

# ***Cassipourea atanganæ* sp. nov., a new species of Rhizophoraceae from Lower Guinea**

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## **ABSTRACT**

A new species of *Cassipourea* is described from the banks of the Mana River, in the southeastern boundary of the Korup National Park in Cameroon and placed provisionally within the subgenus *Cassipourea*. The leaves of the new species are close to those of *C. afzelii*, but its flowers differ from those of the latter and the rest of the species of the subgenus *Cassipourea* in having a glabrous ovary and a diplostemonous androceum, with filaments distinctly of two lengths. The illustration of the new species is provided and based on its narrow distribution, the provisional conservation status Vulnerable VU D1 is assigned.

## **RÉSUMÉ**

*Cassipourea atanganæ* sp. nov., une espèce nouvelle de Rhizophoraceae de Basse Guinée.

Une nouvelle espèce de *Cassipourea* est décrite des rives de la rivière Mana, à la limite sud-est du parc national de Korup au Cameroun, et placée dans le sous-genre *Cassipourea*. Les feuilles de la nouvelle espèce ressemblent à celle de *C. afzelii*, cependant ses fleurs diffèrent de celles de cette dernière et de celles du reste des espèces du sous-genre *Cassipourea* par leur ovaire glabre et leur androcée diplostémone à filets clairement de deux longueurs. La nouvelle espèce est illustrée et, sur la base de son aire de distribution étroite, le statut de conservation vulnérable (VU D1) lui est attribué.

## **KEYWORDS**

Rhizophoraceae,  
*Cassipourea*,  
Cameroun,  
Korup National Park,  
new species.

## **MOTS CLÉS**

Rhizophoraceae,  
*Cassipourea*,  
Cameroun,  
parc national de Korup,  
espèce nouvelle.

## INTRODUCTION

*Cassipourea* Aubl. comprises between 40 (Mabberley 2008) and 62 (Alston 1925) species of shrubs and trees widespread in tropical America, Africa, the Mascarene Islands and Sri Lanka. In the most comprehensive revision of the genus, Alston (1925) recognized four subgenera, *Cassipourea*, *Dactylopetalum* (Benth.) Alston, *Lasiosepalum* Alston and *Weiha* (Spreng.) Alston, based on several characters, including the degree of the indentation and the indumentum of the calyx, the length of the pedicel compared to that of the flower bud, whether the petals are fimbriate or lacerate, the number of stamens, the indumentum on the thecae, and the number of carpels. Floret (1988) confirmed the taxonomic value of these subgenera and described three additional subgenera, *Dinklageiweihea* (Engl.) Floret, *Zenkerowiheihea* (Engl.) Floret and *Pumilowiheihea* Floret, to accommodate two species from Cameroon that deviated from Alston's classification and a newly described species from Gabon, raising the total number of subgenera in the genus *Cassipourea* to seven. Breteler (2008), in a taxonomic study of the *Cassipourea* of continental tropical Africa, reviewed the subgeneric classification, maintaining the seven subgenera recognized by Floret and providing a new and more simplified key to their identification.

Following the description of *Cassipourea korupensis* Kenfack & Sainge (Kenfack *et al.* 2006) from the Korup National Park in southwestern Cameroon, and in the course of compiling the checklist of vascular plants of the park (Kenfack *et al.* unpubl. data), I came across specimens collected from the area that had been identified as belonging to the West African species *C. afzelii*. These specimens presented a suite set of characters that suggested they belonged to subgenus *Cassipourea* based on the keys of Floret (1988) and Breteler (2008). However, unlike the species currently assigned to this subgenus, the material from Korup has a diplostemonous androecium typical of subgenus *Dactylopetalum* and glabrous ovary. The combination of these characters is unique within the subgenus and allows recognising these specimens as belonging to a new species.

The new species is described and illustrated here, its conservation status is evaluated and its placement within *Cassipourea* subgenus *Dactylopetalum* is discussed.

## SYSTEMATICS

*Cassipourea atangananae* Kenfack, sp. nov.  
(Fig. 1)

*Haec species quoad folia ad Cassipouream afzelii* (Oliv.) Alston accedit, sed ab ea androecio diplostemono, filamentorum longitudinibus duabus atque ovario glabro recedit.

**TYPUS.** — **Cameroon.** Southwest Province, Korup National Park, 50 m, *Thomas 2158* (holo-, YA; iso-, K, MO).

**PARATYPES.** — **Cameroon.** Korup National Park, 50 m, *M.N. Sainge, Ekpe K. & Iuke 470* (fl) (MO, YA); 05°02'N, 8°50'E, 60 m, *D. Thomas 6860* (fl) (MO); 05°02'N, 8°51'E, 80 m, *C. Doumenge 401* (fl) (MO).

## DESCRIPTION

A shrub to 2.5 m tall. Young twigs appressed-pubescent to glabrescent. Stipules caducous, narrowly triangular, densely appressed-pubescent to glabrescent outside, glabrous within, 2-3 mm long, 0.8-1.5 mm at base. Leaves opposite; petiole (3-)5-10 mm long, sparsely appressed-pubescent in young leaves; lamina 5-11 cm long, 1.5-3.5 cm wide, elliptic to oblong-elliptic, glabrous on both sides, base cuneate, margins entire, apex acuminate; midrib prominent on abaxial surface, sparsely appressed-pubescent to glabrous; secondary veins 4-8 pairs on each side of the midrib, brochidodromous, prominent on both surfaces. Flowers 5(6)-merous, in 1 to 3-flowered sessile inflorescences; bract ovate, less than 0.5 mm long, c. 1 mm wide, tomentose outside, glabrescent inside; pedicel green, puberulous or glabrescent, 1.5-2.8 mm long, with an articulation less than 1 mm below the apex; calyx campanulate, glabrous outside, densely tomentose inside, 3-4 mm high, about 2 mm diameter, 5- or 6-toothed, tooth acute to triangular, about 1.3 mm long, always shorter than the tube, tube 1.7-2.5 mm.



FIG. 1. — *Cassipourea atanganæ* Kenfack, sp. nov.: **A**, fruiting branch; **B**, dorsal view of stamens in bud; **C**, lateral view of stamens in bud; **D**, stamens in developing bud; **E**, opened flower; **F**, dorsal view of petal; **G**, androecium and pistil; **H**, fruit with persistent calyx, petals and stamens; **I**, fruit with all floral parts removed; **J**, seed; **K**, cotyledons. **A**, *Thomas 2158*; **B-K**, *Saingé 470 et al.* Scale bars: A, 9 mm; B-D, F, G, K, 2 mm; E, H-J, 5 mm. Drawing Alba Alvarez.

Petals 5 or 6, linear-spathulate, fimbriate, ciliate. Stamens 10 or 12, in two whorls of unequal filament length, outer whorl opposite the sepals, the filaments 3.5-5.5 mm long; inner whorl opposite the petals, the filaments 5-7.5 mm long, the base of both whorls united into a lobed ring; anthers oblong, glabrous, 1 mm long, 0.5-0.7 mm wide, longitudinally dehiscent. Ovary 3-locular, subglobose, less than 1 mm long, 1-1.3 mm diameter, glabrous; style 4-5.5 mm long, densely pubescent. Fruit elliptic to obovoid, 5-7 mm long, 2.3-5 mm diameter, glabrous, the petals and stamens persistent; seeds generally 2, obovoid, 3-3.5 mm long, 1-1.5 mm diameter, arillate.

#### HABITAT AND DISTRIBUTION

Open rocky places on Mana river bed and banks, in Southwest Cameroon.

#### ETYMOLOGY

This species is dedicated to Dr. Atanga Ekobo of WWF-Cameroon, for his dedication to the conservation of the coastal forests of Cameroon.

#### CONSERVATION STATUS

The new species described here appears to be restricted to the banks of the Mana River in Southwest Cameroon, which constitutes the southeastern boundary of the Korup National Park. Although several botanical surveys have been conducted in the park and in other parts of Southwest Cameroon over the years, only a few collections have been made of *Cassipourea atanganae* sp. nov., which presumably is an indication of its rarity. Using the IUCN Red List categories and criteria version 3.1 (IUCN 2001), a provisional conservation status of Vulnerable VU D1 is proposed for this species.

#### KEY TO AFRICAN SPECIES OF *CASSIPOUREA* SUBGENUS *CASSIPOUREA*

1. Calyx up to 6 mm long, flowers sessile, stamens *c.* 30, anthers apiculate, ovary 2-locular ..... *C. plumosa* Alston
- Calyx less than 6 mm long, flowers pedicellate to sub-sessile, stamens 10 or 15, anthers not apiculate, ovary 3-locular ..... 2
2. Ovary glabrous, stamens 10 ..... *C. atanganae* Kenfack, sp. nov.
- Ovary pubescent, stamens 15 ..... 3
3. Leaves 9-13.5 cm long, pedicel to 2.5 mm long ..... *C. afzelii* Alston
- Leaves less than 9 cm long, pedicel to 1.5 mm long ..... *C. eketensis* Baker

#### DISCUSSION AND CONCLUSION

*Cassipourea* is morphologically highly diversified in Africa, especially within the coastal forest belt that extends from Nigeria to the mouth of the Congo River, often referred to as the Lower Guinea center of endemism (White 1979). All seven subgenera of *Cassipourea* have representatives in this area. Three of the seven subgenera (*Dimklageiweihea*, *Zenkeroweihea* and *Pumiloweihea*) are endemic to the Lower Guinea forest. The African subgenus *Lasiosepalum* has six species, four of which are endemic to this area.

The Lower Guinea forest is also home to unusual morphological features in the genus *Cassipourea* as a whole or within subgenera. *Cassipourea alternifolia* Breteler, described from Cameroon and placed within

subgenus *Weihea*, differs from all other members of the genus in having alternate leaves and stamens with filaments united into bundles of 3 to 6 each (Breteler 2007). Only three species of *Cassipourea* have verticillate leaves, all of which are African, with two restricted to northern Angola and the third widespread in Africa. Verticillate leaves are also found in the South American genus *Sterigmatopetalum*.

*Cassipourea atanganae* sp. nov. provides another example of unusual species from the Lower Guinea forest. Unlike many other members of the genus, all floral parts persist in mature fruits, including the petals. Although *C. atanganae* sp. nov. is placed here in subgenus *Cassipourea*, its androecium differs from the other species assigned to the group in having stamens in two rows, a character that is otherwise typical

of taxa placed in subgenus *Dactylopetalum* (Floret 1988). The androecium of *C. atangananae* sp. nov. is also atypical within the genus in comprising stamens whose filaments are of two lengths, a character state previously known only in *Sterigmapetalum*.

Over 75% of *Cassipourea* species occur in Africa, most of them in the Lower Guinea forest, suggesting that this area may correspond in part or in whole to the center of diversification of the genus. A molecular phylogeny of Rhizophoraceae (Schwarzbach & Ricklefs 2000) places *Sterigmapetalum* as sister to a clade comprising *Cassipourea* and the Malagasy genus *Macarisia*, although sampling from Africa was limited. This hypothesis of relationships suggests that the presence of verticillate leaves and a diplostemonous androecium may be a synapomorphy for this clade and thus plesiomorphic within *Cassipourea*. Alston (1925) mentioned that "Africa appears to have been the home of the genus, the American species being closely allied to some of the west coast of Africa, and the Asiatic species to those of East Africa". An expanded molecular analysis that includes all representatives of the seven subgenera of *Cassipourea* would be valuable to test this idea further and to assess whether Central Africa is part of centre of diversification for the genus. With adequate sampling, it would also be possible to assess whether the subgenera currently recognized in *Cassipourea* represent monophyletic groups.

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