Rinorea Ranirisonii Nusb. & Wahlert (Violaceae), a New Species from the Daraina Region of Northern Madagascar

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Rinorea ranirisonii Nusb. & Wahlert (Violaceae), a new species from the Daraina region of northern Madagascar

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Abstract

WAHLERT, G. A., L. NUSBAUMER & L. GAUTIER (2013). Rinorea ranirisonii Nusb. & Wahlert (Violaceae): a new species from the Daraina region of northern Madagascar. *Candollea* 68: 87-92. In English, English and French abstracts.

Rinorea ranirisonii Nusb. & Wahlert *(Violaceae),* a new species from the Daraina region of northern Madagascar, is described and illustrated. This species, with opposite leaves and endemic to Madagascar, is immediately distinguished from all other species belonging to *Rinorea* subsect. *Verticillatae* Engl. by its young branches, upper and lower leaf surfaces, inflorescence axis, pedicels, sepals, and ovary covered in golden-reddish hispid indumentum. Distribution and ecology of the new species are discussed and a preliminary IUCN conservation assessment is given.

Key-words

VIOLACEAE – *Rinorea* – Madagascar – Daraina – Taxonomy – IUCN – Conservation

Résumé

WAHLERT, G. A., L. NUSBAUMER & L. GAUTIER (2013). Rinorea ranirisonii Nusb. & Wahlert (Violaceae), une nouvelle espèce de la région de Daraina du nord de Madagascar. *Candollea* 68: 87-92. En anglais, résumés anglais et français.

Rinorea ranirisonii Nusb. & Wahlert *(Violaceae),* une nouvelle espèce de la région du Daraina au nord de Madagascar, est décrite et illustrée. Cette espèce, présentant des feuilles opposées et endémique à Madagascar, diffère clairement des autres espèces de *Rinorea* subsect. *Verticillatae* Engl. par ses jeunes rameaux, les surfaces supérieures et inférieures de ses feuilles, ses pédoncules floraux, ses pédicelles, ses sépales et son ovaire recouverts d'un tomentum hispide doré à roussâtre. La distribution et l'écologie de cette nouvelle espèce sont discutées et un statut préliminaire de conservation suivant les Critères de l'UICN est proposé.

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Introduction

Rinorea Aubl. *(Violaceae)* is a pantropical genus of shrubs and small trees and is the second most species-rich genus in the Violaceae, with an estimated 225-275 species. In Madagascar and the Comoro Islands, the genus is represented by ca. 45 species that can be divided into six infrageneric groups (Wahlert, 2010). Among the six groups is the endemic *Rinorea* subsect. *Verticillatae* Engl., a taxon erected by Engler (1904), but not recognized in subsequent treatments (e.g., Brandt, 1914; de Wildeman, 1920). Species belonging to *Rinorea* subsect. *Verticillatae* are easily distinguished from other Old World groups by their opposite-leaved phyllotaxy. The last revision of the Malagasy and Comorian species recognized 17 taxa of opposite leaved species (Perrier de la Bâthie, 1949, 1954), whereas recent studies estimate 26-28 species in the group (Wahlert, 2010). Indeed, *Rinorea* subsect. *Verticillatae* is the most species-rich infrageneric taxon of *Rinorea* in Madagascar. Molecular phylogenetic evidence strongly supports the monophyly of *Rinorea* subsect. *Verticillatae* from Madagascar and the Comoro Islands and shows the group to be sister to a clade containing *Rinorea* from Asia (Wahlert & Ballard, 2012).

A distinctively hispid species with opposite leaves was collected several times in the course of botanical and vegetation studies in the Daraina region conducted by the Conservatoire et Jardin botaniques de la Ville de Genève, in collaboration with the Universities of Antananarivo and Geneva and the Malagasy NGO Fanamby. The majority of the field work was conducted over three consecutive years from 2003-2006, mostly during the rainy season (i.e., November to April) and totaled more than 300 days in the field. The Daraina region is located at the intersection of four main phytogeographic units and exhibits strong environmental gradients, particularly rainfall, elevation, and temperature. A variety of forest types have been recognized and many new species have been discovered, among which 24 have already been published and several more will be published over the next few years (for a review, see Gautier & al., 2006; Nusbaumer, 2011). This work and similar works done in the area by zoologists in several taxonomic groups have been used for priority assessment of conservation by the NGO Fanamby, that has largely contributed to the recent creation of a protected area with a status as a Multiple Usage Forest Station (Station Forestière à Usages Multiples = SFUM now referred to as the Loky-Manambato area). The new species was identified after survey of collections for the genus *Rinorea* in the G and P herbaria by Patrick Ranirison and later confirmed by the first author.

Taxonomic treatment

Rinorea ranirisonii Nusb. & Wahlert, **spec. nova** (Fig. 1, 2).

Typus: Madagascar. Prov. Antsiranana: Sous-préfecture de Vohemar, commune rurale de Daraina, forêt de Binara, 225 m, 13°14’19’’S 49°37’30’’E, 225 m, 27.III.2004, *Ranirison 496* (holo-: G!; iso-: P!, MO!, K!, TEF, research herbarium of Daraina).

Arbuscula foliis oppositis, ab omnibus congeneribus sectionis Verticillatae in Madagascaria indumento oculo nudo dense hispido, aureo-rubro in ramulis annotinis, petiolis, nervura primaria laminae, pedunculo, pedicellis, sepalisque, oculo armato indumento conspicuo in ovario.

Shrub branched, up to 1.5 m tall; young branches flattened in cross section, quite canaliculated under the nodes, hispid. *Leaves* opposite, anisophyllous (1:1.3); petiole 10-20 mm long, with hispid golden reddish hairs 0.8-1.2 mm long, adaxially slightly canaliculated at the apex; stipules early caducous, not seen; terminal bud scales green, brown when dry, conical, linear-lanceolate, 2-4 mm long, 1-1.5 mm broad, hispid, apex acute, mucronate; lamina ovate, 2.8-8.2 × 2.0-5.0 cm, length to width ratio of 1.3-1.8, membranaceous, green and slightly discolorous, whitish on the lower surface, upper and lower surfaces hispid; primary and secondary veins densely hispid on both surfaces; secondary vein pairs 3-7, brochidodromous, divergent, tertiary veins reticulate; base rounded to truncate to subcordate, slightly asymmetrical, oblique; margin crenate, subrevolute; apex obtuse to rounded, mucronate. *Inflorescence* a terminal cyme, less than 2.5 cm long, axis hispid, peduncle 12-18 mm long, peduncle subtended by two persistent bud scales; pedicels 1.0-1.5 mm long, hispid; pedicel bractlets persistent, deltoid-ovate, 0.7-1.5 × 0.2-0.5 mm, hispid, apex acute, mucronate. *Flowers* 3.4-4.0 mm long. *Sepals* five, cream at the base and gradually green to the apex, entire, unequal, imbricate, narrowly triangular, 2.1-3.5 × 1.0 mm, keeled, hispid, apex acute, mucronate, mucro dark red when dry. *Petals* five, contorted to the left, cream to white, subequal, lanceolate, 3.5-4.0 × 0.6-1.2 mm, outer surface glabrous, inner surface glabrous or with few-several hairs above the middle, margin entire, apex subacute, erect. *Stamens* white to cream, five, 1.5-1.8 mm long; staminal tube 0.6-0.8 mm tall, outer and inner surfaces glabrous; anthers subsessile, filaments 0.1-0.2 mm long, anther connectives 0.5 × 0.5 mm; anther ventral appendages absent; anther dorsal connective scales apical, ovate, scarious, white, 0.5 × 0.3 mm, surface glabrous, margin entire, apex rounded, truncate or bifid. *Pistil* 30 mm long; ovary ovoid, 1.0 × 0.8 mm, hispid; style 20 mm long, erect, fluted in cross-section, straight, glabrous. *Fruit* not seen.

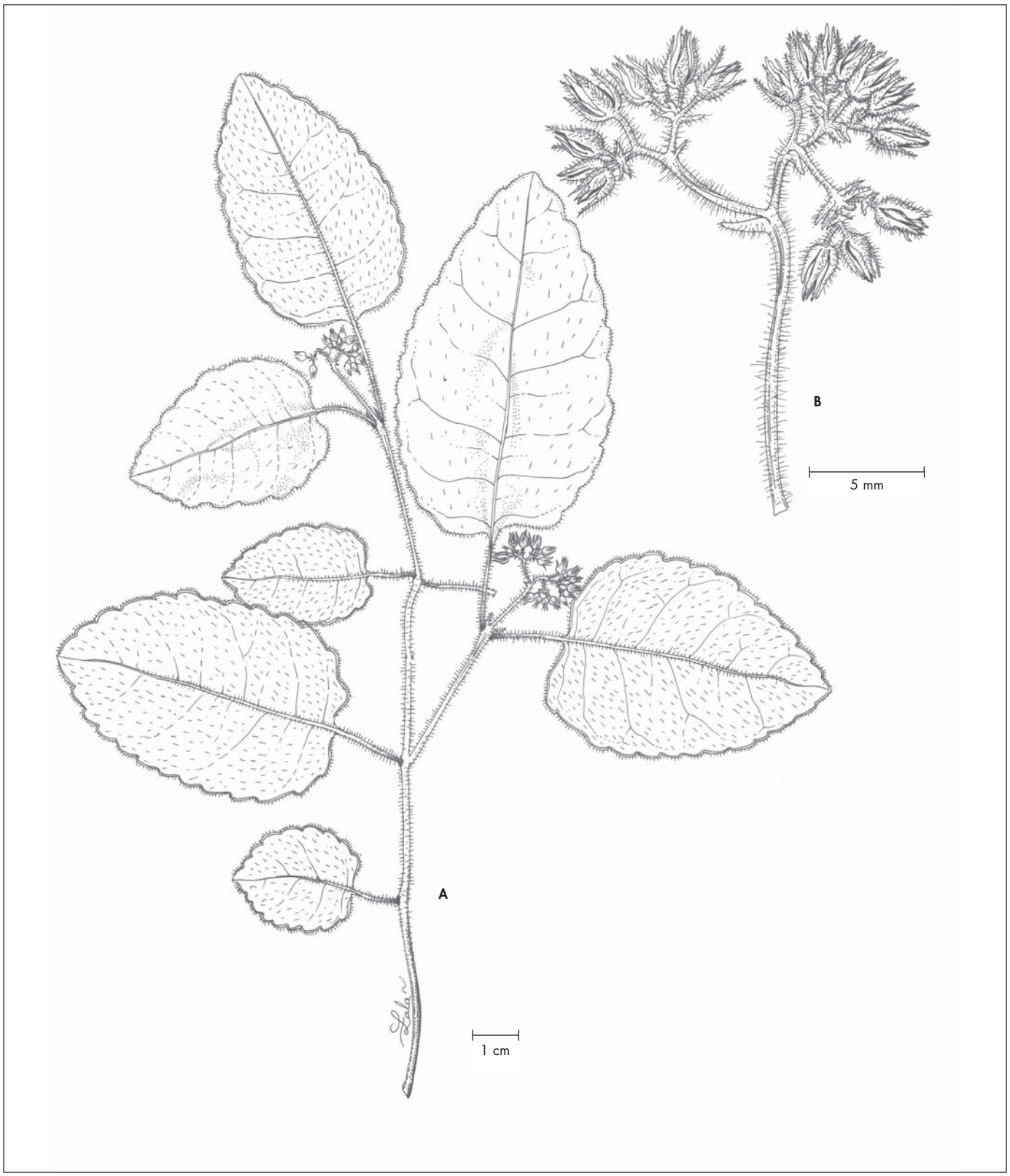

Fig. 1. – *Rinorea ranirisonii* Nusb. & Wahlert. **A.** Flowering branch ; **B.** Inflorescence.
[*Ranirison 496*, P] [Drawn by R. L. Andriamiarisoa]

Fig. 2. – Inflorescence of *Rinorea ranirisonii* Nusb. & Wahlert. [*Ranirison 496*, P] [Photo: P. Ranirison]

Remarks. – Rinorea ranirisonii is a distinctive species, yet it is not clear to which other opposite-leaved species in *Rinorea* subsect. *Verticillatae* it is most close related. With *R. auriculata* it shares a pedunculate cymose inflorescence (vs a contracted, subsessile inflorescence in most species), but is otherwise completely different in vegetative characters. *R. ranirisonii* differs from other species by the shape of its ovate leaf blade and the apex of the blade obtuse to rounded. It is also distinguished by its ovary covered in golden-reddish hispid indumentum, often densely so, as well as the young branches, upper and lower leaf surfaces, inflorescence axis, pedicels, and sepals.

Distribution. – The new species is only known from the forests of the Loky-Manambato (Daraina) region, in northeastern Madagascar (Fig. 3). During botanical and vegetation studies in the region, only four individuals were observed among ca. 54 000 vascular plant observations. The four individuals were found in Binara, Ampondrabe, and Bobankora forests in the Loky-Manambato region. However we suspect the species may occur in several other forests across the entire Loky-Manambato region.

Habitat and ecology. – Rinorea ranirisonii occurs primarily in evergreen rainforest on slopes, and uncommonly in semi-deciduous forest along streams. The species grows in forests with canopies reaching 12 to 15 m on metamorphic rock, up to 500 m elevation. The most frequently recorded species occurring with *R. ranirisonii* in vegetation surveys include: *Diospyros* aff. *quercina* (Baill.) G. E. Schatz & Lowry, and *Nesogordonia* sp. as well as *Vepris nitida* (Baker) I. Verdc., *Salacia madagascariensis* (Lam.) DC., *Ivodea mahanarica* Capuron, *Securinega durissima* J. F. Gmel. and *Wielandia bemarensis* (Leandri) Petra Hoffm. & McPherson.

Phenology. – The species flowers from February to March.

Etymology. – The new species described in this paper is named in honor of Patrick Ranirison, who collected the type specimen and suspected it to represent a new species. Patrick Ranirison and L. Nusbaumer both earned their doctorate under the supervision of L. Gautier, and both spent months in the field together doing botanical inventories and vegetation studies in the forests of Loky-Manambato. Ranirison is a highly capable botanical researcher, a passionate conservationist, and a congenial companion in the field. The *sakarivo* link between P. Ranirison and L. Nusbaumer through their long collaboration and friendship is reserved for the closest and most loyal relationship between two friends.

Conservation status. – With an area of occupancy (AOO) of 36 km^2 and an extent of occurrence (EOO) of 227 km^2, and only four collections known among three subpopulations in the protected area of Loky-Manambato, *Rinorea ranirisonii* is assigned a preliminary status of "Endangered" (VU D1) following the IUCN Red List Categories and Criteria (IUCN, 2001; calculation following Moat (2007) and Callmander & al. (2007)).

Other specimens examined. – **Madagascar. Prov. Antsiranana:** Sous-préfecture de Vohemar, commune rurale de Daraina, forêt d'Ampondrabe, 12°57'13"S 49°42'31"E, 460 m, 21.II. 2005, fl. bud, *Nusbaumer & Ranirison 2265* (G); same locality description, 12°57'04"S 49°42'33"E, 490 m, 21.II.2005, fl. bud, *Nusbaumer & Ranirison 2998* (G); sous-préfecture de Vohemar, commune rurale de Daraina, forêt de Bobankora, partie nord, 13°13'29"S 49°45'37"E, 405 m, 29.I.2005, sterile, *Nusbaumer & Ranirison 3005* (G).

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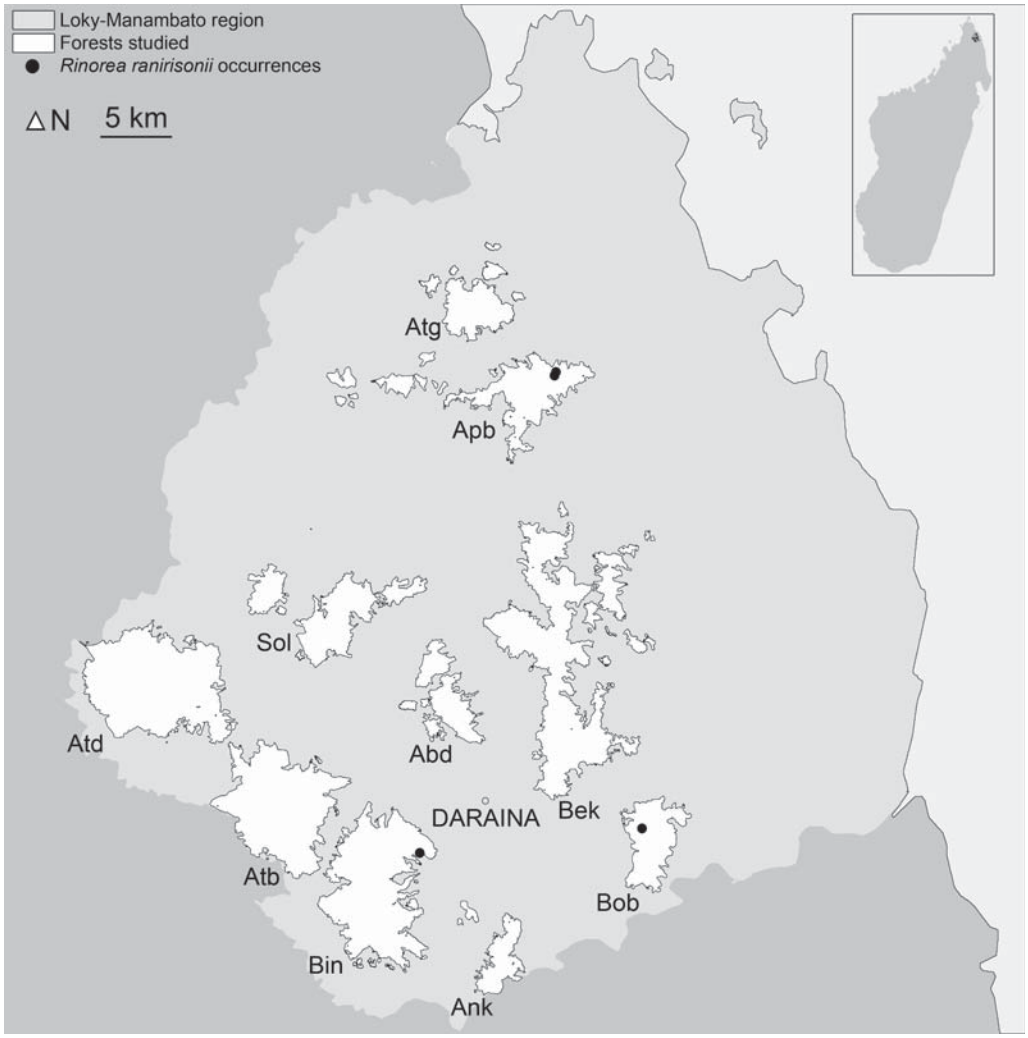

Fig. 3. – Map of Loky-Manambato area showing distribution of *Rinorea ranirisonii* Nusb. & Wahlert [Forest acronyms: Abd: Ambilondamba; Ank: Ankaramy; Apb: Ampondrabe; Atb: Antsahabe; Atd: Ambohitsitondroina; Atg: Antsaharaingy; Bek: Bekaraoka; Bin: Binara; Sol: Solaniampilana].

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