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Authors: Thulin, Mats, Nusbaumer, Louis, and Gautier, Laurent

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Bauhinia darainensis Thulin & Nusb. (Fabaceae), a new species from northern Madagascar

Mats Thulin, Louis Nusbaumer & Laurent Gautier

Abstract

THULIN, M., L. NUSBAUMER & L. GAUTIER (2014). *Bauhinia darainensis* Thulin & Nusb. (Fabaceae), a new species from northern Madagascar. *Candollea* 69: 135-139. In English, English and French abstracts.

Bauhinia darainensis Thulin & Nusb. (Fabaceae), a new species from the Loky-Manambato region of north-eastern Madagascar, is described and illustrated. The species is believed to be most closely related to *Bauhinia decandra* Du Puy & R. Rabev. from south-central and southern Madagascar and *Bauhinia hildebrandtii* Vatke that is widespread in northern Madagascar. *Bauhinia darainensis* differs from both these species notably by its white petals, with the upper petal pink towards the tip, and by its stamen arrangement with three longer and seven shorter and more slender stamens. The distribution and ecology of the new species are discussed and a preliminary IUCN Red List conservation assessment is proposed.

Key-words

FABACEAE – *Bauhinia* – Madagascar – Daraina –
Taxonomy – Conservation

Résumé

THULIN, M., L. NUSBAUMER & L. GAUTIER (2014). *Bauhinia darainensis* Thulin & Nusb. (Fabaceae), une nouvelle espèce du nord de Madagascar. *Candollea* 69: 135-139. En anglais, résumés anglais et français.

Bauhinia darainensis Thulin & Nusb. (Fabaceae), une nouvelle espèce de la région de Loky-Manambato au nord-est de Madagascar, est décrite et illustrée. Cette espèce est vraisemblablement proche de *Bauhinia decandra* Du Puy & R. Rabev. du centre-sud et du sud de Madagascar et de *Bauhinia hildebrandtii* Vatke qui est largement distribuée dans le nord de Madagascar. *Bauhinia darainensis* diffère particulièrement de ces deux espèces par ses pétales blancs avec le pétale supérieur rose vers l'apex, et par l'organisation de ses étamines: trois longues et sept plus courtes et plus graciles. La distribution et l'écologie de cette nouvelle espèce sont discutées et un statut préliminaire de conservation selon la Liste Rouge de l'IUCN est proposé.

Addresses of the authors: MT: Department of Systematic Biology, EBC, Uppsala University, Norbyvägen 18D, SE-752 36 Uppsala, Sweden. Email: mats.thulin@ebc.uu.se
LN, LG: Conservatoire et Jardin botaniques de la Ville de Genève and Laboratoire de botanique systématique et biodiversité, Université de Genève, case postale 60, 1292 Chambésy, Switzerland.

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Introduction

DU PUY & RABEVOHITRA (2002) recognized 16 species of *Bauhinia* L. (Fabaceae) native to Madagascar, of which 15 are endemic to the island. During the naming of Malagasy collections of legumes sent for identification from MO to one of us (MT), a collection of *Bauhinia* was encountered that could not be matched with any previously known species. As this collection originated from a forest patch of the Daraina region in northeastern Madagascar, an enquiry was made to the Conservatoire et Jardin botaniques de la Ville de Genève, an institution that had for several years been involved in botanical inventories of this region (GAUTIER & al., 2006; NUSBAUMER & al., 2010). A second collection of the new species from the same forest patch was then located.

The recent botanical exploration of Daraina has shown this region to be an important area of local endemism. The area is now protected as a Multiple Usage Forest Station (MUFS) referred to as Loky-Manambato (WAHLERT & al., 2013). The new species of *Bauhinia* described here brings further weight to the importance of Loky-Manambato as a conservation area.

Taxonomic treatment

Bauhinia darainensis Thulin & Nusb., **spec. nova** (Fig. 1-2).

Typus: MADAGASCAR. **Prov. Antsiranana:** SAVA Region, Vohemar, Daraina, village Befarafara, forêt de Solanampilana au N de Daraina, 13°05'42''S 49°34'57''E, 137 m, 9.XII.2006, fl., Randrianaivo & al. 1430 (holo-: UPS!; iso-: CNARP, MO-6310175!, P [P00754864]!, TAN).

Bauhinia darainensis Thulin & Nusb. is similar to *B. decandra* Du Puy & R. Rabev. and *B. hildebrandtii* Vatke in having 10 fertile stamens, but differs from both of them by having shorter racemes with only 2-3 (not up to 10 or more) flowers, flowers with a 4-6.5 mm (not 10-25 mm) long hypanthium, white (not orange-red) petal blades with the blade of the upper petal pink towards the tip (not with a yellow blotch), petal claws glabrous or with a few scattered hairs (not distinctly pubescent), and by having 3 longer and 7 shorter and more slender stamens (not 5 longer and 5 shorter stamens).

Shrub, c. 1.5 m, or tree up to 11 m tall, flowering along with mature foliage; twigs slender, purplish brown, densely pubescent with short spreading hairs when young, with whitish lenticels. *Leaves* simple, bilobed, with an acicular pubescent mucro 2-5 mm long in the sinus; stipules linear, 5-7 mm long, acuminate, pubescent, caducous; petiole 8-40 mm long, densely pubescent with spreading hairs; lamina membranous, broadly ovate, divided from about midway to 2/3 of the length, 1.5-8.2 × 1.8-8.8 cm, shallowly to deeply cordate at the base, the lobes obtuse to subacute, glabrous above, pubescent beneath, with 9 main veins from the base. *Racemes* 2-3-flowered, the flowers

opening sequentially; axis 10-17 mm long, densely pubescent with spreading hairs; bracts linear-lanceolate, 4-5.5 mm long, pubescent; pedicels 8-11 mm long, densely pubescent; bracteoles filiform, 1.5-3.5 mm long, pubescent. *Flowers* c. 4 cm across; hypanthium narrowly funnel-shaped, 4-6.5 mm long, pubescent. *Calyx* spathe-like, 1.8-2.5 cm long, pubescent, with 5 linear teeth 1-3 mm long at the apex, not winged. *Petals* white with greenish claws, the upper petal suffused with pink towards the tip but white along main nerve and lower parts of secondary nerves, subequal, suberect to somewhat spreading, straight or with the blades slightly curved backwards to reflexed, glabrous or with a few scattered hairs, 3.0-4.0 cm long, the 4 lateral petals with the blade broadly elliptic 2.0-2.5 × 1.1-1.2 cm, subacute at the apex, attenuate at the base, upper petal with the blade ovate, 2.0-2.5 × 1.2-1.3 cm, obtuse at the apex, gradually tapering at the base and with a narrow wing along the margin of the claw almost to the base. *Stamens* 10, all fertile, glabrous except for pubescence of long white hairs at the base of the filaments; 3 longer, 15-20 mm long, with anthers 2.5-3 mm long, the 7 others 7-14 mm long, more slender, with anthers c. 2 mm long. *Ovary* c. 10 mm long, shortly stipitate, pubescent at base and sometimes along upper margin with long white hairs, on the sides with short brownish ± appressed tubercle-based hairs, with c. 15 ovules; style 16-18 mm long, glabrous or with scattered white hairs; stigma enlarged and oblique, c. 1.5 mm across, papillate. *Young pods* with a pubescent stipe c. 5 mm long, linear-oblong, 50-60 × 7-8 mm, apiculate, subglabrous with scattered white hairs and brownish tubercle-based hairs particularly towards the base.

Notes. – *Bauhinia darainensis* appears to be most closely related to *B. decandra* Du Puy & R. Rabev. and *B. hildebrandtii* Vatke, two other species with 10 fertile stamens of varying length. *Bauhinia decandra* is restricted to south-central and southern Madagascar, whereas *B. hildebrandtii* is fairly widespread in northern Madagascar, including Daraina, and also has been recorded from the Comoro Islands (DU PUY & RABEVOHITRA, 2002). *Bauhinia darainensis* differs from both *B. decandra* and *B. hildebrandtii* by its shorter racemes (axis 10-17 mm versus up to 90 mm long) with only 2-3 (not up to 10 or more) flowers, hypanthium 4-6.5 mm (not 10-25 mm) long, petal blades white, the one at the uppermost position pink towards the tip (versus petal blades orange red, the one of the upper petal with a yellow blotch), petal claws glabrous or almost so (not distinctly pubescent), and by its three longer and seven shorter, more slender stamens (not five longer and five shorter stamens).

From the sympatric and subglabrous *B. hildebrandtii*, *B. darainensis* can also be separated by being pubescent in most parts. Due to its dense indumentum of spreading hairs on young stems and leaf undersides, it can be easily distinguished also in a sterile state.

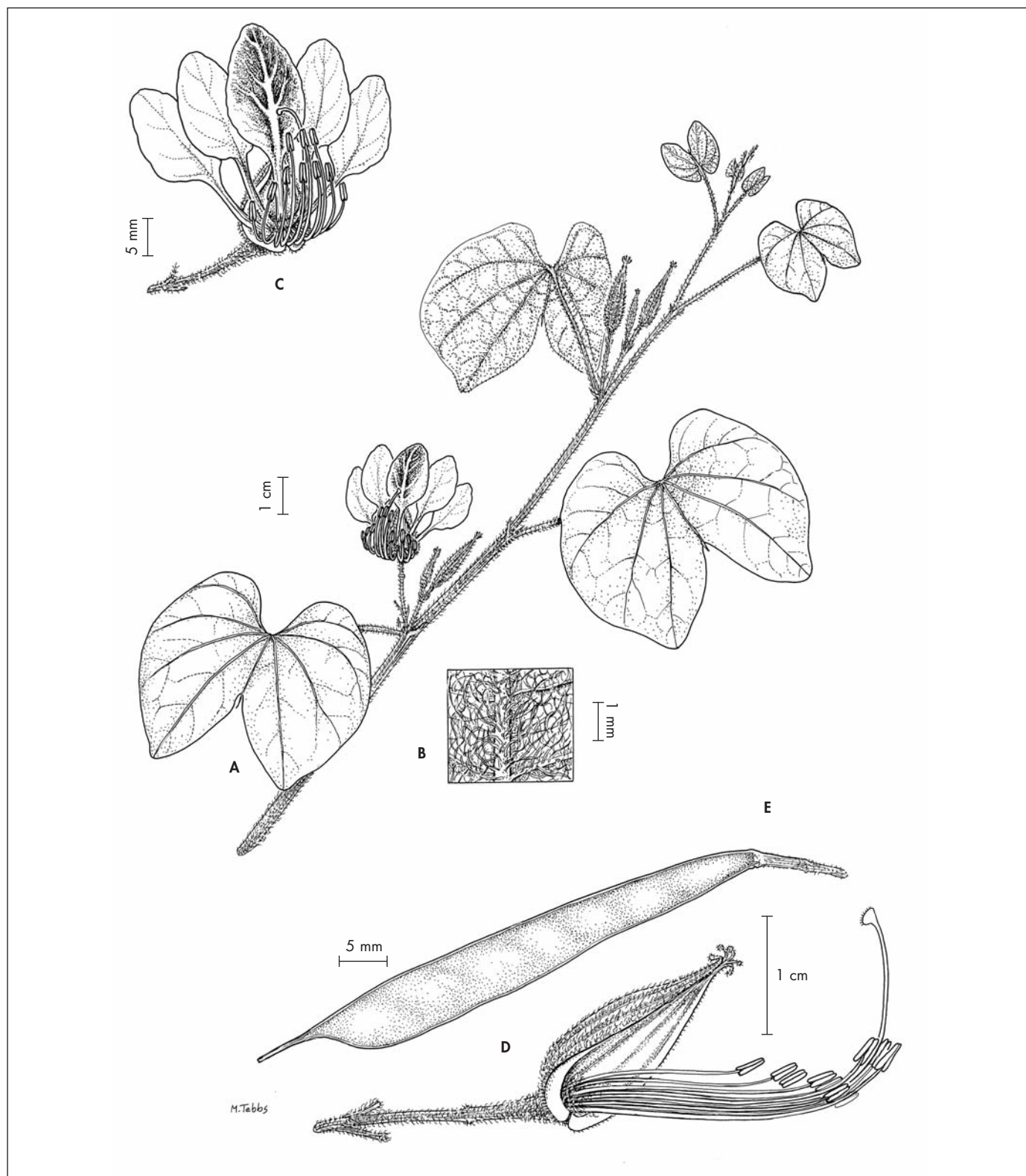


Fig. 1. – *Bauhinia darainensis* Thulin & Nusb. **A.** Flowering branch; **B.** Underside of leaf showing indumentum; **C.** Flower, front view; **D.** Flower with petals removed, side view; **E.** Young pod.

[**A-C:** Randrianaivo & al. 1430, UPS; **D:** Nusbaumer & Ranirison 2031, G] [Drawn by M. Tebbs]

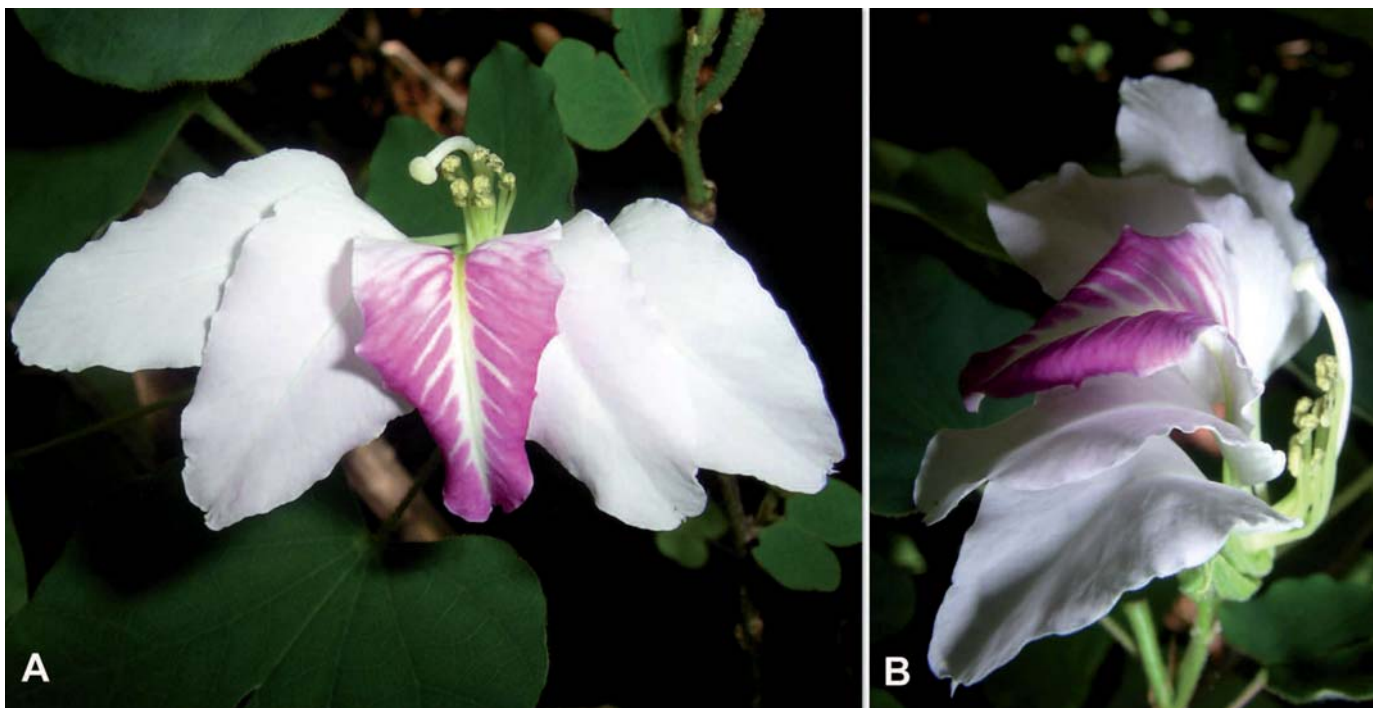


Fig. 2. – Flower of *Bauhinia darainensis* Thulin & Nusb. **A.** Top view, showing the reflexed petal blades of the flower; **B.** Side view. [Nusbaumer & Ranirison 2031, G] [Photo: L. Nusbaumer]

Distribution and ecology. – The new species is known only from the Solaniampilana-Maroadabo, Bekaraoka, Ampondrabe and Ankaramy forests in the Loky-Manambato region (Daraina) in northeastern Madagascar. A total of about 60 individuals were observed among all these localities during a vegetation study, which included more than 54,000 records of plant occurrences in the ten main forest areas of the region (NUSBAUMER, 2011).

Bauhinia darainensis was observed at elevations between 100 and 450 m above sea level, mainly in primary dry (60% of the occurrences), but also in mesophilous, ripicolous and sclerophyllous forest. The canopies of the forests where it occurs reach up to 12 m with emergent trees up to 16 m tall. The species most frequently recorded together with *B. darainensis* are, in decreasing order: *Grossera perrieri* Leandri (*Euphorbiaceae*), *Dracaena xiphophylla* Baker (*Asparagaceae*), *Ehretia cymosa* Thonn. (*Boraginaceae*), *Strychnos madagascariensis* Poir. (*Loganiaceae*), *Ambilobeia madagascariensis* (Capuron) Thulin & al. (*Burseraceae*), *Mallotus oppositifolius* (Geiseler) Müll. Arg. (*Euphorbiaceae*), *Drypetes perrieri* Leandri (*Putranjivaceae*), *Strychnos decussata* (Pappe) Gilg (*Loganiaceae*), *Hildegardia ankaranensis* (Arènes)

Kosterm. (*Malvaceae*), *Wielandia fadenii* (Radcl.-Sm.) Petra Hoffm. & McPherson (*Phyllanthaceae*), *Commiphora ankaranensis* (J. F. Leroy) Cheek & Rakot. (*Burseraceae*), *Delonix boiviniana* (Baill.) Capuron (*Fabaceae*), *Grevea madagascariensis* Baill. (*Montiniaceae*) and *Coptosperma* sp. (*Rubiaceae*).

Phenology. – Collections in flower, and in flower and young fruit, have been made in December and February, respectively.

Conservation status. – With an “Area of Occupancy” (AOO) of 54 km² and an “Extent of Occurrence” (EOO) of 362 km², two herbarium collections and 60 further observations among five subpopulations, of which three in the temporarily protected Loky-Manambato area, *Bauhinia darainensis* is assigned a preliminary status of “Vulnerable” (VU D2) following the IUCN Red List Categories and Criteria (IUCN, 2012).

Paratypes. – **MADAGASCAR. Prov. Antsiranana:** sous-préfecture de Vohemar, commune rurale de Daraina, forêt de Solaniampilana-Maroadabo, 13°05'44''S 49°34'26''E, 248 m, 7.II.2006, fl. & imm. fr., Nusbaumer & Ranirison 2031 (G [G00090379]!, MO-5997545!, P [P00466005]!, TEF!).

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References

- DU PUY, D. J. & R. RABEVOHITRA (2002). Tribe Cercideae. *In*: DU PUY, D. J., J.-N. LABAT, R. RABEVOHITRA, J.-F. VILLIERS, J. BOSSER & J. MOAT (ed.), *The Leguminosae of Madagascar*: 104-127. Royal Botanic Gardens, Kew.
- GAUTIER, L., P. RANIRISON, L. NUSBAUMER & S. WOHLHAUSER (2006). Aperçu des massifs forestiers de la région Loky-Manambato. *In*: GOODMAN, S. M. & L. WILMÉ (ed.), *Inventaires de la faune et de la flore du Nord de Madagascar dans la région Loky-Manambato, Analamerana et Andavakoera*: 81-99. CIDST, Ministère de l'Education Nationale et de la recherche Scientifique, Antananarivo.
- IUCN (2012). *IUCN Red List Categories and Criteria: version 3.1*. 2nd edition. IUCN Species Survival Commission, Gland & Cambridge.
- NUSBAUMER, L. (2011). *Species distribution patterns in steep environmental gradients: downscaling of a biogeographical framework (Loky-Manambato Region, NE Madagascar)*. PhD. thesis, University of Geneva.
- NUSBAUMER, L., P. RANIRISON, L. GAUTIER, C. CHATELAIN, P.-A. LOIZEAU & R. SPICHIGER (2010). Loky-Manambato: point de rencontre des principales unités phytogéographiques de Madagascar. *In*: VAN DER BURGT, X., J. VAN DER MAESEN & J.-M. ONANA (ed.), *Systématique et conservation des plantes africaines*: 253-264. Royal Botanic Gardens, Kew.
- WAHLERT, G. A., P. B. PHILLIPSON, L. NUSBAUMER & L. GAUTIER (2013). *Cyphostemma darainense* Wahlert & Phillipson (Vitaceae), a new species from northeastern Madagascar. *Candollea* 67: 277-283.