REINWARDTIA

A JOURNAL ON TAXONOMIC BOTANY, PLANT SOCIOLOGY AND ECOLOGY


Chief Editor
Kartini Kramadibrata (Mycologist, Herbarium Bogor, Indonesia)

Editors
Dedy Darnaedi (Taxonomist, Herbarium Bogor, Indonesia)
Tukirin Partomihardjo (Ecologist, Herbarium Bogor, Indonesia)
Joeni Setijo Rahajoe (Ecologist, Herbarium Bogor, Indonesia)
Marlina Ardiyani (Taxonomist, Herbarium Bogor, Indonesia)
Topik Hidayat (Taxonomist, Indonesia University of Education, Indonesia)
Eizi Suzuki (Ecologist, Kagoshima University, Japan)
Jun Wen (Taxonomist, Smithsonian Natural History Museum, USA)

Managing Editor
Himmah Rustiami (Taxonomist, Herbarium Bogor, Indonesia)
Lulut Dwi Sulistyaningsih (Taxonomist, Herbarium Bogor, Indonesia)

Secretary
Endang Tri Utami

Layout
Medi Sutiyatmo

Illustrators
Subari
Wahyudi Santoso
Anne Kusumawaty

Correspondence on editorial matters and subscriptions for Reinwardtia should be addressed to:
HERBARIUM BOGORIENSE, BOTANY DIVISION,
RESEARCH CENTER FOR BIOLOGY-INDONESIAN INSTITUTE OF SCIENCES
CIBINONG SCIENCE CENTER, JLN. RAYA JAKARTA - BOGOR KM 46,
CIBINONG 16911, P.O. Box 25 CIBINONG
INDONESIA
PHONE (+62) 21 8765066; Fax (+62) 21 8765062
E-MAIL: reinwardtia@mail.lipi.go.id
http://e-journal.biologi.lipi.go.id/index.php/reinwardtia

The Editors would like to thank all reviewers of volume 14(2):

Abdul Latiff Mohamad, Faculty of Science & Technology, Universiti Kebangsaan Malaysia, Malaysia
Abdulrokhman Kartonegoro - Herbarium Bogoriense, Bogor, Indonesia
Agus Susatya - University of Bengkulu, Bengkulu, Indonesia
Axel D. Poulsen - Royal Botanic Garden Edinburgh, Edinburgh, Scotland, UK
Campbell O. Webb - Arnold Arboretum, University of Harvard, USA
Edwino Fernando - Dept. of Forest Biological Sciences, University of the Philippines, Los Baños, Philippines
Fabian Brambach - Dept. of Ecology & Ecosystem Research, Georg August University, Gottingen, Germany
John Mood - Lyon Arboretum, University of Hawaii, USA
Kuswata Kartawinata - Integrative Research Center, The Field Museum, Chicago, USA
Mark Newman - Royal Botanic Garden Edinburgh, Edinburgh, Scotland, UK
Martin Dancak - Faculty of Science, Palacky University, Czech Republic
Mien A. Rifai - Akademi Ilmu Pengetahuan Indonesia (AIPI)
Ridha Mahyuni - Herbarium Bogoriense, Bogor, Indonesia
TWO NEW SPECIES OF \textit{ALPINIA} (ZINGIBERACEAE) FROM SULAWESI, INDONESIA

Received September 03, 2015; accepted September 18, 2015

WISNU H. ARDI
Centre for Plant Conservation – Botanic Gardens, LIPI, Jln. Ir. H. Juanda No. 13 Bogor, 16122. Indonesia. E-mail: wisn001@lipi.go.id

MARTLNA ARDIYANI
Herbarium Bogoriense, Botany Division, Research Center for Biology-LIPI, Cibinong Science Center, Jln. Raya Jakarta-Bogor Km. 46, Cibinong 16911, Bogor, Indonesia. E-mail: marlina.ardiyani@gmail.com

ABSTRACT
ARDI, W. H. & ARDIYANI, M. 2015. Two new species of \textit{Alpinia} (Zingiberaceae) from Sulawesi, Indonesia. Reinwardtia 14(2): 311 – 316. — Two new species of \textit{Alpinia} section \textit{Cenolophon}, \textit{Alpinia macrocrista} Ardiyani \& Ardi, and \textit{Alpinia pusilla} Ardi \& Ardiyani, from Sulawesi, Indonesia, are described. Colour plates are provided, and four-loci DNA barcodes have been generated for the purpose of identification. Tabulated key to species of \textit{Alpinia} subsection \textit{Cenolophon} in Sulawesi is also presented.

Key Words: \textit{Alpinia}, endemic, ginger, new species, subsection \textit{Cenolophon}, Sulawesi, taxonomy, Zingiberaceae.

INTRODUCTION

\textit{Alpinia} is a large genus consisting of about 230 species distributed across South Asia to Australia (Kress \textit{et al.}, 2005). \textit{Alpinia} subsection \textit{Cenolophon} (Blume) R. M. Sm. was proposed by Smith (1990), adopting the original generic name of the type species, \textit{Cenolophon rubrum} Blume (1823; = \textit{Alpinia rubricaulis} K. Schum.). The subsection is characterized by erect and branchless inflorescences which produce flowers singly, never in cincinni, and the absence of bracteoles (occasionally) minute and caducous very early. Phylogenetic analysis shows that the group is embedded in Clade Zerumbet-IV showing an affinity with \textit{Alpinia zerumbet} (Pers.) B. L. Burtt \& R. M. Sm. (Kress \textit{et al.}, 2005). As \textit{Alpinia} is not monophyletic and the type of the genus, \textit{A. galanga} (L.) Willd., is not included in the Zerumbet clade, a new generic name is expected to be given to this in the future.

\textit{Alpinia} subsection \textit{Cenolophon} is a relatively small group which belongs to subgenus \textit{Alpinia} section \textit{Alpinia} and comprises about 24 species distributed in southern China, Indo-China, Peninsular Malaysia, and Indonesia. In Indonesia, they are restricted to Sulawesi, Borneo and the Sula Islands (Sanana). Five endemic species belonging to this subsection are found in Sulawesi, namely \textit{Alpinia orthostachys} K. Schum., \textit{A. hulstii} Váleton, \textit{A. padacanca} Váleton ex K. Heyne, \textit{A. rubricaulis} K. Schum., \textit{A. versicolor} K. Schum. and \textit{A. warburgii} K. Schum.

During an inventory of the gingers in Bogor Botanic Garden, five species of \textit{Alpinia} subsection \textit{Cenolophon} were recorded, namely \textit{A. padacanca}, \textit{A. rubricaulis}, \textit{A. warburgii} and two species which proved to be new to science. The new species which we describe as \textit{Alpinia macrorista} below had originally been collected sterile in West Sulawesi Province while \textit{Alpinia pusilla}, also collected sterile, came from Natali Baru Village, North Sulawesi Province. Both were cultivated at Bogor Botanic Gardens until they flowered and are described formally here.

The two new species increase the number of \textit{Alpinia} subsection \textit{Cenolophon} in Sulawesi to seven species which are all endemic. Descriptions of the new species are presented and key morphological characters separating the seven species of the subsection are tabulated in the present paper.

MATERIALS AND METHODS

The morphology of the new species was characterized from living plants collected at Bogor Botanic Gardens. Detailed morphological measurements were made using a ruler and a calibrated eyepiece under a dissecting microscope. Herbarium specimens to serve as types were taken from plants...
cultivated in the Garden (see Taxonomic Treatment).

DNA extraction, amplification and sequencing of four barcoding regions, namely rbcL, matK, the intergenic spacer between trnH and psbA, and ITS2 were carried out using published primers under standard conditions (see Kress and Erickson, 2007). GenBank accession numbers for the four-locus barcode regions are summarized in Table 1.

**TAXONOMIC TREATMENT**

1. *Alpinia macrocrista* Ardiyani & Ardi, spec. nov. — Type: Indonesia, Cultivated in Bogor Botanic Garden from vegetative material collected in the wild (Mamuju District, Inhutani Palade, West Sulawesi Province, Indonesia) 14 iv 2013, Wisnu Ardi & Marlina Ardiyani WI 80 (BO; isotype BOHB). Plate 1.

The new species resembles *Alpinia macrostephana* (Baker) Ridl. in the flowers and anther crest shape and size, but differs consistently by the shorter leafy shoots (up to 80 cm tall), subsessile leaflets, smaller leaf size (21.5–34 × 4–8 cm), and symmetrically cuneate leaf base. In contrast, in *Alpinia macrostephana* the length of leafy shoots are up to 2.5 m tall, petioles up to 11 cm long, leaf size 60 × 21.5–34 cm, and large, broadly ovate anther crest which is more than twice the length of the anther (10 × 21.5–34 cm), and large flowers (> 4.5 cm long) and large, broadly ovate anther crest which is more than twice the length of the anther (10 × 2–12–14 mm).

**Description.** Perennial herb. *Rhizome* ca. 10 mm diameter, scales cream greenish externally, 2–3 cm long. Leafy shoots 4 cm apart forming a loose clump of few shoots, shoot 60–80 cm long with 6–11 leaves, green, base slightly swollen; leaf sheath green with red-brown margin. *Ligule* 5–10 mm long, red-brown, margin sparsely ciliate, apex deeply bilobed; leaf epitiolate or sessile. *Leaves* elliptic-oblong, 21.5–34 × 4–8 cm, glabrous on both surfaces, adaxially green, shiny, abaxially pale green, margin entire from the middle part to the base, hairy towards the apex, slightly undulating, base cuneate, apex acuminate. *Inflorescence* terminal, racemose, flower bearing part 13 cm long, densely set with 10–20 flowers, 1–2 flowers open at a time. *Pedicel* 2–2.5 cm long, pubescent, bracts absent. *Flowers* 5–5.5 cm long. *Pedicel* ca. 1–2 mm long, red. *Calyx* reaching shorter than corolla, tubular, up to 19–23 mm long, apex three-lobed, split unilaterally, pubescent, white. *Corolla* tube 15–17 mm long, white; corolla lobes oblong, reaching shorter than filament, pubescent, white tinged pink, dorsal lobe oblong mucronate, 2.2–2.5 × 0.5–1.0 cm, lateral lobes 2.4–2.7 × 0.7–1.0 cm. *Labellum* broadly obvate, 3.1–3.3 × 2.5–2.8 cm, adaxially pink with two broad, yellowish green lines between the middle band and red stripes on the middle band, apex tinged yellow, margin entire from base to the middle part and crenate from the middle part to the apex, apex obtuse. *Stamen* 2.1–2.7 cm long, pinkish, outer surface sparsely covered with glandular hairs. *Filament* 16–20 mm long. *Anther* 5–7 × 4–4.5 mm, pink; anther crest broadly obvate, apex crenate, 10 × 12–14 mm. *Lateral staminodes* subulate, 10–15 mm long, green with red blotches. *Ovary* spherical, pale green, tomentose, *ca*. 2–4 × 4 mm. *Style* 4–4.5 cm long, glabrous. *Stigma* funnel-shaped. *Nectary gland* entire, split to the base in one side close to the base of the style, 2–3 mm long, clasping the base of the style. *Fruit* and seeds unknown.

**Distribution.** At present this species is only known from the type locality in West Sulawesi and is probably endemic to Sulawesi.

**Etymology.** The specific epithet is derived from

<table>
<thead>
<tr>
<th>Species</th>
<th>Gene region</th>
<th>Genbank accession number</th>
<th>Voucher (Herbarium location)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Alpinia macrocrista</em></td>
<td>rbcL</td>
<td>KT280458</td>
<td>WI 80 (BO, HBBO)</td>
</tr>
<tr>
<td></td>
<td>matK</td>
<td>KT280460</td>
<td>WI 80 (BO, HBBO)</td>
</tr>
<tr>
<td></td>
<td>trnH-psbA</td>
<td>KT280462</td>
<td>WI 80 (BO, HBBO)</td>
</tr>
<tr>
<td></td>
<td>ITS2</td>
<td>KT280464</td>
<td>WI 80 (BO, HBBO)</td>
</tr>
<tr>
<td><em>A. pusilla</em></td>
<td>rbcL</td>
<td>KT280459</td>
<td>WI 81 (BO, HBBO)</td>
</tr>
<tr>
<td></td>
<td>matK</td>
<td>KT280461</td>
<td>WI 81 (BO, HBBO)</td>
</tr>
<tr>
<td></td>
<td>trnH-psbA</td>
<td>KT280463</td>
<td>WI 81 (BO, HBBO)</td>
</tr>
<tr>
<td></td>
<td>ITS2</td>
<td>KT280465</td>
<td>WI 81 (BO, HBBO)</td>
</tr>
</tbody>
</table>
**macro** (Latin – large) and **crista** (Latin - crested) referring to the large anther crest.

**Phenology.** *Alpinia macrocrista* has been observed in flower at Bogor Botanic Garden from May to June.

**Conservation status.** Data deficient (DD). *Alpinia macrocrista* is known from one collection from a single location which could not be georeferenced with certainty. Further exploration is required to assess the current range of the species on the island.

Notes. At first, this species was misidentified in the Garden as *Amomum abendanoni*, which was a nomen nudum of Valeton. A specimen of *Amomum abendanoni* was found in Herbarium Bogoriense but the species had never been published. When the living material in Bogor Botanic Garden flowered, we could identify it as a species of *Alpinia*.

2. *Alpinia pusilla* Ardi & Ardiyani, spec. nov. —
Type: Indonesia, Cultivated in Bogor Botanic Garden from vegetative material collected in the wild (Natali Baru Village, North Sulawesi Province, Indonesia) 14 iv 2013, Wisnu Ardi & Marlina Ardiyani WT 81 (BO, isotype BOHB).

Plate 2.

This species differs from all other species of *Alpinia* subsect. *Cenolophon* in its considerably small stature, few-flowered inflorescence and relatively large size flower.

Description. Perennial herb. *Rhizome* 5–8 mm diameter, scales cream greenish externally, 2–3 cm long. *Leafy shoots* 3–4 cm apart forming a dense clump of up to 10 shoots, shoot 25–30 cm
long with 3–5 leaves, brownish to red, pubescent. **Ligule** 3–5 mm long, reddish to brownish, margin ciliate, apex bilobed. **Petiole** 1.5–4.5 cm long, green or red, glabrous. **Leaves** elliptic, 8.5–15 × 3–8 cm, pubescent on both surfaces, adaxially green, abaxially pale green, slightly plicate, margin entire, base slightly oblique, sub-rounded, apex acuminate. **Inflorescence** terminal, a simple raceme, branchless, flower-bearing part 6–7.5 cm long with 4–5 well-spaced flowers, 1–2 open at a time. **Peduncle** 1–2 cm long, pubescent. **Flowers** 4.0–4.5 cm long. **Pedicel** ca. 1–2 mm long, red. **Calyx** reaching shorter than corolla, tubular, up to 19 mm long, apex three-lobed, split unilaterally, white pinkish, pubescent. **Corolla** tube 11–14 mm long, cream; corolla lobes oblong, reaching shorter than filament, white, pubescent, dorsal lobe oblong 1.6–2.5 × 0.4–0.6 cm, lateral lobes 1.7–2.4 × 0.5–0.6 cm. **Labellum** obvate, curved outward 2.8–3.3 × 1.8–2.3 cm, adaxially white pinkish with red stripes in between of two yellow bands, margin entire, apex three-lobed. **Stamen** 3.2–3.7 cm long, pink, outer surface covered with glandular hairs. **Filament** 27–30 mm long. **Anther** 6–7 × 3.5–4 mm, pink with red strips on the upper surface, pink creamy underneath; anther crest ovate, apex crenulate, 5 × 5.5–6 mm. **Lateral staminodes** subulate, 7–10 mm long, red. **Ovary** spherical, dark red, tomentose, **ca.** 4–4.5 mm long, 3–3.5 mm diameter; style glabrescent; stigma 4 mm long, funnel-shaped; nectary gland entire, split to the base in one side close to the base of the style, 2–3 mm long.

**Distribution.** At present *Alpinia pusilla* is only known from the type locality, endemic to North Sulawesi.

**Etymology.** The specific epithet is derived from *pusillus* (Latin – very small), referring to the small stature of the plant which, at only 30 cm tall, is the smallest of all the species of subsection *Cenolophon*.

**Phenology.** *Alpinia pusilla* has been observed in flower at Bogor and Cibodas Botanic Gardens from May to June.

**Conservation status.** Data deficient (DD). *Alpinia pusilla* is known from one collection from single location which could not be georeferenced with certainty. Further exploration is required to assess the current range of the species on the island.

**Notes.** *A. pusilla* is distinct from all other species not only in its short leafy shoots but also in the number of flowers per inflorescence and the size of the flower. Even if cultivation outside its naturally habitat may have prevented it from growing to its maximum size, it will still be easy to distinguish it even if taller plants would be collected in nature in the future.

**Notes on Alpinia subsection Cenolophon in Sulawesi**

The number of the member of *Alpinia* subsection *Cenolophon* in Sulawesi reaches seven species which are all endemic. This number may increase as new species are likely to be found. Table 1 shows the comparison of morphological characters of *Alpinia* subsection *Cenolophon*. The leafy shoot of *A. pusilla* is up to 30 cm long, while all other species reach more than 50 cm. The number of flowers per inflorescence vary from 4 flowers in *A. pusilla* to 40 flowers in *A. warburgii*. The flower size also vary from less than 4 cm to 5 cm or more. The largest flowers are found in *A. macrocrista*. The size and the shape of the labellum vary, *A. pusilla* has an obvate labellum with entire margin which is relatively big (3.3 × 2.3 cm) compared to the other species from Sulawesi. *Alpinia macrocrista* is unique and distinct from others because of its subsessile and coriaceous leaf blades, large flower (5–5.5 cm long) and conspicuously large, broadly obvate anther crest (10 × 12–14 mm) compared to other species.

**ACKNOWLEDGEMENTS**

We would like to thank Dr Mark F. Newman for discussion and assistance in preparing the manuscript. We also thank Bogor Botanical Garden and Herbarium Bogoriense for their facilities. The second author is indebted to the Sibbald Trust of the Royal Botanic Garden Edinburgh which funded a visit to examine herbarium specimens and the living collections there. Thanks are also due to Susila who helped in the Molecular Lab. The DNA sequencing was funded by the DIPA Project “Konstruksi Pustaka Referensi Sekuen DNA Fauna dan Flora Indonesia melalui DNA Barcode dan Forenisk” or "Construction of the DNA Reference Library of the Indonesian Fauna and Flora using DNA Barcode and Forensic". Last but not least, we would like to thank the Editors and the Reviewers who helped us to improve the quality of this paper.

**REFERENCES**


Table 2. Comparison of morphological characters of *Alpinia* spp. in *Alpinia* subsect. *Cenolophon* in Sulawesi

<table>
<thead>
<tr>
<th>Character</th>
<th>A. huljstinii</th>
<th>A. orthostachys</th>
<th>A. padacanca</th>
<th>A. rubricaulis</th>
<th>A. versicolor</th>
<th>A. warburgii</th>
<th>A. pusilla</th>
<th>A. macrocrista</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leafy shoot</td>
<td>0.4-0.6 m</td>
<td>2 m</td>
<td>0.9 m</td>
<td>1.6 m</td>
<td>3 m</td>
<td>0.7 m</td>
<td>0.3 m</td>
<td>0.6-0.8 m</td>
</tr>
<tr>
<td>Petiole; petiole length</td>
<td>Petiolate; 2-7 cm</td>
<td>Petiolate; 8 mm</td>
<td>Petiolate; 1.5-4 cm</td>
<td>Petiolate; 1-5 cm</td>
<td>Petiolate; 2 cm</td>
<td>Petiolate; 1.2 cm</td>
<td>Petiolate; 1.5-4 cm</td>
<td>Subsessile</td>
</tr>
<tr>
<td>Shape of leaf</td>
<td>Ovate-oblong</td>
<td>Oblong</td>
<td>Elliptic-oblong</td>
<td>Elliptic</td>
<td>Elliptic-oblong</td>
<td>Narrowly oblong</td>
<td>Elliptic</td>
<td>Elliptic-oblong</td>
</tr>
<tr>
<td>Size of leaf</td>
<td>20-40 × 7-8 cm</td>
<td>30-35 × 7.5 cm</td>
<td>12-24 × 4-8 cm</td>
<td>18-40 × 8.5-12 cm</td>
<td>50 × 14 cm</td>
<td>40 × 5 cm</td>
<td>8.5-15 × 3-8 cm</td>
<td>21-34 × 4-8 cm</td>
</tr>
<tr>
<td>Number of flower per inflorescence</td>
<td>-</td>
<td>-</td>
<td>4-10</td>
<td>17-25</td>
<td>-</td>
<td>14-40</td>
<td>3-5</td>
<td>10-20</td>
</tr>
<tr>
<td>Flower size (length)</td>
<td>3-4 cm</td>
<td>-</td>
<td>3-3.5 cm</td>
<td>3.2-3.5 cm</td>
<td>-</td>
<td>3-3.5 cm</td>
<td>4-4.5 cm</td>
<td>5-5.5 cm</td>
</tr>
<tr>
<td>Shape of labellum</td>
<td>Obovate</td>
<td>Obovate</td>
<td>Broadly obovate</td>
<td>Obovate</td>
<td>Obovate</td>
<td>Obovate</td>
<td>Obovate</td>
<td>Broadly obovate</td>
</tr>
<tr>
<td>Size of labellum</td>
<td>32 × 20 mm</td>
<td>-</td>
<td>22-24 × 19-21 mm</td>
<td>22-24 × 14-16 mm</td>
<td>25 mm long</td>
<td>14 mm long</td>
<td>33 × 23 mm</td>
<td>31-33 × 25-28 mm</td>
</tr>
<tr>
<td>Anther crest</td>
<td>Ovate</td>
<td>Ecristate</td>
<td>Ovate</td>
<td>Ovate</td>
<td>-</td>
<td>Ovate</td>
<td>Ovate</td>
<td>Broadly obovate</td>
</tr>
<tr>
<td>Anther crest size</td>
<td>4 mm long</td>
<td>-</td>
<td>3 × 2.5 mm</td>
<td>3.4 × 2.5-3 mm</td>
<td>-</td>
<td>1.5 mm long</td>
<td>6.7 × 3.5 mm</td>
<td>10 × 12-14 mm</td>
</tr>
</tbody>
</table>


REINWARDTIA Author Agreement Form

Title of article : 

Name of Author(s) : 

I/We hereby declare that:

- My/Our manuscript was based on my/our original work.
- It was not published or submitted to other journal for publication.
- I/we agree to publish my/our manuscript and the copyright of this article is owned by Reinwardtia.
- We have obtained written permission from copyright owners for any excerpts from copyrighted works that are included and have credited the sources in our article.

Author signature (s)           Date

___________________________________________________________________________________________

Name
REINWARDTIA
CONTENTS
Page

IBRAHIM DJAMALUDDIN, POPPY INDRAYANI, YASUHIRO MITANI, SHUICHIRO TAGANE & TETSUOAZU YAHARA
GIS web server for biodiversity information system ......................................................... 249

TAN AI LEE, NURNIDA MOHD KAMAL, TAN HOCI POAY & IZLAMIRA ROSLAN. Notes on morphological characteristics of Bungorima spp. and its status in Peninsular Malaysia ...................................................... 259

ANDREW POWLING, AURORA PHILLIPS, ROSIE FRITCHETT, SIMON T. SEGAR, REBECCA WHEELER, ANI MARDI
ASTUTI. The vegetation of Lambugasung forest, Buiten, Indonesia .................................. 265

RUTH KIEW. Chrysanthus (Oleaceae) in Sulawesi, Indonesia, including three new species .................. 287

KHOON MEONG WONG, SYLVAIN C. RAZAFIMANDIMBISON. A new combination and a new name in Glycosorrhoea (Rutaceae) ................................................................. 297

J. F. VELDKAMP, LULUT DWI SULISTYANINGSIH. Nomenclature and typification of Maso salicifolia Zoll. ex Kuntz (Muscaceae) ................................................................. 299

J. F. VELDKAMP & WITA WARDANI. Agapanthus fenestratus var. pauciflorus is the correct name for A. flambegii var. bolangeri (Agapanthraceae) ............................................. 303

MARLINA ARDIYANI. A new species of Zingiber (Zingiberaceae) from Enggano island, Indonesia .......... 307

WSNU H. ARDI & MARLINA ARDIYANI. Two new species of Alpinia from Sulawesi, Indonesia .................. 311

RIHDA MARYINTI, YAYAN WARYUC KUSUMA, WIHERMANTO & J. F. VELDKAMP. Notes on Rafflesia (Rafflesiaceae) in East Java with a new record Rafflesia gadoliana 'Mujer' .............................................. 317

W. J. O. DE WILDE, H. E. DUYFRES & RUGAYAH. Gymnostachyum pectinatum (W. J. De Wilde & Duyfres) Rugayah. rank of species for Gymnostachyum acuminatum var. pectinatum (Cucurbitaceae) .............................................. 323

Reinwardtia is a LIPI accredited Journal (517/AU2/P2M1-LIPI/04/2013)
http://ejournal.biologi.lipi.go.id/index.php/reinwardtia

Herbarium Bogoriense
Botany Division
Research Center for Biology – Indonesian Institute of Sciences
Cibinong Science Center
Jl. Raya Jakarta – Bogor, Km 46
Cibinong 16911, P.O. Box 25 Cibinong
Indonesia