

## **Keetia namoyae (Rubiaceae, Vanguerieae), a new species from eastern Democratic Republic of Congo**

Authors: Lachenaud, Olivier, Luke, Quentin, and Bytebier, Benny

Source: Candollea, 72(1) : 23-26

Published By: The Conservatory and Botanical Garden of the City of Geneva (CJBG)

URL: <https://doi.org/10.15553/c2017v721a2>

---

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](http://www.bioone.org/terms-of-use).

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

# Keetia namoyae (Rubiaceae, Vanguerieae), a new species from eastern Democratic Republic of Congo

Olivier Lachenaud, Quentin Luke & Benny Bytebier

## Abstract

LACHENAUD, O., Q. LUKE & B. BYTEBIER (2017). *Keetia namoyae* (Rubiaceae, Vanguerieae), a new species from eastern Democratic Republic of Congo. *Candollea* 72: 23-26. In English, English and French abstracts. DOI: <http://dx.doi.org/10.15553/c2017v721a2>

A new species of *Rubiaceae* from the Democratic Republic of Congo, *Keetia namoyae* O. Lachenaud & Q. Luke, is described and illustrated. The species resembles *Keetia tenuiflora* (Hiern) Bridson and *Keetia mannii* (Hiern) Bridson, but differs from both in having alternate (not opposite) flowering twigs with stiff appressed hairs, few-flowered inflorescences, a longer corolla tube, and larger fruits. The species is only known from the type locality in Maniema Province, and is assessed to be “Critically Endangered” according to IUCN Red List Categories and Criteria.

## Résumé

LACHENAUD, O., Q. LUKE & B. BYTEBIER (2017). *Keetia namoyae* (Rubiaceae, Vanguerieae), une nouvelle espèce de l'Est de la République Démocratique du Congo. *Candollea* 72: 23-26. En anglais, résumés anglais et français. DOI: <http://dx.doi.org/10.15553/c2017v721a2>

Une nouvelle espèce de *Rubiaceae* de la République Démocratique du Congo, *Keetia namoyae* O. Lachenaud & Q. Luke, est décrite et illustrée. Elle ressemble à *Keetia tenuiflora* (Hiern) Bridson et *Keetia mannii* (Hiern) Bridson, mais diffère de ces deux espèces par ses rameaux florifères alternes (et non opposés) à poils raides fortement apprimés, ses inflorescences pauciflores, sa corolle à tube plus long, et ses fruits plus gros. L'espèce est uniquement connue de la localité type dans la province du Maniema. Elle est évaluée comme «En Danger Critique d'Extinction» d'après les Catégories et Critères de la Liste Rouge de l'IUCN.

## Keywords

RUBIACEAE – Vanguerieae – *Keetia* – Democratic Republic of Congo – Maniema Province – Taxonomy – New species

---

Addresses of the authors:

OL: Botanic Garden Meise, Domein van Bouchout, 1860 Meise, Belgium; Herbarium et Bibliothèque de Botanique africaine, C.P. 169, Université Libre de Bruxelles, Avenue F. Roosevelt 50, 1050 Bruxelles, Belgium. E-mail: [olivier.lachenaud@botanicgardenmeise.be](mailto:olivier.lachenaud@botanicgardenmeise.be)

QL: East African Herbarium, National Museums of Kenya, P.O. Box 40658, Nairobi. 00100, Kenya.

BB: Bews Herbarium, School of Life Sciences, University of KwaZulu-Natal, Pr. Bag X01, 3209 Scottsville, South Africa.

Submitted on January 12, 2017. Accepted on February 7, 2017.

First published online on February 22, 2017.

ISSN: 0373-2967 – Online ISSN: 2235-3658 – *Candollea* 72(1): 23-26 (2017)

© CONSERVATOIRE ET JARDIN BOTANIKES DE GENÈVE 2017

## Introduction

The genus *Keetia* E.P. Phillips (*Rubiaceae*, *Vanguerieae*) was for a long time included in *Canthium* Lam., before BRIDSON (1986) resurrected it for a group of African species. *Keetia* currently includes 32 species, occurring in most of sub-Saharan Africa, except in arid regions. The East African species have been revised by BRIDSON (1986, 1991) but no recent taxonomic revision exists for West and Central Africa. As a result, the genus is taxonomically poorly known, and the number of species certainly underestimated. *Keetia* has some potential interest as a source of medicinal compounds. Recent studies on *K. leucantha* (K. Krause) Bridson, which is used in traditional medicine in Benin, found significant antiparasitic, antitrypanosomal and antileishmanial activity of leaf and twig extracts in *in vitro* conditions (BERO et al., 2009, 2011). Most of the other *Keetia* species have not yet been tested pharmacologically, and it would be highly interesting to know if they show similar properties.

In 2008, two of us (BB and QL) collected a *Rubiaceae* specimen in Maniema Province, Democratic Republic of Congo, which the first author identified as a new species. This collection clearly belongs to the tribe *Vanguerieae*, due to the inflorescences in paired axillary cymes, exerted anthers, exerted style with a conspicuously hooded stigma, and indehiscent fruits with 1-seeded locules. Within this group, it shows all the characters typical of *Keetia* (BRIDSON 1986): sarmentose habit, stipules interpetiolar and caducous, stigma longer than broad, anthers erect and subsessile in the corolla throat, and 2-locular fruits; only the presence of a lid-like area at the apex of the pyrenes, considered typical of the genus, could not be verified, because the fruits are too few for a dissection to be made.

Despite a thorough search among unidentified specimens of *Keetia* and related genera in BR (where most herbarium collections from D.R. Congo are deposited), BRLU, K, P and WAG, no similar collections were found. It thus appears that the species is very rare, and presumably a local endemic. It is here described as *Keetia namoyae* O. Lachenaud & Q. Luke, and its affinities and conservation status are discussed.

## Taxonomy

*Keetia namoyae* O. Lachenaud & Q. Luke, **spec. nova** (Fig. 1).

**Typus** : DEMOCRATIC REPUBLIC OF CONGO. **Prov. Maniema** : Namoya, Mwendamboko Hill, 4°00'05"S 27°32'94"E, 12.IV.2008, fl. & fr., Bytebier & Luke 2796 (holo-: BR [BR000000524731]!; iso-: EA!).

*Foliis glabrescentibus et coriaceis venulis tertiariis inconspicuis K. tenuiflorae* (Hiern) Bridson et *K. mannii* (Hiern) Bridson *similis*, sed ab ambabus speciebus conspicue differt ramis floriferis alternis (nec oppositis) cum indumento sparso et valde

*appresso, inflorescentiis paucifloris, floribus majoribus corollae tubo c. 4 mm longo (nec c. 2 mm) fructibusque majoribus c. 20 × 20 mm apice paullo emarginatis.*

*Scandent shrub* to 2 m high, with branches alternate and directed backwards, subtended by normal (not modified) leaves. *Twigs* rather sparsely covered with very stiffly appressed hairs, which persist for a long time on the woody, medium brown bark. *Stipules* c. 2 mm long, shortly triangular with apex laterally compressed, with same indumentum as twigs, very soon caducous. *Leaves* with petiole 4–7 mm long, stiffly appressed-pubescent; blade elliptic, acute at base, acuminate at tip, 4–9 × 2.2–4 cm, very coriaceous, glabrous above, sparsely appressed-pubescent on midrib beneath, drying dull brownish-green with underside paler; lateral nerves 4–6, not strongly prominent; tertiary veins invisible or almost so; small tuft-domatia present in axils of lateral nerves along midrib. *Inflorescences* cymose, 10–15-flowered, c. 1.5 cm long including c. 0.5 cm long peduncle, shortly branched, sparsely pubescent. *Bracts* small, c. 1.5 mm, triangular and acute at apex, ciliate. *Flowers* (4–)5-merous; pedicels 2–5 mm, densely appressed-pubescent. *Calyx* split almost to the base into narrowly triangular teeth c. 0.75 mm long, shortly ciliate on the margin. *Corolla* cream; tube cylindrical, 4 × 1.5 mm, glabrous outside, hairy inside with a ring of long (c. 1 mm) abruptly deflexed hairs near the lower 1/4<sup>th</sup>, and short sparse hairs above reaching just under the throat; lobes 2 mm long, reflexed, glabrous. *Flower buds* cylindrical with a rounded head. *Anthers* almost completely exerted, erect, c. 1 × 0.5 mm. *Disk* shortly pubescent. *Style* glabrous, exceeding throat by 3 mm and ending in a hood-like stigma c. 0.7 mm long. *Fruit* slightly obovate, 20 × 20 mm, rounded at base, very shallowly emarginate at apex, glabrous; pedicel reaching c. 8 mm.

**Etymology.** – The species is named after its only known locality.

**Distribution and ecology.** – *Keetia namoyae* is only known from the type locality in Maniema Province, eastern D.R. Congo (Fig. 2). It was found only once in disturbed, open secondary rain forest, at an altitude of 977 m. The following species were recorded in the vicinity: *Adenia tricolorata* De Wild., *Aidia micrantha* (K. Schum.) F. White, *Aptandra zenkeri* Engl., *Argomuellera pierlotiana* J. Léonard, *Boehmeria macrophylla* Hornem., *Celosia globosa* var. *porphyrostachya* C.C. Towns., *Crassocephalum rubens* (Jacq.) S. Moore, *Cyperus distans* L.f., *Dichapetalum* sp., *Dichapetalum parvifolium* Engl., *Dioscorea* sp., *Monanthotaxis* sp., *Justicia tenella* (Nees) T. Anderson, *Lindackeria schweinfurthii* Gilg, *Macaranga* sp. nov. (Bytebier & Luke 2805), *Puelia ciliata* Franch.,



**Fig. 1.** – *Keetia namoyae* O. Lachenaud & Q. Luke. **A.** Flowering twig; **B.** Fruiting twig; **C.** Node with stipules; **D.** Detail of a domatia; **E.** Flower bud; **F.** Open flower; **G.** Longitudinal section of flower; **H.** fruit.  
[Bytebier & Luke 2796, BR] [Drawing: Antonio Fernandez]



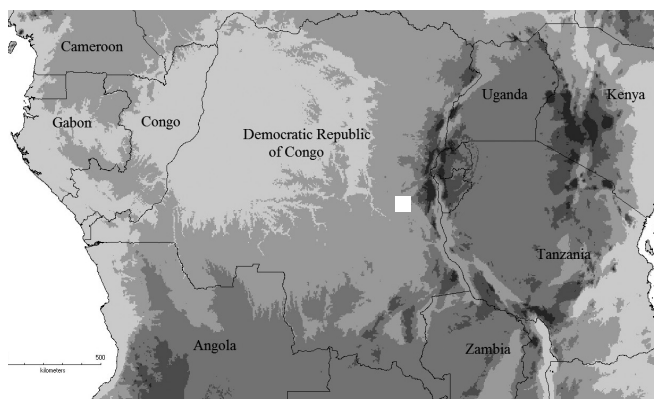


Fig. 2. – Distribution map of *Keetia namoyae* O. Lachenaud & Q. Luke (white square).

*Rhabdophyllum welwitschii* Tiegh., *Rutidea insculpta* Bridson, *Solanum welwitschii* C.H. Wright, *Spermacoce exilis* (L.O. Williams) W.C. Burger & C.M. Taylor, *Thecacoris lucida* (Pax) Hutch. and *Tricalysia pallens* Hiern.

**Conservation status.** – This plant is known from a single location sensu IUCN (2012); the extent of occurrence is therefore not calculable, and the area of occupancy is estimated as 4 km<sup>2</sup>. It was collected on a hill that was due to be mined for gold; a decline in the area of occupancy, habitat extent and quality, number of locations and number of individuals is therefore expected. No other individuals are known, although the area has several other hills and is at the edge of extensive primary forest. The species is therefore assessed to be “Critically Endangered” [CR B2ab(ii,iii,iv,v)+D1] of the IUCN (1991).

**Notes.** – *Keetia namoyae* is a rather distinctive species due to its very large fruits, small coriaceous leaves with inconspicuous tertiary venation, and twigs with sparse and very stiffly appressed hairs. Due to the appressed-pubescent twigs and lack of conspicuous tertiary veins, *K. namoyae* most closely resembles *K. tenuiflora* (Hiern) Bridson and some forms of *K. mannii* (Hiern) Bridson (the latter usually has glabrous twigs, but occasional variants with pubescent twigs occur). However, these two species differ from *K. namoyae* in many characters, including: flowering twigs opposite, with indumentum not so stiffly appressed; flowers more numerous (at least 25 per inflorescence, often more) and distinctly smaller, with corolla tube c. 2 mm long only; fruits smaller, < 12 mm long, frequently 1-seeded, or if 2-seeded then strongly bilobed. *Keetia tenuiflora* further differs from *K. namoyae* in having a pale buff-grey bark.

Although BRIDSON (1991: 921) described the fruits of *K. tenuiflora* as “1.2–1.5 cm long, 2 cm wide”, this appears to be erroneous; the largest fruits we have seen in this species are 12 mm long and 17 mm wide.

## Acknowledgements

We are grateful to Antonio Fernandez for his drawing of this new species. BB and QL would like to thank the management of Banro Congo Mining Sarl for their support during the survey and acknowledge the cheerful company of the local guides whilst in the field. They would also like to thank Caroline Henderson and SRK Consulting (SA), South Africa, for the opportunity to contribute to the Environmental and Social Impact Assessment. Martin Callmänder and Petra De Block are thanked for their comments on a first version of this paper.

## References

- BERO, J., H. GANFONA, M.-C. JONVILLE, M. FRÉDÉRICH, F. GBA-GUIDI, P. DEMOLD, M. MOUDACHIROU & J. QUÉTIN-LECLERCQ (2009). In vitro antiparasitic activity of plants used in Benin in traditional medicine to treat malaria. *J. Ethnopharmacol.* 122: 439–444.
- BERO, J., V. HANNAERT, G. CHATAIGNÉ, M.-F. HÉRENTA & J. QUÉTIN-LECLERCQ (2011). In vitro antitrypanosomal and antileishmanial activity of plants used in Benin in traditional medicine and bio-guided fractionation of the most active extract. *J. Ethnopharmacol.* 137: 998–1002.
- BRIDSON, D.M. (1986). The reinstatement of the African genus *Keetia* (Rubiaceae subfam. Cinchonoideae, tribe Vanguerieae). *Kew Bull.* 41: 965–994.
- BRIDSON, D.M. (1991). *Keetia*. In: VERDCOURT, B. & D.M. BRIDSON (ed.), *Fl. Trop. E. Africa Rubiaceae* (Part 3): 909–923.
- IUCN (2012). *IUCN Red List Categories and Criteria, version 3.1*. 2<sup>nd</sup> ed. IUCN Species Survival Commission, Gland & Cambridge.