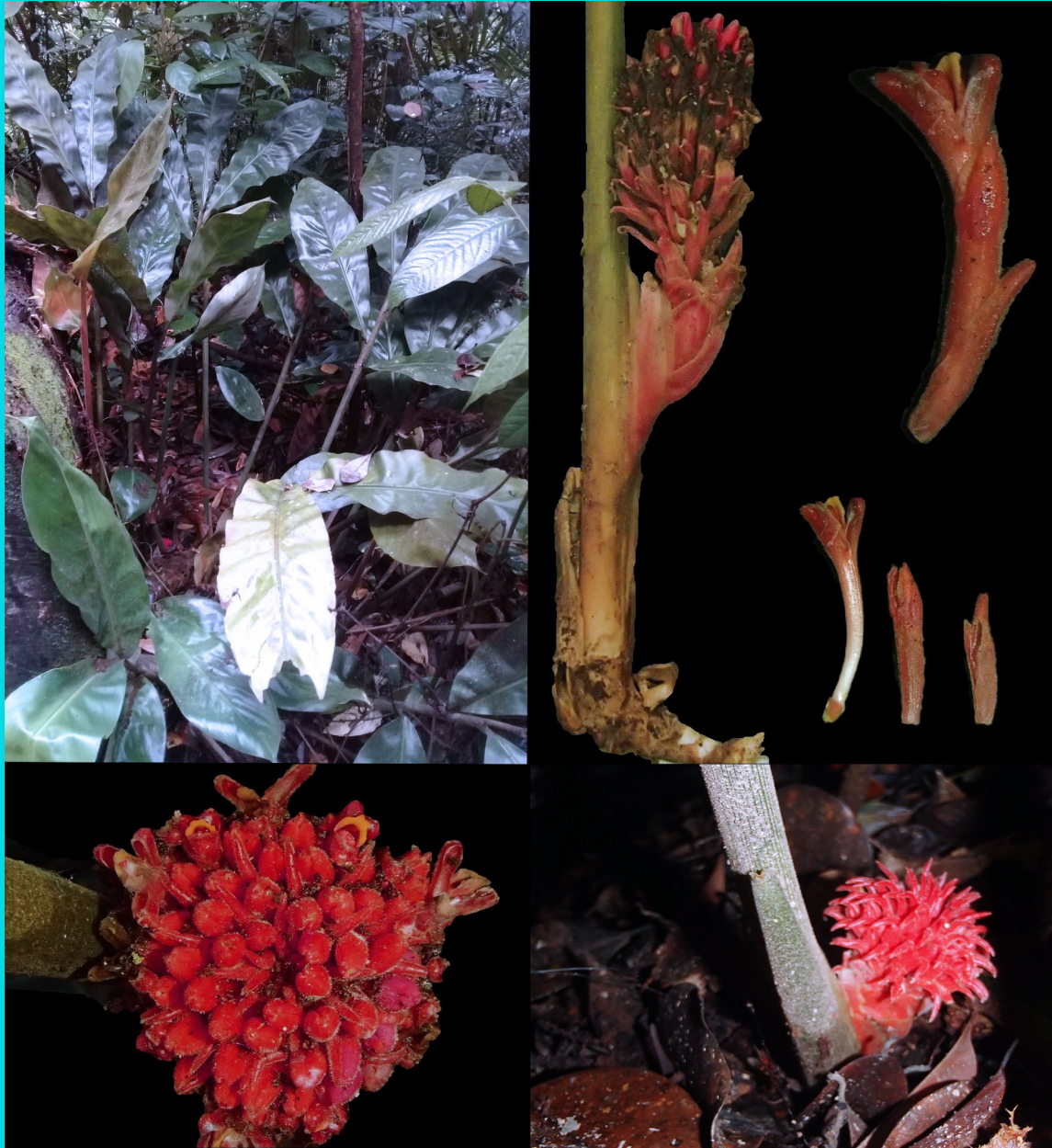




# REINWARDTIA

A JOURNAL ON TAXONOMIC BOTANY, PLANT SOCIOLOGY AND ECOLOGY

ISSN 0034 – 365 X | E-ISSN 2337 – 8824 | Accredited 10/E/KPT/2019



2020 19 (2)



**The Editors would like to thank all reviewers of volume 19(2):**

Theo Damen, Wageningen, The Netherlands  
Andrew J. Henderson, The New York Botanical Garden, New York, USA  
Berhaman Ahmad, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia  
L. Hartanto Nugroho, Gadjah Mada University, Yogyakarta, Indonesia  
Marco Roos, Naturalis Biodiversity Center, Leiden, The Netherlands  
Mien A. Rifai, Indonesia Academy of Sciences (API), Jakarta, Indonesia  
Mark Newman, Royal Botanic Garden Edinburgh, Scotland, United Kingdom  
Fabian Brambach, Georg-August-University Göttingen, Göttingen, Germany  
Avelinah Julius, Forest Research Institute Malaysia (FRIM), Kuala Lumpur, Malaysia

## **DRACAENA JIEWHOEI (ASPARAGACEAE), A NEW ENDEMIC SPECIES FROM SUMATRA, INDONESIA**

Received May 15, 2020; accepted September 24, 2020

### **G. G. HAMBALI**

Taman Buah Mekarsari, Cileungsi, Bogor, 16820 and Yatazawa Research & Development Gardens, Bogor, 16143, Indonesia. Email: gregham2010@yahoo.com

### **DIAH SULISTIARINI**

Herbarium Bogoriense, Botany Division, Research Center for Biology, Indonesian Institute of Sciences (LIPI), Cibinong Science Center, Jln. Raya Jakarta–Bogor Km 46, Cibinong, 16911, Bogor, Indonesia. Email: dsulistiariini@yahoo.com

### **RUGAYAH**

Herbarium Bogoriense, Botany Division, Research Center for Biology, Indonesian Institute of Sciences (LIPI), Cibinong Science Center, Jln. Raya Jakarta–Bogor Km 46, Cibinong, 16911, Bogor, Indonesia. Email: titikrugayah@yahoo.com

### **ABSTRACT**

HAMBALI, G. G., SULISTIARINI, D. & RUGAYAH. 2020. *Dracaena jiewhoei* (Asparagaceae), a new endemic species from Sumatra, Indonesia. *Reinwardtia* 19(2): 75–79. — *Dracaena jiewhoei* Hambali, Sulistiariini & Rugayah, a new endemic species from Muara Emat, Batang Merangin, Jambi, Sumatra, Indonesia is described and illustrated. It is related to *Dracaena cantleyi* Baker but differs substantially in a range of morphological and its growth pattern characteristics.

**Keywords:** *Dracaena jiewhoei*, Indonesia, Jambi, Muara Emat.

### **ABSTRAK**

HAMBALI, G. G., SULISTIARINI, D. & RUGAYAH. 2020. *Dracaena jiewhoei* (Asparagaceae), satu jenis baru endemik dari Sumatra, Indonesia. *Reinwardtia* 19(2): 75–79. — Jenis baru *Dracaena jiewhoei* Hambali, Sulistiariini & Rugayah, endemik dari Muara Emat, Batang Merangin, Jambi, Sumatra, Indonesia dipertelakan dan dibuat ilustrasinya. Jenis ini berkerabat dekat dengan *Dracaena cantleyi* Baker, tetapi berbeda pada karakter morfologi dan pola pertumbuhan.

**Kata kunci:** *Dracaena jiewhoei*, Indonesia, Jambi, Muara Emat.

### **INTRODUCTION**

*Dracaena* is a genus included in several family names, Liliaceae, Agavaceae, Ruscaceae, Dracaenaceae (Lu & Morden, 2010). Later *Dracaena* is placed in Asparagaceae, together with *Cordyline* (ex Agavaceae), *Arthropodium*, *Asparagus*, *Chlorophytum*, *Disporopsis*, *Liriope*, *Ophiopogon*, *Peliosanthes*, *Thysanotus* and *Tupistra* (ex Liliaceae) (van Balgooy, 2010). Recently, Damen *et al.* (2018) have recorded 116 species of *Dracaena* in the world.

Baker (1875) has revised genera and species of Asparagaceae, and he enumerated 38 species of *Dracaena*, some of them found in Malesian region *e.g.* *D. finlaysonii* (Malacca and Borneo), *D. angustifolia* (Java and Borneo), *D. porteri* (Penang), *D. timorensis* (Timor), *D. spicata* var. *aurantiaca* (Malacca, Penang and Singapore). *D. atropurpurea* var. *griffithii* (Malacca, Borneo), *D. atropurpurea* var. *gracilis* (Penang) and *D. elliptica* (Sumatra, Java and Borneo).

In early 2000s while exploring various places in Sumatra with the purpose of procuring ornamental and fruit plant materials for supporting the breeding project in Taman Buah Mekarsari and Yatazawa Research & Development Gardens (YRDG) in Bogor, G. G. Hambali stumbled upon several attractive individuals of an unidentified *Dracaena* species in a disturbed secondary forest in the vicinity of Muara Emat village. The *Dracaena* propagules obtained from the trip and from two more trips to the same place were planted in YRDG. Nowadays, there are about 30 mature living plants growing in the ground along with mature plants of *D. cantleyi* and *D. elliptica*. After an arduous search of information which includes the studies of *Dracaena* herbarium specimens in BO and SING and several hybridization experiments, it is concluded that the attractive Muara Emat *Dracaena* is an undescribed species and named here as *Dracaena jiewhoei* Hambali, Sulistiariini & Rugayah.

## MATERIALS AND METHODS

Exploration in various places of Sumatra, in the early 2000s were carried out. Several attractive individuals of an unidentified *Dracaena* species then planted at YRDG. Further observations on the living plants as well as specimens of *Dracaena* spp. deposited in Herbarium Bogoriense (BO) and Herbarium Singapore (SING) were carried out to confirm the taxonomical status of the plant.

## RESULTS AND DISCUSSION

***Dracaena jiewhoei*** Hambali, Sulistiarini & Rugayah *spec. nov.* — TYPE: INDONESIA, West Java, Bogor, Yatazawa R & D Gardens, 2 March 2018, *Diah Sulistiarini 1109*; originally collected from a small patch of disturbed forest to the hillside direction on the roadside between Bangko and Sungai Penuh, approaching Muara Emat village from Bangko, Batang Merangin, Jambi, Sumatra, Indonesia, *ca.* 400 m asl. (Holotype BO). Fig.1.

The new species is closely related to *D. cantleyi* in its paniculate inflorescences, but differs substantially from the latter in the verticillate leaves which are intermittently

arranged along the stem. In *D. cantleyi*, the numerous leaves which could be as many as 90 leaves on a large plant are arranged in a continuous spiral along the stem.

*Shrub* to 1.5 m tall. *Stem* terete, branched or unbranched, 3–5 cm diam. near ground level. *Leaves* coriaceous, sessile, up to 24 on the most robust specimen, usually far fewer, in 2-3 intermittent pseudowhorls of 4-8 leaves each; each pseudowhorl always preceded by up to 16 early caducous acutely triangular rudimentary leaves of 3–6 × 3–4 cm, these when completely detached from the stem create the intermittent gap between pseudowhorls of normal leaves, uppermost pseudowhorls always terminated by a dormant bud with dormancy duration up to 6 months long before growth resumption; sheathing leaf base clasping the stem slightly less than its circumference; lamina green with distinct or blurred scattered small white dots only at its upper surface, broadly elliptic oblong up to 45 × 16 cm, apex acuminate, mucro *ca.* 2 mm; midrib at the upper lamina surface only slightly raised, starting from near lamina base to about half way the lamina length, and soon flattened and becoming inconspicuous, midrib at the lower lamina surface inconspicuous. *Inflorescence* erect, terminal, paniculate or racemose; branches 0-4,

Table 1. Comparison of some characteristic features between *Dracaena jiewhoei* Hambali, Sulistiarini & Rugayah *spec. nov.* and *D. cantleyi* Baker, based on living specimens in YRDG.

Characters	<i>Dracaena jiewhoei</i>	<i>Dracaena cantleyi</i>
Plant height	1.5 m	6 m
Stem diam. at ground level	2–3 cm	8–11 cm
Leaf number	Up to 24	Up to 90
Leaf arrangement	Intermittent pseudowhorls (4-8 leaves each)	A continuous spiral
Leaf shape	Broadly elliptic oblong	Oblong lanceolate
Leaf size	Up to 45 cm long and 16 cm wide	Up to 85 cm long and 10 cm wide
Midrib	On upper leaf surface slightly raised near lamina base and soon flattened towards the leaf tip; on lower leaf surface inconspicuous	On upper leaf surface impressed, forming a shallow groove; on lower leaf surface prominent
Leaf variegation	Distinct or slightly blurred small white dots visible on the upper leaf surface only; dots often still visible on old leaves although rather vague	Coalescing yellowish green blotches visible on both leaf surfaces; blotches conspicuous only on new leaves, undetectable on old ones
Inflorescence	Panicle branches 0-4, the upper most confined to the lower one third of the length of panicle rachis	Panicle branches <i>ca.</i> 7 or more, the upper most reaching to three fourth of the length of panicle rachis
Growth pattern	Interrupted by the bud dormancy	Continuous
Vegetative propagation	Easy	Difficult

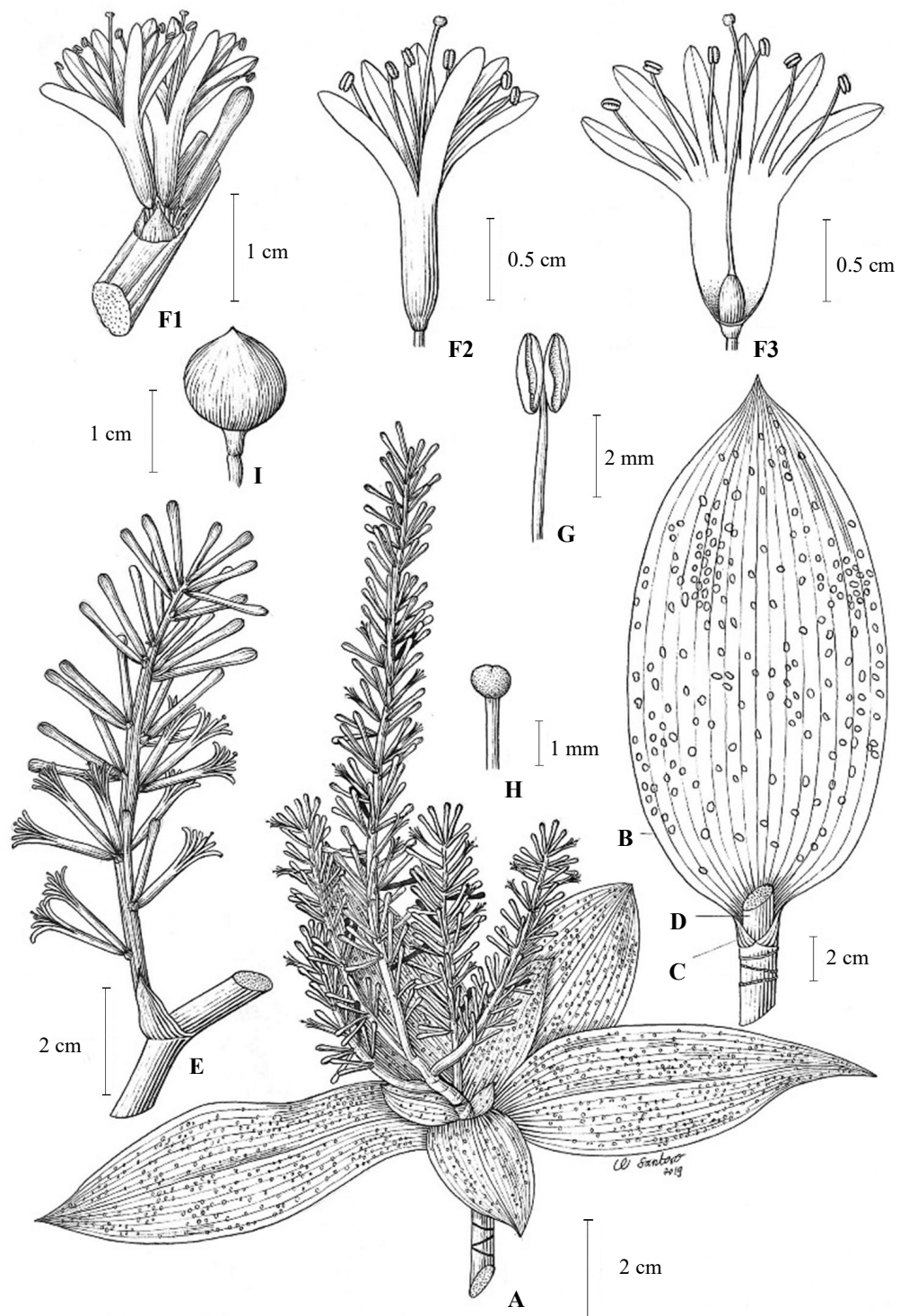


Fig. 1. *Dracaena jiewhoei* Hambali, Sulistiarini & Rugayah *spec. nov.* A. Habit. B. Leaf. C. Leaf sheath. D. Stem. E. Inflorescence. F. (1, 2 & 3). Flowers. G. Stamen. H. Pistil. I. Fruit. From *DS 1109*, drawn by Wahyudi Santoso.

confined to the lower one fourth of the panicle length; rachis smooth, terete, becoming 6-grooved upward along the fascicles bearing part, green, up to 55 cm long, bracts present, conspicuous at the lower section of the rachis, getting scale-like upwards. Flowers fasciculate, fascicles up to 80 on the panicle rachis, up to 15 on the panicle branches, each fascicle 2-6 flowered; flower length *ca.* 2.4 cm, pedicel length 1–2 mm, flower tube and perianth lobes more or less of equal length *ca.* 1.2 cm long, perianth lobes *ca.* 0.15 cm wide, greenish white; stamens 6, *ca.* 1 cm long, each inserted slightly above the middle of perianth lobe base, anthers *ca.* 1.5 × 0.5 mm, filaments *ca.* 8.5 mm long; pistil *ca.* 2.2 cm long, ovary ovoid *ca.* 2 × 1.5 mm, style filiform, stigma globular *ca.* 0.5 mm diam. *Ripe fruit* globular, orange, *ca.* 0.9 cm diam., usually 1-seeded.

#### **Relationship to other *Dracaena* species**

In our interspecific hybridization experiments, when used as a male parent, *D. jiewhoei* is crossable to *D. cantleyi*, a species which was known only from Singapore when it was first described by Baker (1881) but based on GGH's personal survey we know now that it also occurs in southern Thailand including Phuket island, Malay Peninsula, Sarawak and West Kalimantan in Borneo, and also in North Sumatra. Although this crossability reveals the close genetic relationship, *D. jiewhoei* differs substantially from *D. cantleyi* as shown in Table 1. The living specimens of *D. cantleyi* in YRDG were originally raised from seedlings of a plant brought back by the late Mr. Sukardi (GGH's former colleague in Bogor Botanic Garden) from Sibolangit forest in North Sumatra more than 20 years ago. His collection, hence, represented a new record for Sumatra. The relationship to other sympatric *Dracaena* species is still being investigated.

**Etymology.** The specific epithet refers to the name of Mr. Tan Jiew Hoe, the President of Singapore Gardening Society, who provided several transportation grants to G. G. Hambali that enabled him to visit various places in Sumatra.

**Distribution and habitat.** *Dracaena jiewhoei* is of much restricted distribution. The small population appears not to be represented elsewhere apart from this small area in Muara Emat, Batang Merangin, Jambi, Sumatra, Indonesia. The area where the plant was found was covered by a relatively thin layer of leaf litter on podzolic soil at *ca.* 400 m asl.

**Conservation assessment.** During the last visit to the area in 2007 the habitat of *Dracaena jiewhoei* was already converted to a coffee plantation and at that time not a single plant of this species was found there. The plants which are now in cultivation are being propagated to ensure its conservation. As the plants themselves are self incompatible, seed set can be only effected between different cross compatible clones through hand pollination in the late evening. Throughout our observation in YRDG, we notice that a synchronous flowering which is very crucial for a cross pollination system to operate properly for ensuring fruit and seed set in a self incompatible species rarely occurs in the collection of *D. jiewhoei*. It is quite clear that in the wild the rarity of synchronous flowering could be detrimental to the dissemination and eventually the survival of any plants which could only produce seeds through cross pollination.

This situation when coupled with the absence or the rarity of the proper nocturnal pollinators such as hawk moths to ensure fruit and seed set and also the rarity of seed dispersal agents particularly frugivorous bird which can effectively disperse seed to great distances are interacting factors that are most likely responsible for the restricted distribution of *D. jiewhoei*. As far as we know despite the long history of plant exploration activities by many botanists in South East Asia and GGH's own botanical forays to many forested places in this region, this species has never been known to occur in places other than Sumatra. However, now we do not know whether there is still a possibility that *D. jiewhoei* may also occur in some isolated forest pockets in Sumatra. At this stage we are in the process of exploring all possible means to increase and diversify *D. jiewhoei* materials in YRDG through an interclonal cross pollination program.

Considering the situation above, for the moment the conservation status of this new species is Data Deficient (DD), until further assessment.

**Note.** The best F1 hybrids between *D. cantleyi* and *D. jiewhoei* are named as *Dracaena* 'JT Stardust' and most of the hybrids produce better looking variegation on the leaves (Fig. 2C). The living collections of F1 hybrid were given to nurseries *e.g.* in Taman Buah Mekarsari, Indonesia and Handelskwekerij van der Velden, the Netherlands.



Fig. 2. A. *Dracaena jiewhoei* Hambali, Sulistiarini & Rugayah. B. *Dracaena cantleyi* Baker C. F1 hybrid, *Dracaena* 'JT Stardust'. Photos by G. G. Hambali.

#### ACKNOWLEDGEMENTS

GGH is very grateful to Ibu Siti Hutami Endang Adiningsih, the Director of Taman Buah Mekarsari, for allowing him to use the company's time in the field trips to various places in South East Asia and in the preparation of this article, and he would like to thank Mr. Tan Jiew Hoe for solving the logistics for the trips and to the late Mr. Loteng from Muara Emat village for his kind help in the field.

#### REFERENCES

BAKER, J. G. 1875. Revision of the genera and species of Asparagaceae. *Botanical Journal of the Linnean Society* 14(79): 508–546.

BAKER, J. G. 1881. A new *Dracaena* from Singapore. *Journal of Botany, British, and Foreign* 19: 326–327.

DAMEN, T. H. J., VAN DER BURG, W. J. WILAND-SZYMANSKA, J. & SOSEF, M. S. M. 2018. Taxonomic novelties in African *Dracaena* (Dracaenaceae). *Blumea* 63: 31–53.

PEI-LUEN LU & MORDEN, C. 2010. Phylogenetics of the plant genera *Dracaena* and *Pleomele* (Asparagaceae). *Journal of Plant Science* 7: 64–72.

VAN BALGOOY, M. M. J. 2010. An updated survey of Malesian seed plant families. *Reinwardtia* 13(2): 171–181.





## INSTRUCTION TO AUTHORS

**Scope.** *Reinwardtia* is a scientific regular journal on plant taxonomy, plant ecology and ethnobotany published in June and December. Manuscript intended for a publication should be written in English.

**Titles.** Titles should be brief, informative and followed by author's name and mailing address in one-paragraphed.

**Abstract.** English abstract followed by Indonesian abstract of not more than 250 words. Keywords should be given below each abstract.

**Manuscript.** Manuscript is original paper and represent an article which has not been published in any other journal or proceedings. The manuscript of no more than 36 pages by using Times New Roman 11, MS Word for Windows of A4 with double spacing, submitted to the editor through <reinwardtia@mail.lipi.go.id>. New paragraph should be indented in by 5 characters. For the style of presentation, authors should follow the latest issue of *Reinwardtia* very closely. Author(s) should send the preferred running title of the article submitted. Every manuscript will be sent to two blind reviewers.

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

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

**Map/line drawing illustration/photograph.** 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. 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.

**References.** Bibliography, list of literature cited or references follow the Harvard system as the following examples.

- Journal : KRAENZLIN, F. 1913. *Cyrtandraceae* novae Philippinenses I. *Philippine Journal of Science* 8: 163–179.  
MAYER, V., MOLLER, M., PERRET, M. & WEBER, A. 2003. Phylogenetic position and generic differentiation of *Epithemateae* (Gesneriaceae) inferred from plastid DNA sequence data. *American Journal of Botany* 90: 321–329.
- Proceedings : TEMU, S. T. 1995. Peranan tumbuhan dan ternak dalam upacara adat “Djoka Dju” pada suku Lio, Ende, Flores, Nusa Tenggara Timur. In: NASUTION, E. (Ed.). *Prosiding Seminar dan Lokakarya Nasional Etnobotani II*. LIPI & Perpustakaan Nasional. Pp. 263–268. (In Indonesian).  
SIMBOLON, H. & MIRMANTO, E. 2000. Checklist of plant species in the peat swamp forests of Central Kalimantan, Indonesia. In: IWAKUMA, T., INOUE, T., KOHYAMA, T., OSAKI, M., SIMBOLON, H., TACHIBANA, H., TAKAHASHI, H., TANAKA, N. & YABE, K. (Eds.). *Proceedings of the International Symposium on: Tropical Peatlands*. Pp. 179 – 190.
- Book : RIDLEY, H. N. 1923. *Flora of the Malay Peninsula* 2. L. Reeve & Co. Ltd, London.
- Part of Book : BENTHAM, G. 1876. *Gesneriaceae*. In: BENTHAM, G. & HOOKER, J. D. (Eds.). *Genera Plantarum* 2. Lovell Reeve & Co., London. Pp. 990–1025.
- Thesis : BAIRD, L. 2002. *A Grammar of Kéo: An Austronesian Language of East Nusantara*. Australian National University, Canberra. [PhD. Thesis].
- Website : <http://www.nationaalherbarium.nl/fmcollectors/k/KostermansAJGH.html>. (Accessed 15 February 2012).



## **Reinwardtia**

Published by Herbarium Bogoriense, Botany Division, Research Center for Biology,  
Indonesian Institute of Sciences

Address: Jln. Raya Jakarta-Bogor Km. 46 Cibinong 16911, P.O. Box 25 Cibinong

Telp. (+ 62) 21 8765066; Fax (+62) 21 8765062

Email: reinwardtia@mail.lipi.go.id

### ***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

Vol. 19. No. 2. 2020

### CONTENTS

G. G. HAMBALI, DIAH SULISTARINI & RUGAYAH. <i>Dracaena jiewhoei</i> (Asparagaceae), a new endemic species from Sumatra, Indonesia .....	75
DEDY DARNAEDI & LYNN CLAYTON. Nantu <i>Platynerium grande</i> (Polypodiaceae), a new generic record of <i>Platynerium</i> in Sulawesi, Indonesia .....	81
SITI SUNARTI. <i>Syzygium tinombalum</i> (Myrtaceae), a new species from Central Sulawesi, Indonesia .....	87
FURQON AL MUZAKKI, TATIK CHIKMAWATI & ALEX HARTANA. The resurrection of <i>Schizostachyum biflorum</i> McClure ( <i>Bambusoideae</i> ) .....	93
SELIM MEHMUD & HIMU ROY. Anatomical studies on <i>Wallichia nana</i> Griff., a wild palm of Assam, India .....	97
MARLINA ARDIYANI, WISNU HANDOYO ARDI, WAHYUDI SANTOSO & AXEL DALBERG POULSEN. <i>Etilingera tjiasmantoi</i> (Zingiberaceae), a new species from Central Sulawesi .....	103
SALASIAH MOHAMAD & MEEKIONG KALU. <i>Plagiostachys strobilifera</i> var. <i>conica</i> (Zingiberaceae), a new variety from Sarawak, Borneo .....	109

Reinwardtia is an accredited Journal (10/E/KPT/2019)

<http://e-journal.biologi.lipi.go.id/index.php/reinwardtia>

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



Crossref

DOAJ  
DIRECTORY OF  
OPEN ACCESS  
JOURNALS

