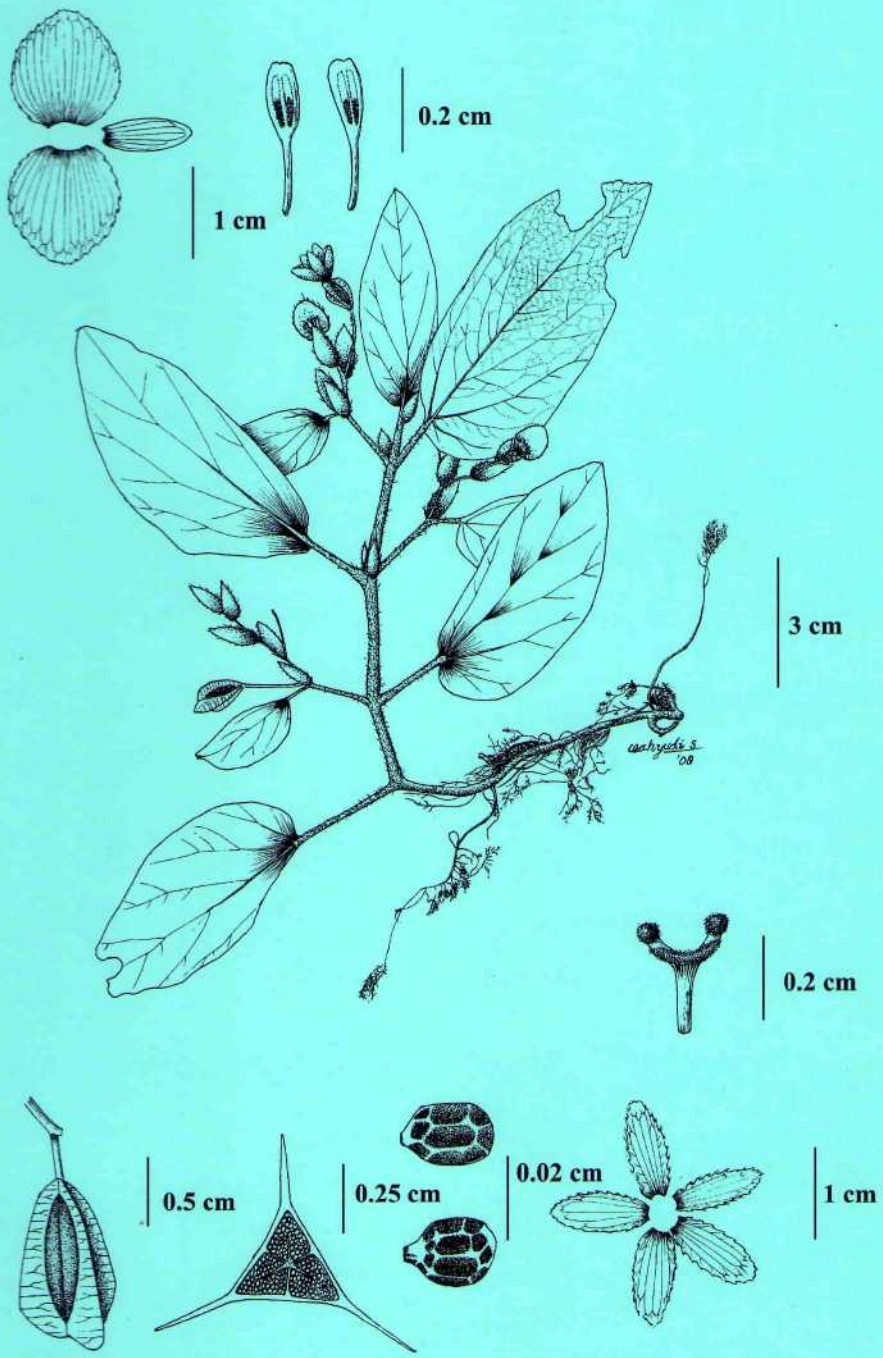
LIPI

A JOURNAL ON TAXONOMIC BOTANY, PLANT SOCIOLOGY AND ECOLOGY

ISSN 0034—365 X

REINWARDTIA



13 (3)

REINWARDTIA

A JOURNAL ON TAXONOMIC BOTANY, PLANT SOCIOLOGY AND ECOLOGY

Vol. 13(3): 221 —315, April 11, 2012

Correspondence on editorial matters and subscriptions for Reinwardtia should be addressed to:
HERBARIUM BOGORIENSE, BOTANY DIVISION,
RESEARCH CENTER FOR BIOLOGY-LIPI,
CIBINONG 16911, INDONESIA
E-mail: reinwardtia@mail.lipi.go.id

REINWARDTIA
Vol 13, No 3, pp: 221 − 228

TRICHOSANTHES (CUCURBITACEAE) IN MALESIA: ADDITIONS AND CORRECTIONS, INCLUDING A NEW SPECIES AND A NEW VARIETY

Received September 7, 2010; accepted June 14, 2011

W.J.J.O. DE WILDE & BRIGITTA E.E. DUYFJES
Netherlands Centre for Biodiversity Naturalis (section NHN), Leiden University P.O. Box 9514, 2300 RA Leiden, The Netherlands. E-mail: duyfjes@nhn.leidenuniv.nl

ABSTRACT
DE WILDE, W.J.J.O. & DUYFJES, B.E.E. 2012. *Trichosanthes* (*Cucurbitaceae*) in Malesia: additions and corrections, including a new species and a new variety. Reinwardtia 13(3): 221–228. — Recent discoveries in *Trichosanthes* (*Cucurbitaceae*): including the re-description of *T. celebica, T. pedicellata spec. nov*., and *T. edulis* var. *punctata var. nov*. are presented.

Keywords: *Cucurbitaceae, Trichosanthes*, South East Asia, Sulawesi, Philippines, New Guinea.

ABSTRAK
DE WILDE, W.J.J.O. & DUYFJES, B.E.E. 2012. *Trichosanthes* (*Cucurbitaceae*) di Malesia: tambahan dan koreksi, termasuk pertelaan satu jenis baru dan satu varietas baru. Reinwardtia 13(3): 221–228. — Rekaman baru dalam *Trichosanthes* (*Cucurbitaceae*): termasuk pertelaan kembali jenis *T. celebica, T. pedicellata spec. nov*., dan *T. edulis* var. *punctata var. nov*. dipaparkan.

Kata kunci: *Cucurbitaceae, Trichosanthes*, Asia Tenggara, Sulawesi, Filipina, Niugini.

INTRODUCTION

Since the overall revision of *Trichosanthes* in Malesia (Rugayah & de Wilde, 1999; Rugayah, 1999; de Wilde & Duyfjes, 2010) some novelties have emerged and are described below. It concerns (1) a correction of the description of the male sepals of *T. obscura* Rugayah (Borneo), (2) the re-description of *T. celebica* Cogn. (Sulawesi), (3) the description of a new species, *T. pedicellata* W.J. de Wilde & Duyfjes (Sulawesi), (4) the description of a new variety of *T. edulis* Rugayah: var. *punctata* W.J. de Wilde & Duyfjes (Philippines), and (5) some notes on incomplete material of an undescribed, unidentified species of *Trichosanthes* (New Guinea).

(1) THE SEPALS OF THE MALE FLOWERS OF TRICHOSANTHES OBSCURA Rugayah (REINWARDTIA 11 (1999) 269).

Through an old collection (*C. Hose 751* (K)), Sarawak, erroneously annotated as collected in North Sulawesi which had at the time escaped from our attention it now became evident that the male sepals of *T. obscura* are distinctly narrowly lobed (Fig. 1). They were previously described (Rugayah & de Wilde, 1999; de Wilde & Duyfjes, 2010) as entire, erroneously seen as such in the following rather deficient male flowering collections of *Sumbing SAN 116679*, *Sumbing SAN 110399*, and *Jaheri 1570*. The plant in the collection of *C. Hose 751* is somewhat stouter as hitherto known, with the leaf blade *ca.* 20 by 17.5 cm and the male peduncle *ca.* 15 cm long. Female flowers of this species are still not known.

(2) RE-DESCRIPTION OF TRICHOSANTHES CELEBICA Cogn.

When conceiving *T. celebica* Cogn. (1881: 385) for the revision of *Trichosanthes* (Rugayah, 1999; de Wilde & Duyfjes, 2010), it was assumed that the following four collections from E. Sulawesi: *Beccari 51* (type, consisting of a male specimen and one fruit), *Kjellberg 1212* (male, BO, S, not seen by de Wilde at the time, though recently we could examine and identify the S-duplicate as *T. tricuspidata* Lour.), *de Vogel 6136* (fruit), and *de Wilde & Duyfjes 21903* (sterile), and one from Buru: *Nooteboom 5275* (sterile) all belonged to that species.

With recent molecular sequencing of the collection of *de Vogel 6136*, as part of a larger molecular analysis of the whole genus *Trichosanthes* (Hugo de Boer, Uppsala, in

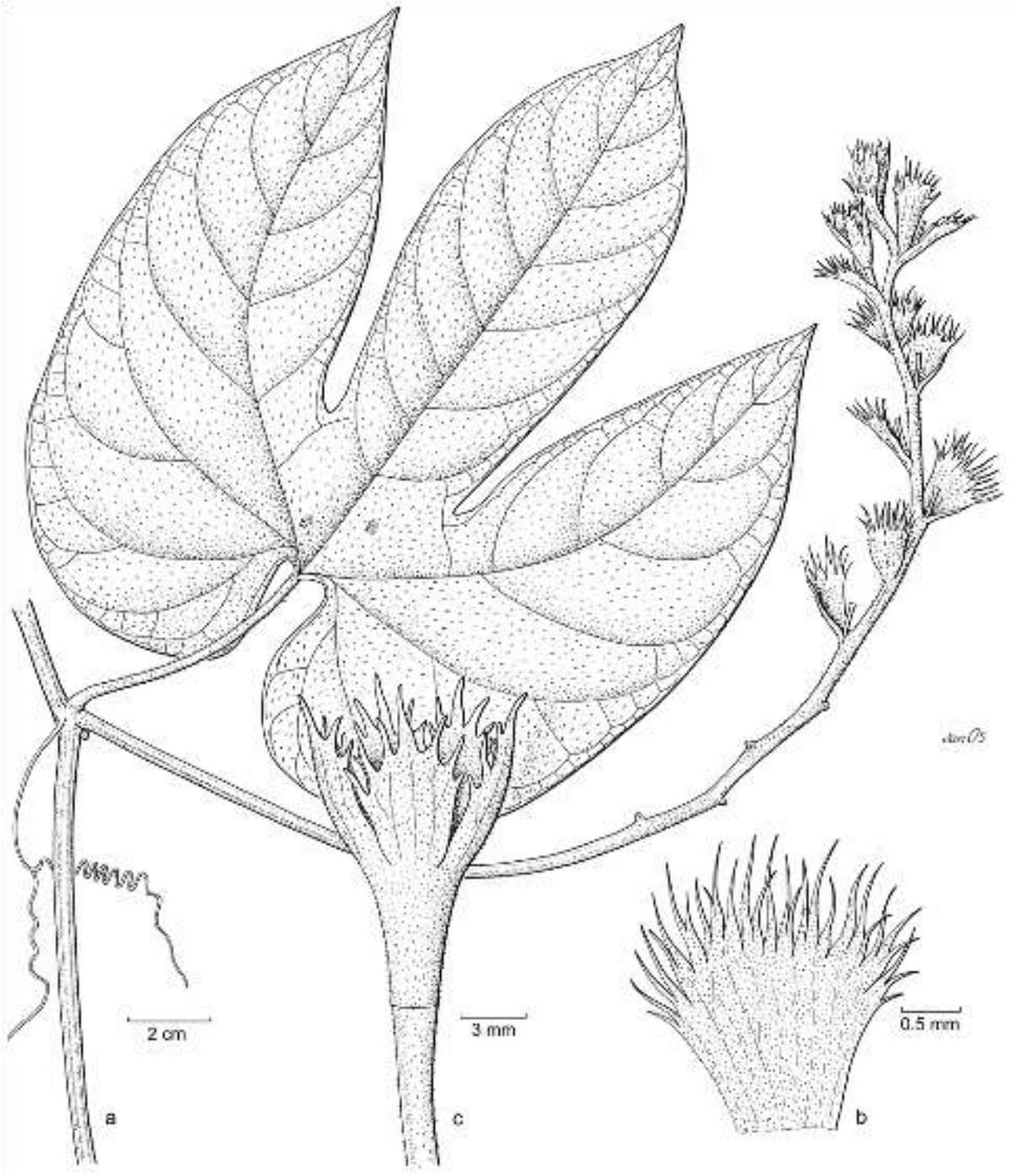


Fig. 1. *Trichosanthes obscura* Rugayah. a. Node with male inflorescence; b. male bract; c. immature male flower showing lobed sepals (corolla invisible, petals still small, coherent and not yet expanded) (all: *C. Hose* 751, K). Drawn by Jan van Os (L).

preparation), this plant came located in the provisional cladograms wide apart from those of the group to which *T. celebica* and close relatives like *T. elmeri* Merr., *T. wawrae* Cogn., and *T. papuana* F.M. Bailey belong. *de Vogel 6136* appeared to link up with species from New Guinea, at present grouped in section *Edulis* Rugayah. This prompted us to re-examine the specimen morphologically and also to see the type of *T. celebica* (FI) again. We concluded that the collection of *de Vogel 6136* is quite different in many details, *e.g.* in its leaf blade glands and seeds and further on it is described as the new species *T. pedicellata*. Most likely here also belongs *Nooteboom 5275* from Buru.

The description of the new species implies that the hitherto accepted description of *T. celebica* (Rugayah, 1999; de Wilde & Duyfjes, 2010) should be amended, excluding *de Vogel 6136, Nooteboom 5275,* and *Kjellberg 1212*.

TRICHOSANTHES CELEBICA Cogn. (1881) 385; Rugayah & de Wilde (1999) 251, p.p.; Rugayah (1999) 99, p.p., pl. 5a; de Wilde & Duyfjes (2010) 260, p.p. — Type: *Beccari 51* (holo FI), SE Sulawesi, near Kendari, Lepo-Lepo. ―Fig. 2c, d.

Climber to 10 m long, early glabrescent, at first with sparse minute hairs, leafy stem 1.5–3 mm diam.; monoecious or dioecious. *Probract* fine-hairy, ovate, 3–6 by 3–4 mm, glands present. *Tendrils* unbranched (or 2-branched). *Leaves* petiole 2–4 cm long; petiolules 0.3–0.8 cm long; blade green on drying, chartaceous or membranous, simple and unlobed or 3-foliolate; unlobed blade in outline ovate-oblong or subhastate, 10–18 by 5–8.5 cm, *foliolate blade* in outline circular, 15–20 cm diam., middle leaflet 10–15 by 3–5(–7) cm, base cuneate, faintly scabrous above, with dense inconspicuous cystoliths, glands (several or) numerous, scattered, 0.5(–1) mm diam., margin entire or sparsely minutely dentate; unlobed blades with 3(–5) curved basal veins, leaflets pinniveined. *Male raceme* minutely rust-hairy; peduncle 2.5–4 cm long, *ca.* 3 mm thick; rachis somewhat thickened, with bract-scars, 5–11 cm long, 8–15-flowered; bracts subpersistent, oblong-lanceolate, 15–25 mm long, fine-hairy, base attenuate, 3–5-nerved, apex deeply incised, with glands. *Male flowers* (from buds): pedicel 1–2(–3) mm long; buds fine-hairy; sepals narrowly triangular, 6–7 mm long, entire. *Female flowers* not known. *Fruit* ripening red (possibly no paler striped), ovoid, *ca.* 9 by 6 cm (see Note 1); fruiting pedicel possibly *ca.* 2 cm long, *ca.* 3 mm thick. *Seeds* pale or dark brown, obliquely (narrowly) ovate or elliptic, much compressed, 12–13 by 6–7 by 2–2.5 mm, smooth, margin absent, edge entire.

Distribution. SE Sulawesi (Kendari).

Habitat & Ecology. Open areas in secondary forest or disturbed primary forest, at low altitudes; male flowering and fruiting in July.

Specimens seen. *Beccari 51* (♂ fl., fr.); *de Wilde & Duyfjes 21903*, *21909* (both sterile).

Notes.

1. The type material (FI), consists of two sheets. One sheet bears a leafy stem with simple tendrils and male inflorescences (flowers in bud) and, on the same stem possibly a *ca.* 2 cm long fruiting pedicel, but the fruit itself is lacking, however described by Cogniaux, *l.c.*, as red, longitudinally striped, 9 by 6 cm, muricate, with the seeds embedded in green-black pulp. The other sheet bears a leafy twig with male inflorescences and an envelope with seeds. We do not believe that the fruit was muricate. We found only unbranched tendrils in the material.
2. *Trichosanthes celebica* is obviously close to *T. wawrae* and *T. elmeri,* both species differing from the first in broader seeds.
3. *Trichosanthes celebica* as here circumscribed differs from the description in Rugayah & de Wilde (1999), Rugayah (1999), and de Wilde & Duyfjes (2010) in the exclusion of the specimens *Kjellberg 1212*, *de Vogel 6136* and *Nooteboom 5275*, of which the latter two collections belong to a new species (see below).

(3) A NEW SPECIES IN TRICHOSANTHES FROM SULAWESI

Trichosanthes pedicellata W.J. de Wilde & Duyfjes, *spec. nov.*

Trichosanthes celebica auct. non Cogn.: Rugayah (1999) 99, p.p., pl. 5a.

A *Trichosanthidi celebicae* fructibus minoribus *ca.* 6.5 cm longis, pedicello in fructu longiore 5.5–7 cm longo, seminibus minoribus 9–10 mm longis differt. — Typus: *De Vogel 6136* (holo L; iso L), Sulawesi, Lake Matano. Fig. 2a, b.

Climber 5–8 m long, early glabrescent, at first with minute hairs especially at the nodes and apex of petioles, leafy stem 2–3 mm diam.; dioecious. *Probract* not obvious. *Tendrils* unbranched. *Leaves* petiole 2.5–3.5 cm long; blade green on drying, subchartaceous or membranous, simple, unlobed or shallowly or irregularly few-lobed at base; blade in outline ovate-oblong or subhastate, 10–20 by 7–10.5 cm, base widely cordate, faintly scabrous with very numerous flat concolorous cystoliths above, blade glands absent or 1–3 at base, 0.5(–1) mm diam., margin entire or sparsely minutely dentate; basal veins 3(–5) curved towards apex. *Male raceme* and *female* flowers not known. *Fruit* solitary, ripening red (possibly not paler striped), ovoid, 6.5 by 4.5 cm, apex *ca.* 2 mm beaked; exocarp thick-leathery, smooth; dry pericarp *ca.* 5 mm thick; pulp not recorded but possibly greenish black; fruiting pedicel 5.5–7 cm long, 3–4 mm

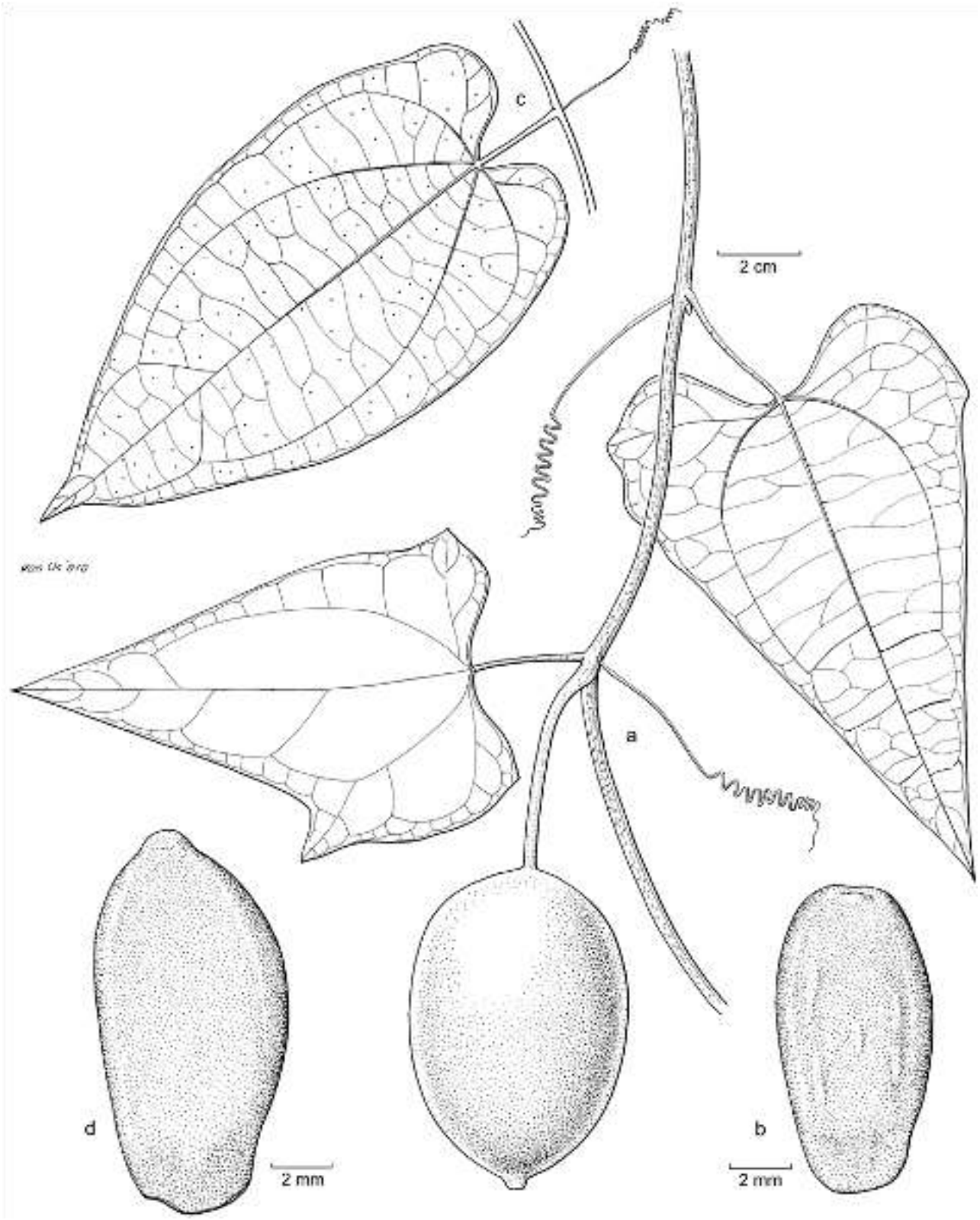


Fig. 2. *Trichosanthes pedicellata* W.J. de Wilde & Duyfjes. a. Fruiting branch; b. seed. c–d: *Trichosanthes celebica* Cogn. c. Simple leaf blade, showing numerous scattered dots on lower surface; d. seed (a, b: *de Vogel* 6136; type (L); c: *de Wilde* & *Duyfjes* 21903 (L); d: *Beccari* 51 (FI)). Drawn by Jan van Os (L).

thick. *Seeds* blackish, compressed, elliptic, 9–10 by 4–4.5 by 2–3 mm, margin absent, edge entire.

Distribution. Sulawesi: Lake Matano area, and possibly Moluccas (NW Buru, *Nooteboom 5275*, sterile).

Habitat & Ecology. Solitary climber in disturbed primary forest on alluvial flat, deep hard red clayey soil derived from conglomerate bedrock; 400 m altitude. Fruiting in July.

Notes.
1. *Trichosanthes pedicellata* differs from *T. celebica* in the aspect of its leaves with very crowded numerous cystoliths on the upper surface and without or with only few glands at the base, and in its smaller fruit with smaller and thicker seeds and with a longer fruiting pedicel. In *T. celebica* the cystoliths are fewer and barely visible, the blade glands numerous and scattered all over the blade, the fruit larger with larger much flattened seeds, and the fruiting pedicel is shorter (see Fig. 2).
2. According to molecular studies by de Boer (mentioned above), *T. pedicellata* rather belongs to the New Guinean section *Edulis*, but the seed in that section is different: more angular in shape, more flattened and often truncate or emarginate at one end.

(4) A NEW VARIETY IN *TRICHOSANTHES EDULIS*, THE TYPE SPECIES OF *TRICHOSANTHES* SECTION *EDULIS* Rugayah

To date it was assumed that *Trichosanthes* sect. *Edulis*, with 8 species, was confined to New Guinea (Rugayah, 1999; de Wilde & Duyfjes, 2010). However, a recent accession from the Philippines, Luzon, *Barbon, Romero & Fuentes PPI 13044*, clearly belongs to this section. It consists of a leafy twig-portion with an unusual long-peduncled immature male inflorescence, obviously most closely resembling *T. edulis*.

The discovery of *PPI 13044* means a large range extension of the species *T. edulis*, as well as a remarkable one of the section *Edulis*, now also known as occurring in the Philippines. The specimen may represent a new species, but for assessing this more complete material is necessary.

As for the present, however, the species is sufficiently resembling *T. edulis* (with 3 varieties in New Guinea) to describe it as a new fourth variety.
Trichosanthes edulis Rugayah var. **punctata** W.J. de Wilde & Duyfjes, *var. nov.* — Fig. 3.

A *Trichosantidis edulis* varietatibus omnibus foliis abaxialiter glandulis punctatis atrobrunneis minutis, pedunculo masculo longo *ca.* 25 cm longo differt. — Typus: *Barbon, Romero & Fuentes PPI 13044*, 05 July 1994 (holo L; iso PNH, not seen), Philippines, Luzon.

Plant subglabrous, except finely hairy male peduncle and woolly hairy male bracts. *Probract* narrowly ovate, *ca.* 7 mm long, acute. *Tendrils* 2-branched. *Leaves* petiole 4.5–6 cm long; blade drying brown-greenish, simple, 3-lobed to nearly halfway, *ca.* 20 by 17 cm, abaxially coarsely reticulately veined and with numerous dark brown dots (gland hairs?), blade glands absent or a single one at very blade-base, *ca.* 1 mm diam., margin entire. *Male inflorescence*: peduncle *ca.* 25 cm long, male bracts broadly elliptic or ovate, *ca.* 20 by 20 mm, densely brown woolly hairy, hairs *ca.* 1 mm long, margin shallowly dentate-crenulate in lower half, apex subacute or bluntish. *Male* and *female flowers* and *fruit* not known.

Distribution. Philippines: Luzon, Isabela Province, where only known from the type.

Habitat & Ecology. In secondary disturbed forest on loam, at 200 m altitude. Flowering (buds): July.

(5) UNIDENTIFIED SPECIMENS

The section *Edulis* seems one of the best defined sections of *Trichosanthes*, however, far from completely known, as testified by two unnamed collections obviously representing new species in this section but waiting for additional material to be described formally. It concerns:

(1) *Eyma 5123*, from West Papua, Wissel Lakes (at the base of Boebeiro and Enarotali, at 1750 m altitude), previously (Rugayah & de Wilde, 1999; Rugayah, 1999) discussed under *T. densiflora* Rugayah. Fig. 4a.

(2) *Johns & Hidayat 10385*, from West Papua, above Freeport, collected at 2780 m, cannot be matched with any of the species described for the section but likely belongs here because of its general leaf shape and distribution. The collection bears immature fruit with an unusual long fruiting pedicel, 5–6 cm long, a character which it shares with *T. pedicellata* (from Sulawesi, see above), and also the leaf shape of both species is resembling, but the seed of *T. pedicellata* does not fit into those of section *Edulis* (Fig. 4b).

ACKNOWLEDGEMENTS

The curators of BO, FI, L, and S are acknowledged for allowing us to study material of *Trichosanthes*. Jan van Os (L) made the beautiful drawings, Ben Kieft (L) scanned the drawings, and Jan Frits Veldkamp (L) translated the diagnoses of the new taxa into Latin.

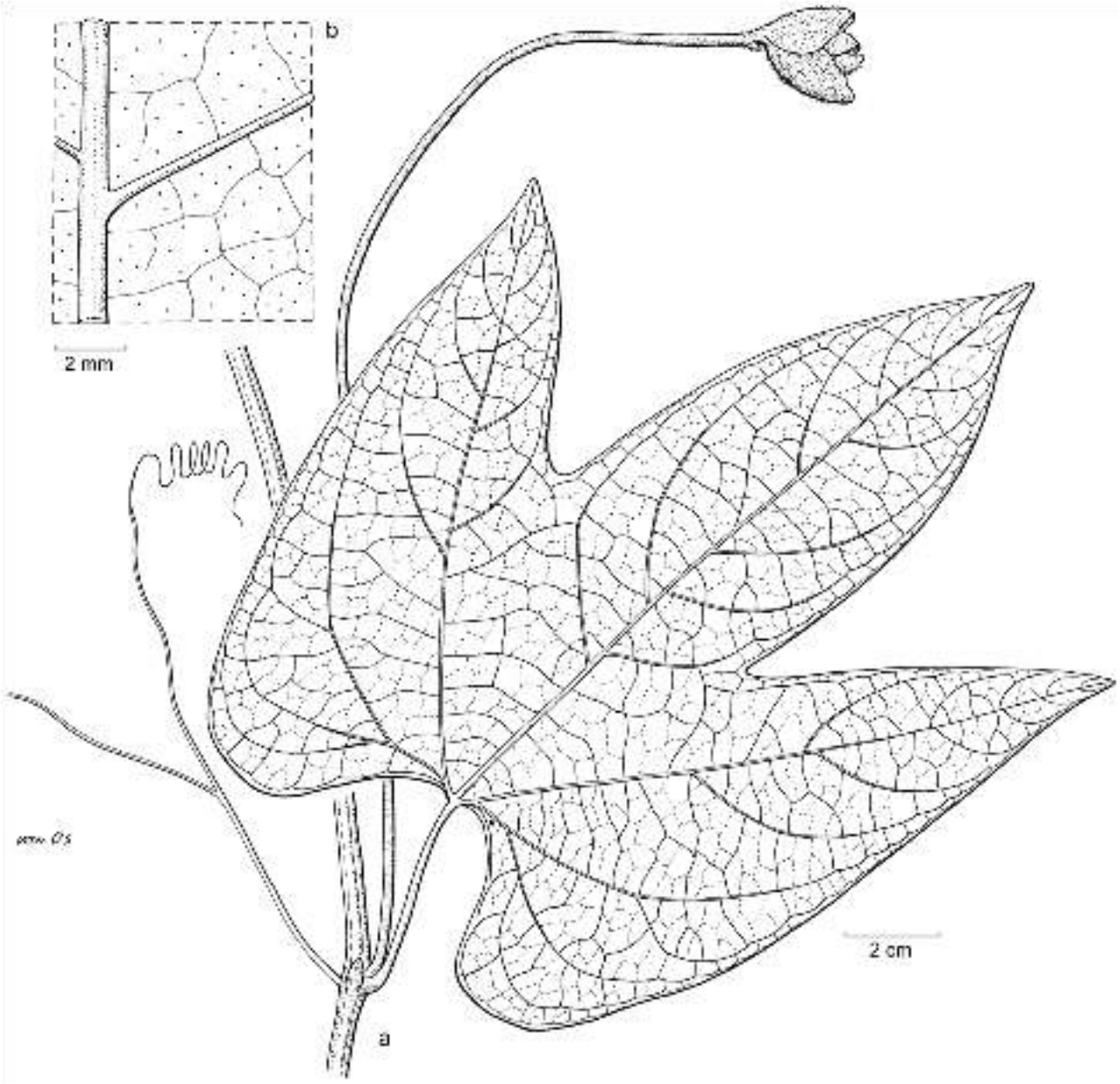


Fig. 3. *Trichosanthes edulis* Rugayah var. *punctata* W.J. de Wilde & Duyfjes. a. Node with male inflorescences; b. detail of lower leaf blade surface, showing punctation (all: *Borbon, Romero* & *Fuentes* PPI 13044 (L)). Drawn by Jan van Os (L).

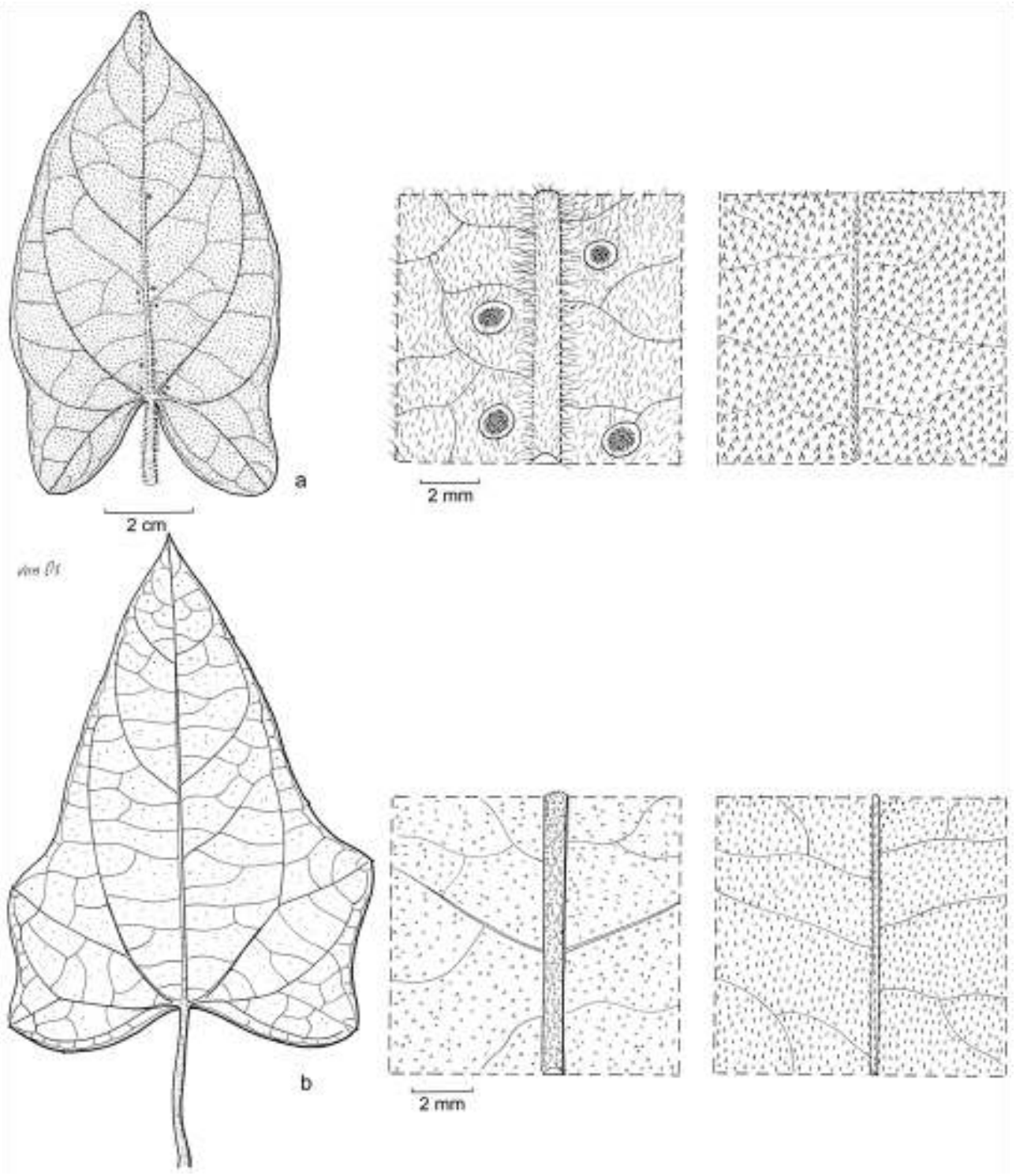


Fig. 4. Leaves of an unidentified high-altitude *Trichosanthes,* from New Guinea, possibly belonging in sect. *Edulis*. a. *Eyma* 5123 (L); b. *Johns* RJ 10385 (L). Drawn by Jan van Os (L).

REFERENCES

COGNIAUX, C. A. 1881. *Cucurbitaceae*. In A. DE CANDOLLE & C. DE CANDOLLE. *Monographiae Phanerogamarum Prodromi* 3: 325–951.

DE WILDE, W. J. J. O. & DUYFJES, B. E. E. 2010. *Flora Malesiana*. *Series 1*. *Spermatophyta* 19: 260.

RUGAYAH. 1999. *Trichosanthes (Cucurbitaceae*) in Malesia. Thesis: 239 pp. Program Pasca Sarjana Institut Pertanian Bogor.

RUGAYAH & DE WILDE, W. J. J. O. 1999. Conspectus of *Trichosanthes (Cucurbitaceae*) in Malesia. *Reinwardtia* 11 (4): 227–280.

ERRATUM

REINWARDTIA Vol. 13, Part 2, 2010

1. Please change the existing word in p. 213, LINE 7 on ABSTRAK (written in Bahasa Indonesia version) with the following:

Keberadaan dua jenis terakhir melampaui distribusi yang sebelumnya hanya diketahui di **barat** garis Wallace.

2. Please change the existing epithet name in p, 214, COLUMN 1, LINE 40 on Key to the species of *Marantaceae* in Sulawesi number 5.a. after *Phrynium:*

……*longispicum*

INSTRUCTION TO AUTHORS

Reinwardtia is a scientific journal on plant taxonomy, plant ecology, and ethnobotany. Manuscript intended for a publication should be written in English represent an article which has not been published in any other journal or proceedings. Every manuscript will be sent to two blind reviewers.

Two printed copies (on A4 paper) of the manuscript of not more than 200 pages together with an electronic copy prepared on Word Processor computer program using Time New Romance letter type and saved in Rich Text File must be submitted.

For the style of presentation, authors should follow the latest issue of Reinwardtia very closely. Title of the article should be followed by authors name and mailing address in one-paragraphed English abstract of not more than 250 words. Keywords should be given below each abstract. On a separated paper, author(s) should send the preferred running title of the article submitted.

Taxonomic identification key should be prepared using the aligned couplet type.

Strict adherence to the International Code of Botanical Nomenclature is observed, so that taxonomic and nomenclatural novelties should be clearly shown. Latin description for new taxon proposed should be provided and the herbaria where the type specimens area deposited should be presented in the long form that is name of taxon, authors name, year of publication, abbreviated journal or book title, volume, number and page.

Map, line drawing illustration, or photograph preferably should be prepared in landscape presentation to occupy two columns. Illustration must be submitted as original art accompanying, but separated from the manuscript. On electronic copy, the illustration should be saved in jpg or gif format at least 350 pixels. Legends or illustration must be submitted separately at the end of the manuscript.

Bibliography, list of literature cited or references follow the Harvard system.

REINWARDTIA
Vol. 13. No. 3. 2012
CONTENTS
Page

Reinwardtia is a LIPI acredited Journal (258/AU 1/P2MBI/05/2010)

Herbarium Bogoriense
Botany Division
Research Center for Biology- LIPI
Cibinong, Indonesia