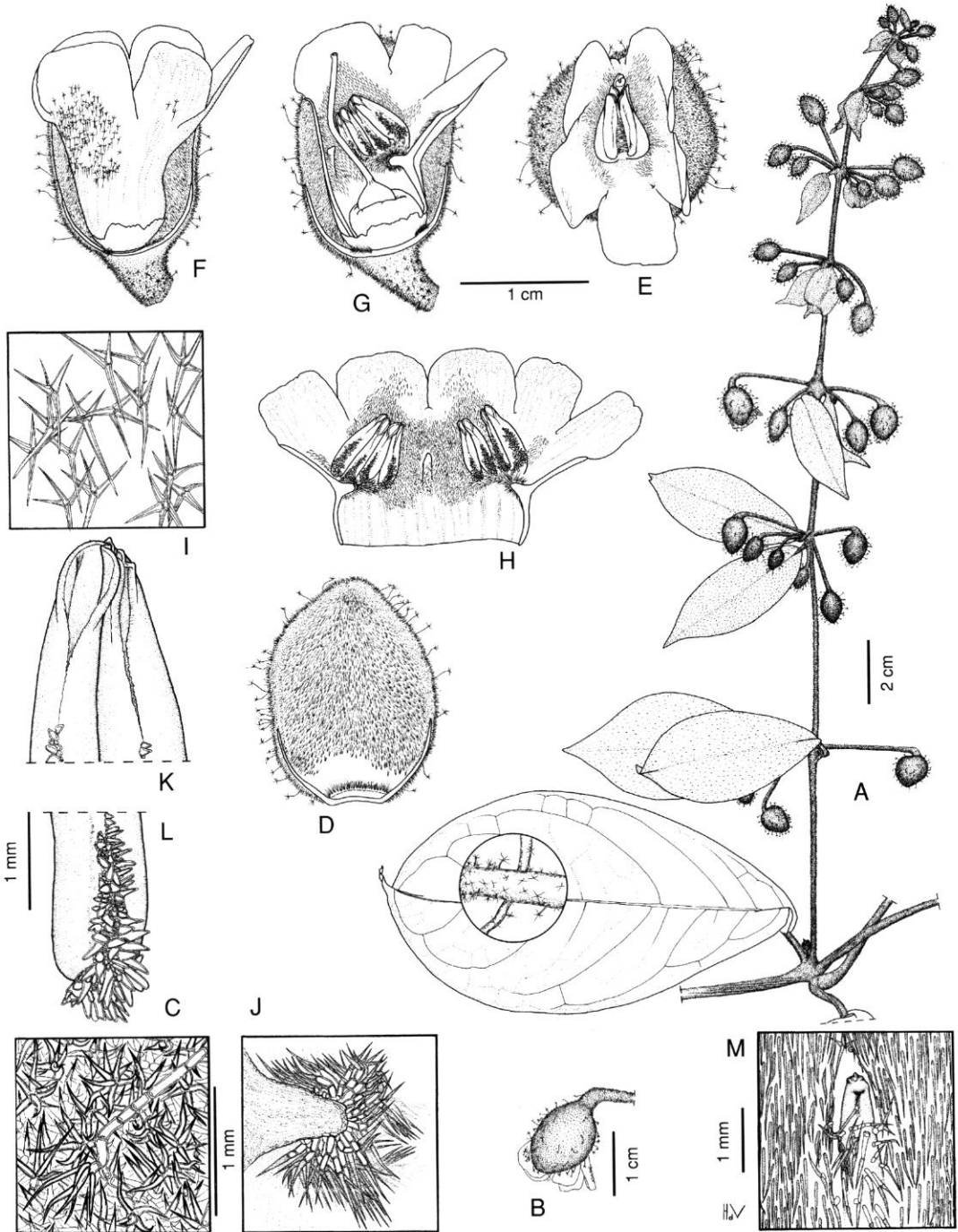


Fig. 3.- *Pseudocalyx macrophyllus*: **A**, flowering branch; **B**, flower; **C**, detail indumentum bracteole outside; **D**, bracteole inside; **E**, flower seen from above; **F**, flower, one bracteole removed; **G**, flower cut lengthwise; **H**, open corolla; **I**, detail indumentum corolla outside; **J**, detail of rim on corolla inside; **K**, apical part of anther; **L**, lower part of anther; **M**, detail of indumentum on corolla inside with staminode. (A-M, *Breteler et Jongkind 10938*). Drawing by H. DE VRIES.

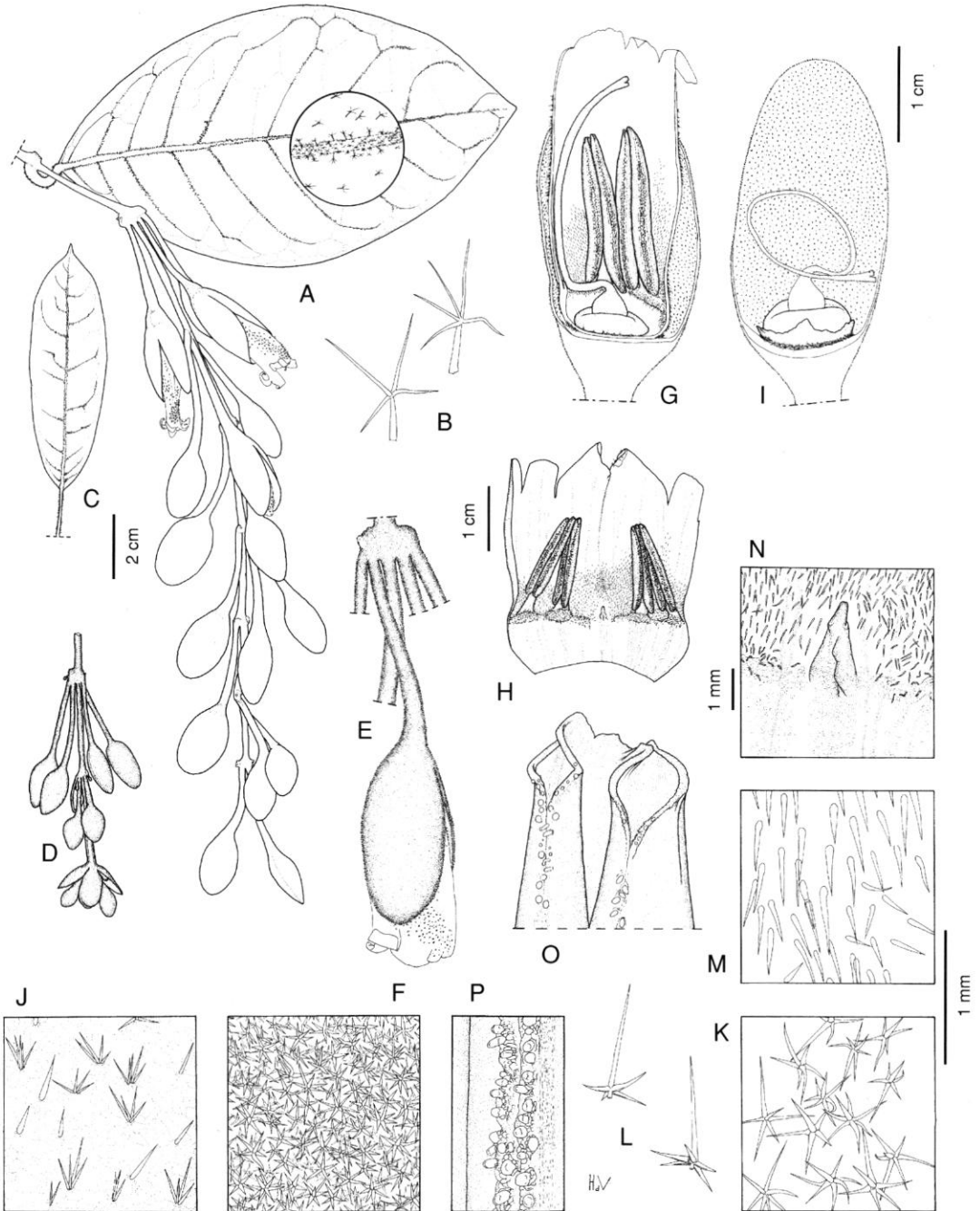


Fig. 4.—*Pseudocalyx pasquieri*: **A**, flowering branch; **B**, stellate hairs of leaf; **C**, small leaf; **D**, apical part of inflorescence; **E**, flower; **F**, detail indumentum bracteole outside; **G**, flower cut lengthwise; **H**, open corolla; **I**, bracteole inside with calyx and pistil; **J**, detail indumentum bracteole inside; **K-L**, detail indumentum of corolla outside; **M**, detail indumentum of corolla inside; **N**, staminate; **O**, apical part of anther; **P**, detail of anther adaxially. (A,B,E, F.J. & B.J.M. Breteler 12195; C-D, Breteler & Jongkind 10832; F-P, F.J. & B.J.M. Breteler 12202). Drawing by H. DE VRIES.

high, irregularly dentate, glabrous. Corolla white, laterally flattened, 3-3.5 cm long, ca. sparsely stellate-hairy outside, ca. glabrous inside except for the rim bearing the stamens and in a zone above this rim with simple hairs; lobes contorted in bud, obtuse to emarginate at apex, ca. rectangular, 4-6 mm long, up to 8 mm wide. Stamens glabrous, inserted on the tube ca. 8 mm above its base; anthers 13-15 mm long, deeply narrowly sagittate, thecae shortly papillate adaxially, dehiscent by an apical pore; filaments firm, 3-8 mm long; staminode minute, glabrous. Disc firm, ca. 2 mm thick, smooth, glabrous, impressed centrally. Pistil glabrous; ovary ca. ovate, laterally compressed, 2-2.5 mm long; style 20-30 mm long, sharply bent just above the ovary, tip protruding or not, two-lobed apically. Fruit unknown.—Figs. 4, 6.

SPECIMENS EXAMINED.—GABON: *Breteler & Jongkind 10832*, ca. 35 km E of Lastoursville, fl. Nov. (WAG); *F.J. & B.J.M. Breteler 12195*, eod. loc. (LBV, P, WAG); *12202*, eod. loc., type (BR, K, LBV, MA, MO, P, PRE, WAG).

NOTES.—*P. pasquieri* has so far been collected only in a small area of tropical rain forest ca. 35 km E of Lastoursville. Flowering is very conspicuous, but this mostly occurs in the crown of medium sized trees and not within a few meters above the forest floor. This may be the reason why this species has not been collected before.

Besides the characters mentioned in the key to the species, *P. pasquieri* may also be distinguished from *P. aurantiacus* by the generally longer and narrower inflorescences which are darker coloured and of which the main axis has the same colour as the pedicels and bracteoles. In *P. aurantiacus* the inflorescence axis is pale brown to grey, in contrast to the orange-red of the pedicels and bracteoles.

This species has been named *P. pasquieri* to honour Mrs. and Mr. PASQUIER for their generous hospitality repeatedly shown at Bambidie, the seat of the Compagnie Équatoriale de Bois (CEB). Mr. PASQUIER always demonstrated a great interest in the botanical exploration of the area East of Lastoursville where his company plays such an important role.

## **Pseudocalyx saccatus** Radlk.,

Abhandl. Naturw. Verein Bremen 8: 417 (1883); Benoist, Not. Syst. 11: 149 (1944); in Humbert, Flore de Madag. et Comores, fam. 182 (1), Acanthacées: 20 (1967); Breteler, Kew Bull. 49: 812 (1994).— Type: *Rutenberg s.n.*, Madagascar, Nossi-be, fl. May (holo-, BREM) n.v., see notes below.—Figs. 5, 6.

*P. africanus* S. Moore, Journ. Linn. Soc., Bot. 40: 156 (1911); Breteler, Kew Bull. 49: 812 (1994).— Type: *Swynnerton 97*, Zimbabwe, Chirinda Forest (holo-, K).

SPECIMENS EXAMINED.—CONGO (Kinshasa): *Bequaert 1863*, Avakubi, fl. Jan. (BR, K); *Bequaert 2933*, Irumu, fl. Apr. (BR); *Bequaert s.n.*, Avakubi, fl. Jan. (BR); *Casier 226*, Muetsi, fl. buds Jan. (BR, WAG); *Casier 460*, fl. buds July (BR, WAG); *Casier 469*, fl. Jan. (BR, P, WAG); *Germain 5304*, Homas Mt., Irumu, fl. buds July (BR); *Lejoly 82/632*, Ubundu, fl. Nov. (BR); *Lisowski 10134*, Luapula R., Kyalwe Falls, fl., fr. Mar. (BR, K); *Malaisse 13833*, Kasenga, fl. Apr. (BR, K, P, WAG); *Mullenders 494*, Kaniamo, fl. Apr. (BR, K); *Vanderyst 22912*, 22923, 23256, 23257, 23258, Merode (BR); *Vanderyst 23371*, 23387, Merode, fl. Apr. (BR).—MADAGASCAR: *Barnett et al. 397*, between Ambaranala and Tsiroanomandidy, fl. Jan. (K, P, WAG); *Baron 4762*, 4770, 4915, 5864, Central Madagascar (K, P); *Baron 5865*, NW Madagascar (K); *Baron 6215*, N Madagascar (K, P); *Boivin s.n.*, Baie de Cassandura, fl. buds (P); *Botoalina 11119*, Ambalona, fl. buds Feb. (P); *Decary 940*, 1569, 1572, 1596, 2227, Maromandia, fl. buds, fl. Mar.-Sep. (P); *Decary 15623*, Besalampy, fr. Sep. (P); *Decary 18988*, Ioala, fl. Apr. (P); *Decary s.n.*, Ankarafantsika, 7<sup>e</sup> Réserve Forestière (K); *Douillot s.n.*, s.loc., fl. buds (P); *Du Puy et al. MB 769*, 16 km W of Marerano, fl. Mar. (K, P); *Gentry 11798*, Maevatanana, fl. juv. fr., May (K); *Gentry 11903*, Diego Suarez, fl. May (K, P); *Humbert 19051*, collines de l'Ankarana, fl. Dec.-Jan. (P); *Humbert & Capuron 25886*, Ambilobe, fl. buds Mar. (P); *Leandri 942*, 1080, Tsingy du Bemaraha, fl. buds (P); *Leandri, Capuron & Razafindrakoto 2013*, Tsiandro, fl. buds Dec. (P); *Leandri & Capuron 2347*, Tsiandro, fl. Jan. (P, WAG) *Leandri & Saboureau 2820*, Antsingy, fl. buds Jan. (K, WAG); *J. & M. Peltier 5217*, Tsaramandroso, fl. buds Mar. (K,P); *Perrier de la Bâthie 586*, Firingalava, fl. Apr. (P); *Perrier de la Bâthie 5925*, Kinkony, fl. buds June (P, WAG); *Poisson 133*, Sakaramy plateau, fl. buds May (P); *Réserves Naturelles 5126-RN, Rakotovao*, Soalala, fl. buds Mar. (K, P); *Réserves Naturelles 1858-RN, Ramamorysara*, Beronono, fl. buds Feb. (P); *Réserves Naturelles 5140-RN, Ramamorysara*, R.N. 7, fl. Mar. (K, P); *Schatz et al. 2722*, Antsiranana, fl. May (K, P).—MOZAMBIQUE: *Munch 133*, Garuso Mts., fl. Aug. (K).—TANZANIA: *Gillett 17989*, Rondo, fl. Nov.

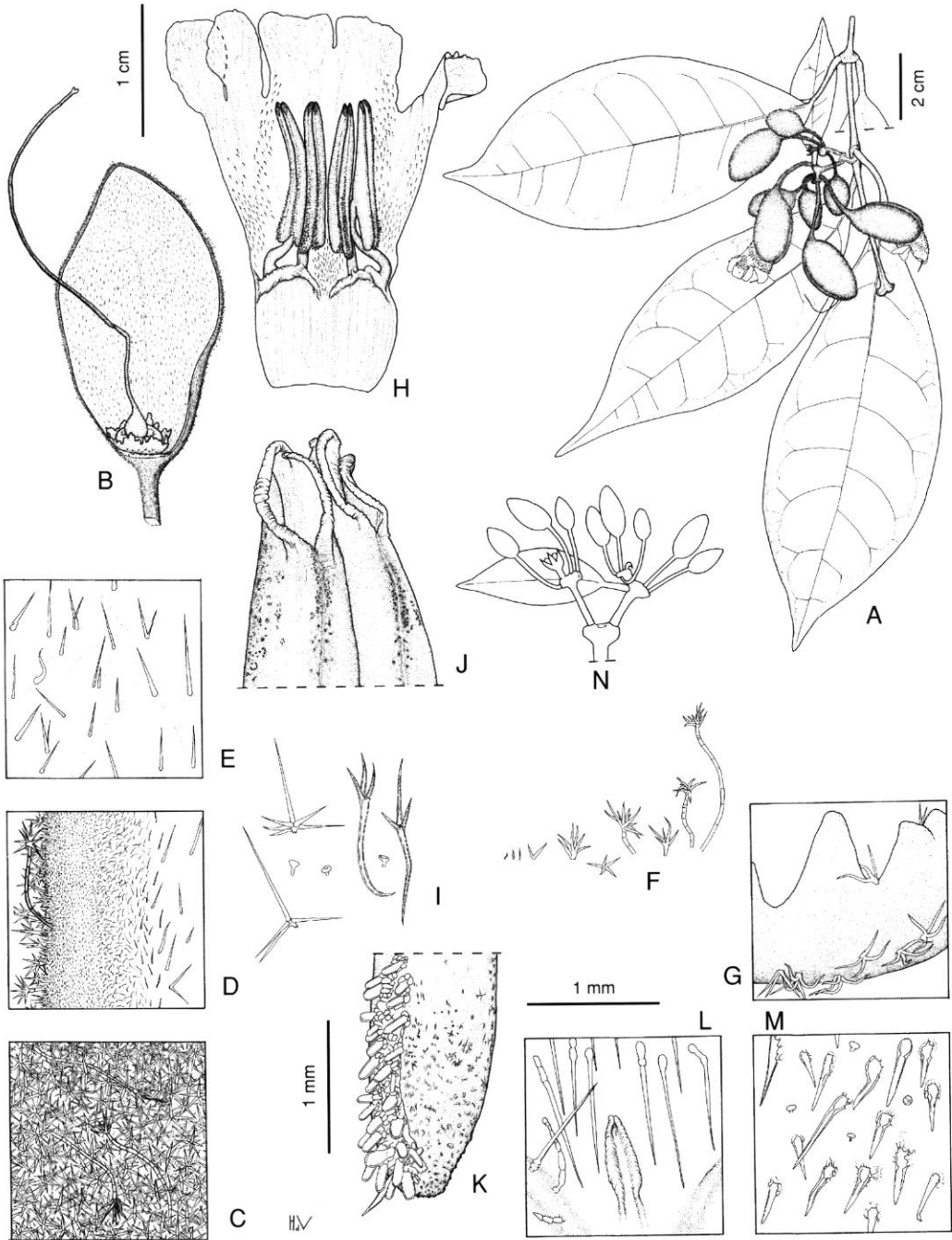


Fig. 5.—*Pseudocalyx saccatus*: A, flowering branch; B, bracteole inside showing calyx and pistil; C, detail indumentum of bracteole outside; D, detail of bracteole margin; E, detail indumentum bracteole inside; F, hairs of bracteole; G, detail of calyx; H, corolla inside; I, hairs of corolla outside; J, apical part of anther; K, basal part of anther; L, staminode; M, detail indumentum of corolla inside; N, inflorescence schematically. (A-N. Casier 226). Drawing by H. DE VRIES.



(K); *Mponda* 12692, Rondo, fl. Nov. (K); *Schlieben* 5490, Muera Plateau, fl. buds Oct. (BR, G, P); *Semsei* 722, Rondo, fl. buds Mar. (K).—ZAMBIA: *Chisumpa* 626, Kasama, fl. buds Mar. (K); *Fanshawe* 2386, Samfya, fl. buds July (K); *Fanshawe* 4814, Wantipa, fr. Sep. (K); *Michelmores* 352, Lake Meru, Chiengwe Distr., fr. juv. May (K); *Pope & Goyder* 2105, Chinsali, fl. Apr. (BR, K); *Richards* 9008, Wantipa, fl. Apr. (BR, K); *Richards* 15291, Abercorn, fl. June (K); *Richards* 21360, Lunzua, fl. buds Mar. (K); *Versey-Fitzgerald* 4281, Lunzuwa R., fl. June (BR, K, WAG).—ZIMBABWE: *Hack* 25172, Chirinda Forest, fl. buds Aug. (K); *Goldsmith* 38/61, Chirinda Forest, Melsetter, fl. buds June (K); *Muller & Pope* 3752, Rusitu R., fl. July (BR); *Swynnerton* 97, Chirinda Forest, fl. May, type of *P. africanus* (K).

NOTES.—I have not been able to distinguish between *P. saccatus*, the type species from Madagascar and *P. africanus* from the mainland of Africa. I have therefore followed BENOIST (1967) who united these two species. The distin-

guishing characters used earlier (BRETELIER 1994), pertaining to the size of the calyx and the length of the corolla did not resist an analysis of a wider range of material. The *P. africanus* material studied originates from a rather wide variation of habitats, ranging from tropical rain forest to savannas and from altitudes of 500 m or less up to ca. 1400 m.

The calyx of *P. saccatus* may be absent or very small in some Madagascar material, but in other specimens from Madagascar it is quite distinct. On the mainland the calyx is always distinct, but very variable in appearance, from distinctly shortly 5-lobed to irregularly dentate, from glabrous or nearly so to densely stellate-hairy. Although the corolla is generally longer in Madagascar specimens than in those of the former *P. africanus*, there is, however, too much overlap to maintain it as a distinguishing character. The ovary is always hairy in material from

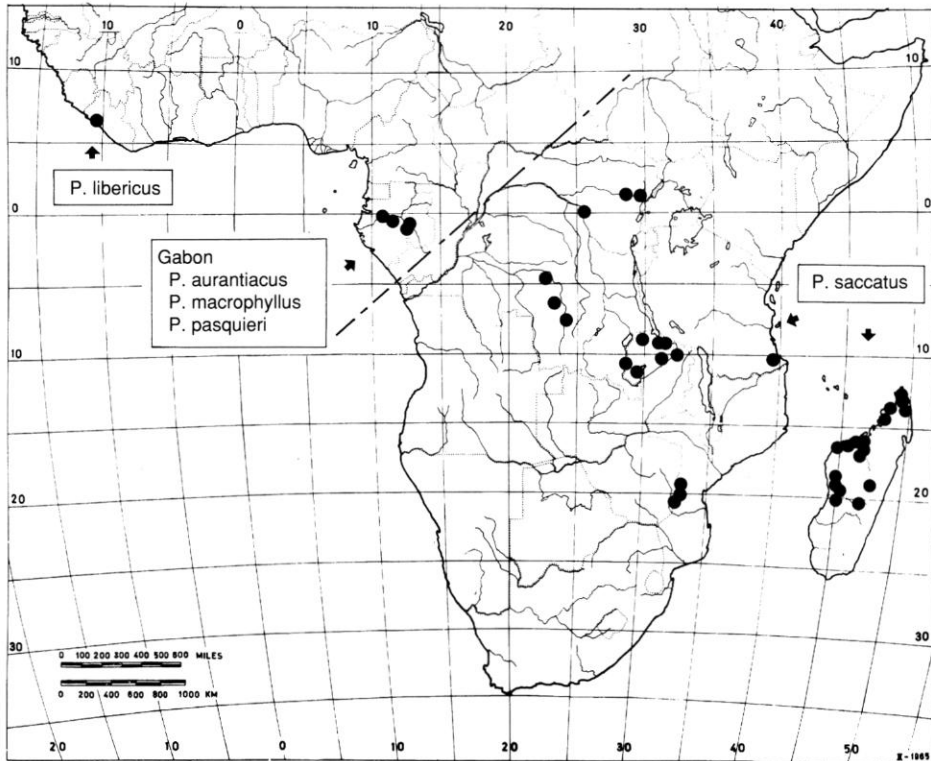


Fig. 6.—Distribution of the five species of *Pseudocalyx*.

Madagascar, but on the continent is usually glabrous (e.g. hairy in *Malaisse 13833* and in *Schlieben 5490*). The flowers of *Bequaert 1833* have glabrous ovaries, but the same specimen bears fruits which are densely hairy. Apparently this fruit indumentum develops during fructification, at least in some specimens from Africa's mainland.

The original material of *P. saccatus* was, according to RADLKOFER, already quite fragmentary when he described this species. A request at the Bremen herbarium to have it on loan was not successful. It is not known whether it may have been lost at BREM during World War II or may have been "safeguarded" by CSR (see Index Herbariorum, ed. 8: 135, 1990).

#### Note on the geography of *Pseudocalyx*

The species of *Pseudocalyx* are remarkably distributed, as is shown in Fig. 6. One of them, *P. saccatus*, is widely spread, occurring in Madagascar as well as in a large area on Africa's mainland. The other 4 species are narrow en-

demics. *Pseudocalyx libericus* is known from a small area in Liberia, in Upper Guinea, while the 3 remaining species occupy a restricted area in Lower Guinea, in Central Gabon. Such a high concentration of species of a small African genus of the Acanthaceae in Gabon, illustrates once more the importance of Gabon's tropical forests in terms of botanical biodiversity. The low number of collections of these 3 Gabonese species, with an average of 3 collections per species, indicates that further exploration of the botanical wealth of this country is still very much needed.

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