

## NOMENCLATURAL NOTES AND TYPIIFICATION OF SOME NAMES IN *MORINDA* (MORINDEAE: RUBIACEAE)

MUHAMMAD IDREES<sup>1\*</sup>, ZHIYONG ZHANG<sup>1\*</sup> AND MUHAMMAD ARFAN<sup>2</sup>

<sup>1</sup>College of Life Science, Neijiang Normal University, Neijiang 641000, Sichuan, China

<sup>2</sup>Department of Botany, University of Education Lahore, Vehari Campus, Vehari 61100, Pakistan

\*Corresponding author's email: [idreesbiotech@yahoo.com](mailto:idreesbiotech@yahoo.com); [zhangzyong219@126.com](mailto:zhangzyong219@126.com)

### Abstract

The names, *Morinda angustifolia*, *M. angustifolia* var. *scabridula*, *M. longifolia*, *M. nana*, and *M. pumila* are here lectotypified, and discussed. The previously, and invalidly published name *Gynochthodes shuanghuaensis*, is validated here by providing a full and complete reference to its basionym.

**Key words:** Rubiaceae, Typification, *Morinda*, Nomenclature, Validation.

### Introduction

The plant genus *Morinda* Linnaeus (1753: 176) belongs to the tribe Morindeae Miq. (Miquel 1857) of the family Rubiaceae (Jussieu, 1789). The genus *Morinda* comprises around 40 species, mainly distributed in the pantropical region (Razafimandimbison & Bremer, 2011). Recent molecular phylogenetic studies in Psychotriaceae alliance (Razafamandimbison *et al.*, 2008) and Morindeae (Razafamandimbison *et al.*, 2009), intending to transfer some *Morinda* species to *Gynochthodes* as *Gynochthodes* sensu lato Blume (Blume 1826: 993) leading to redelimitation of the former. Currently, *Morinda* can be recognized by the following these characters: compound inflorescence, bisexual flowers, bifid stigmatic knobs, syncarpus fruits and globose to sub-globose seeds (Razafamandimbison *et al.*, 2009; Razafimandimbison & Bremer, 2011).

In Thailand, Craib (1932, 1934) recognized six species of *Morinda* namely, *M. angustifolia* Roxburgh (1815: 32) var. *scabridula* Craib (1934: 174), *M. cinnamomea* Craib (1932: 433), *M. longifolia* Craib (1932: 434), *M. nana* Craib (1932: 434), *M. pumila* Craib (1932: 435), and *M. scabrida* Craib (1932: 435). Since, then 9 species (3 endemic) of *Morinda* are currently recorded in Flora of Thailand (Kesonbuaa & Chantaranonthai, 2013). In the course of an ongoing revision of the genus *Morinda*, we noticed that five validly published names: *M. angustifolia* Roxb., *M. angustifolia* var. *scabridula* Craib, *M. longifolia* Craib, *M. nana* Craib, and *M. pumila* Craib, have not yet been typified or inadvertently lectotypified according to Article 7.11 (ICN; Turland *et al.*, 2018). Hence, these names are typified here for nomenclatural stability. In addition, the name, *Gynochthodes shuanghuaensis* (C.Y. Chen & M.S. Huang) Razafim. & B. Bremer (2019: 295) was not validly published, because complete and a full reference to the basionym was not given. The name is also here validated.

### Materials and Methods

The present work was based on the examination of original protologues of *Morinda* and *Gynochthodes* names, to verify the typification status of names, and to

search for possible type. The collections assessed in this work were housed in the following public herbaria: BM, BK, IBSC, and K (acronyms according to Thiers 2022, continually updated). All the names, bibliographic citations were verified from the original literature as well as online databases such as Tropicos (2022), Anon., (2022), and Anon., (2013). For the selection of type specimen, original protologue has been compared with original herbarium material and the most complete and informative herbarium specimen was selected according to ICN; Arts. 9.12 & 9.17 (Turland *et al.*, 2018).

### Results and Discussion

*Morinda angustifolia* Roxb., Pl. Coromandel 3: 32. 1815.

*Morinda angustifolia* Roxb., Hort. Beng. 15. 1814. *nom. inval.*

**Lectotype** [here designated]: India. without date, *Roxburgh s.n.* (BR0000005314867!). Image available at <https://plants.jstor.org/stable/10.5555/al.ap.specimen.br0000005314867>

**Notes:** *Morinda angustifolia* was first published by Roxburgh (1814: 15) in a listing of the plants of the Calcutta Botanic Garden, without any description but with the following information on locality and source: “Chittagong D. F. Buchanan 1797”. The name was first validly published in Roxburgh (1815: 32) with a description and again the information that the species was “a native of Chittagong” by Buchanan and sent to Botanical Garden at Calcutta in 1798 in the protologue that might serve as a type. We could not locate any specimen that was reported by Roxburgh (Hort. Bengal.: 1814: 15; Pl. Coromandel. 1815: 32) with the locality and source “Chittagong D. F. Buchanan 1797”.

Kesonbuaa & Chantaranonthai (2013: 332) selected “*Wallich 8420*” kept at K as the “Holotype”, which is considered an inadvertent lectotypification, in accordance with ICN, Article 7.11 (Turland *et al.*, 2018). Stafleu & Cowan (1983) listed five herbaria having significant numbers of Roxburgh’s specimens, viz., Natural History Museum, London (BM), Brussels (BR), Edinburgh (E), Geneva (G), Liverpool (LIV), and a further eleven having smaller sets. In addition, they also mentioned Roxburgh’s

drawings at The Natural History Museum, London (BM), Calcutta (CAL), and Kew (K). Sealy (1956: 361) was first mentioned that the Roxburgh *no. 1219 M. angustifolia* drawing at Kew is missing, however, there is an unnumbered drawing which is almost identical with t. 237. Later, Forman (1997) selected “*Roxburgh s.n.*” in BR, and “*Icon. 1219*” at CAL as the lectotype [first-step]. Therefore, they are syntypes and lectotype [second-step] must be chosen (ICN; Arts. 8.3, and 9.17, Turland *et al.*, 2018). Among these, the original material of “*Roxburgh s.n.*” at BR (000005314867), is a complete and well preserved specimens, thus, this blooming specimen is selected here as the lectotype.

*Morinda angustifolia* var. *scarbida* Craib, Fl. Siam., 2: 174. 1934.

**Lectotype** [here designated]: Thailand. Phitsanulok, Nakhon Thai (Nakawn Tai), 4 Apr. 1924, *A.F.G. Kerr 8907* (K001045999!; isolectotypes: BK257401!, BM000945408!). Image available at <http://specimens.kew.org/herbarium/K001045999>

**Notes:** In the protologue, Craib (1932) cited one collection: “*A.F.G. Kerr 8907*” as the type, without indicating the herbaria where the specimen was deposited. We traced three duplicate sheets, deposited in K, BK and BM. According to ICN; Art. 40 Note 1 (Turland *et al.*, 2018), all these collections should be regarded as syntypes; hence, a lectotype may be designated (ICN; Art. 9.17, Turland *et al.*, 2018). Kesonbuaa & Chantaranonthai (2013: 333) selected “*A.F.G. Kerr 8907*” kept at BK as the “Holotype”, and recently Chantaranonthai (2019) selected the same specimen kept at BK as the lectotype [first-step], which are considered an inadvertent lectotypification, in accordance with ICN, Article 7.11 (Turland *et al.*, 2018). It is well-known that Craib’s type specimens were often kept at K, but some types were kept at WRSL (Stafleu and Cowan 1976). Thus, we designate here the sheet kept in K (001045999) as the lectotype [second-step] (ICN; Art. 9.17, Turland *et al.*, 2018). The selected sheet is a complete and well-preserved specimen that displays all the morphological diagnostic features in agreement with the protologue.

*Morinda longifolia* Craib, Bull. Misc. Inform. Kew 1932(9): 434. 1932.

**Lectotype** [here designated]: Thailand. Tak (Raheng), 100 m, 15 Nov. 1920, *A.F.G. Kerr 4577* (K000763795!; isolectotypes: BK222257!, BM000945406!, K000763794!). Image available at <http://specimens.kew.org/herbarium/K000763795>.

**Notes:** Craib (1932) mentioned the following source and locality: “Thailand. Raheng, 100 m, *Kerr 4577*” as the type, but did not mention where the type specimen was deposited. We located 4 original type specimens in BK, BM, and K. Kesonbuaa & Chantaranonthai (2013: 336) first selected “*A.F.G. Kerr 8461*” kept at BK as the “Holotype” and Chantaranonthai (2019) cited the same specimen “*A.F.G. Kerr 4577* (BK!)” as lectotype [first-step], which are considered an inadvertent

lectotypification, in accordance with ICN, Article 7.11 (Turland *et al.*, 2018). According to Stafleu & Cowan (1976), Craib’s type materials were kept at K and some were kept at WRSL. We located 2 duplicate specimens of “*A.F.G. Kerr 4577*”, housed in K (000763794, and 000763795), from which lectotype must be chosen (Art. 9.17; Turland *et al.*, 2018). Among these, the one sheet in K (000763795) has a red printed tag “Type” and designate here as the lectotype [second-step], since it is morphological complete specimen with having stem, many leaves, and flower that fully agree with the protologue.

*Morinda nana* Craib, Bull. Misc. Inform. Kew 1932(9): 434. 1932.

**Lectotype** [here designated]: Thailand. Nakhon Phanom (Nakawn Panom), Ta Uten, 200 m, very common along banks of streams, 16 Feb. 1924, *A.F.G. Kerr 8461* (K000763797!; isolectotypes: BK257403!, BM000945395!, K000763796!). Image available at <http://specimens.kew.org/herbarium/K000763797>

**Notes:** In the protologue of *Morinda nana* Craib (1932), Craib provided the following information: “Nakawn Panom, Ta Uten, 200 m., very common along banks of streams, *Kerr 8461*” as the type but did not mention the herbaria where the type specimen was deposited. Kesonbuaa & Chantaranonthai (2013: 336) first selected “*A.F.G. Kerr 8461*” kept at BK as the “Holotype”, and recently Chantaranonthai (2019) selected the same specimen “*A.F.G. Kerr 8461*” kept at BK as the lectotype [first-step], which are considered an inadvertent lectotypification, in accordance with ICN, Article 7.11 (Turland *et al.*, 2018). According to Stafleu & Cowan (1976), Craib type materials were kept at K, and some were in WRSL. We located four duplicate specimens of “*A.F.G. Kerr 8461*”, deposited in BK (257403), BM (000945395), and K (000763797 & 000763796). According to Article 40 note 1 (Turland *et al.*, 2018), all these collections should be regarded as syntypes, and the name *M. nana* needs lectotypification (ICN, Art. 9.17, Turland *et al.*, 2018). Thus, we here designate the blooming specimen kept in K (000763797) as the lectotype [second-step]. The selected sheet is a complete and well-preserved specimen that displays all the morphological diagnostic features in agreement with the protologue.

*Morinda pumila* Craib, Bull. Misc. Inform. Kew 1932(9): 434. 1932.

**Lectotype** [here designated]: Thailand. Chaipayum, Pak Pang, deciduous forest, 1 Feb. 1931, *A.F.G. Kerr 19981* (K000763791!; isolectotypes: BK257405!, BM000945393!). Image available at <http://specimens.kew.org/herbarium/K000763791>

**Notes:** Craib (1932) described *Morinda pumila* with the following locality information in the protologue: “Chaipayum, Pak Pang, 200 m., deciduous forest, *A.F.G. Kerr 19981*” as the type, but without mentioning the

herbarium where the specimen has been deposited. Kesonbuaa & Chantaranothai (2013: 338) selected “*A.F.G. Kerr 19981*” kept at BK as the “Holotype”, and Chantaranothai (2019) selected the same specimen “*A.F.G. Kerr 19981*” kept at BK as the lectotype [first-step], which are considered an inadvertent lectotypification, in accordance with ICN, Article 7.11 (Turland *et al.*, 2018). According to Stafleu & Cowan (1976), Craib type materials were kept at K, and some were in WRSL. We locate three duplicate specimens of “*A.F.G. Kerr 19981*”, kept at K (000763791), BK (000758405) and BM (000945393) from which lectotype must be chosen (ICN; Article 9.17, Turland *et al.*, 2018). Among these, the one sheet “*A.F.G. Kerr 19981*” in K (000763791), selected here as the lectotype [second-step]. The selected sheet is well-preserved specimen that displays all the morphological diagnostic characters which are in agreement with the protologue.

***Gynochthodes shuanghuaensis*** C.Y. Chen & M.S. Huang ex M. Idrees, *comb. nov.* [*Gynochthodes shuanghuaensis* (C.Y. Chen & M.S. Huang) Razafim. & B. Bremer, *comb. nov.*, *Adansonia* 33(2): 295. 2011, *nom. inval.*].

≡ *Morinda shuanghuaensis* C.Y. Chen & M.S. Huang *sp. nov.*, *J. Trop. Subtrop. Bot.* 16(6): 578. 2008. [*Morinda shuanghuaensis* C.Y. Chen & M.S. Huang, *Acta Phytotax. Sin.* 14(2): 70. 1976, *nom. inval.*].

**Holotype:** China. Guangdong: Wuhua, 25 Oct. 1975, *Baji Expedition 045* (IBSC, not seen).

**Notes:** Chen and Huang (1976) published the name *Morinda shuanghuaensis* *sp. nov.*, and simultaneously citing two gathering as type in the protologue, and thus rendering the name invalidly published. Later, the name was validated by Liu and Zhang (2008: 578), who cited “*Baji Exped. 045*” kept in IBSC as the type, and retaining the original authorship to Chen and Huang as per Article 46.2 (ICN; Turland *et al.*, 2018).

Recently, Razafirmandimbison and Bremer (2019) published a new combination: *Gynochthodes shuanghuaensis* (C.Y. Chen & M.S. Huang) Razafim. & B. Bremer, *comb. nov.*, and cited the basionym reference as *Morinda shuanghuaensis* C.Y. Chen & M.S. Huang (1976: 70–71). Chen and Huang’s valid publication of *M. shuanghuaensis* was in *J. Trop. Subtrop. Bot.* 16(6): 577–588 (2008) (in Liu & Zhang, 2008), and so the citation by Razafim. & Bremer (2011: 295) of “*Acta Phytotax. Sin.* 14: 70, 1976” regarded as indirect reference, and was not the actual place of valid publication of the intended basionym. Consequently, the name was not validly published, in accordance with Arts. 41.5, & 41.7 (ICN; Turland *et al.*, 2018), the former requiring for valid publication after 1 January 1953 indication of the basionym with a full and direct reference given to its author and place of publication and the latter stating that “Mere reference to any work other than that in which the name was validly published does not constitute a full and direct reference to the place of publication of a name”. Accordingly, we corrected this error by publishing the new combination with a full and

complete reference to its basionym, so that it is now validly published.

## Acknowledgments

The authors would like to thank Ann Bogaerts at BR for providing the type image. This research was financed by the Key Research and Development Project of Sichuan Provincial Department of Science and Technology (2022YFN0032), the High-level Talent Introduction Project of Science and Technology Department of Sichuan Province of China (2021JDGD0019), the High-level Talent Teams of of Neijiang Normal University (RSC202102), and the Scientific Research Project of Neijiang Normal University (2020WJ02).

## References

- Anonymous. 2013. The Plant List Version 1.1. Missouri Botanical Gardens, St. Louis, and the Royal Botanic Gardens, Kew. Available from: [www.theplantlist.org](http://www.theplantlist.org) (accessed: 27 July 2013).
- Anonymous. 2022. International Plant Names Index. The Royal Botanic Gardens, Kew, Harvard University Herbaria & Libraries, & Australian National Botanic Gardens. Available from <http://www.ipni.org> (accessed: 1 March 2021).
- Blume, C.L. 1826. Bijdragen tot de flora van NederlandschIndië: 993. Lands Drukkerij, Batavia.
- Chantaranothai, P. 2019. A new combination and typifications in *Morinda* (Rubiaceae) for the Flora of Thailand. *Thai Forest Bull. (Bot.)*, 47(2): 184-186.
- Chen, C.Y. and M.S. Huang. 1976. How to distinguish false “Ba Ji Tian” from genuine “Ba Ji Tian”. *Acta Phytotax. Sin.* 14(2): 69-72. (In Chinese).
- Craib, W.G. 1932. Contribution to the Flora of Siam. Additmentum XXXVI. *Bull. Misc. Inf.*, 9: 425-437.
- Craib, W.G. 1934. Florae Siamensis Enumeratio II. Siam Society, Bangkok.
- Forman, L.L. 1997. Notes concerning the typification of names of William Roxburgh’s species of Phanerogams. *Kew Bull.*, 52(3): 513-534. <http://www.jstor.org/stable/4110285>
- Jussieu, A.L. de 1789. Genera plantarum. Impensis Laurentii Salvii, Holmiæ (Stockholm).
- Kesonbuaa, W. and P. Chantaranothai. 2013. The genus *Morinda* (Rubiaceae) in Thailand. *Science Asia*, 39: 331-339.
- Linnaeus, C. 1753. *Species plantarum* I. L. Salvius, Holmiae.
- Liu, Y. and D.-X. Zhang. 2008. Validation of *Morinda shuanghuaensis* and lectotypification of *Morinda howiana* (Rubiaceae). *J. Trop. Subtrop. Bot.*, 16(6): 577-588. <https://doi.org/10.3969/j.issn.1005-3395.2008.6.2044>.
- Miquel, F.A.M. 1857. Flora van Nederlandsch Indie 2. C.G. van der Post, Amsterdam. pp.1103
- Razafimandimbison, S.G. and B. Bremer. 2008. Evolution and trends in the Psychotriaceae alliance (Rubiaceae) A rarely reported evolutionary change of many-seeded carpels from one-seeded carpel. *Mol. Phylogen. Evol.*, 48: 207-223. <https://doi.org/10.1016/j.ympev.2008.03.034>.
- Razafimandimbison, S.G. and B. Bremer. 2011. Nomenclatural changes and taxonomic notes in the tribe Morindeae (Rubiaceae). *Adansonia*, 33(2): 283-309. <https://doi.org/10.5252/a2011n2a13>
- Razafimandimbison, S.G., T.B. Halford and B. Bremer. 2009. Molecular phylogenetics and genetic assessment in tribe Morindeae (Rubiaceae-Rubioideae): How to circumscribe *Morinda* L. to be monophyletic?. *Mol. Phyl. Evol.*, 52: 879-886. <https://doi.org/10.1016/j.ympev.2009.04.007>.

- Roxburgh, W. 1814. *Hortus bengalensis, or a catalogue of the plants growing in the honourable East India Company's Botanic Garden at Calcutta*. Serampore (printed at the Mission Press). <https://www.biodiversitylibrary.org/page/46014360#page/37/mode/1up>
- Roxburgh, W. 1815. Plants of the coast of Coromandel: selected from drawings and descriptions presented to the hon. court of directors of the East India Company. Vol. 3. W. Bulmer and Co. for G. Nicol, Bookseller, London, 300 pp. <https://doi.org/10.5962/bhl.title.467>
- Sealy, J.R. 1956. The Roxburgh Flora Indica Drawings at Kew. *Kew Bull.*, 11(3): 349-399. <http://www.jstor.org/stable/4109123>
- Stafleu, F.A. and R.S. Cowan. 1976. Taxonomic literature: a selective guide to botanical publications and collections with dates, commentaries and types. Volume I: A-G. *Regnum Vegetabile* 137. Bohn, Scheltema&Holkema, Utrecht. <https://www.biodiversitylibrary.org/item/103414#page/11/mode/1up> (Retrieved 1 March 2021).
- Thiers, B. 2022. continually updated. Index Herbariorum: a global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. Available from: <http://sweetgum.nybg.org/science/ih/> (accessed 1 March 2021).
- Tropicos. 2022. Tropicos v3.3.2. Missouri Botanical Gardens, St. Louis: Missouri. Available from: <https://tropicos.org> (accessed: 1 March 2021).
- Turland, N.J., J.H. Wiersema, F.R. Barrie, W. Geuter, D. Hawksworth, P.S. Herendeen, S. Knapp, W.H. Kusber, D.Z. Li and K. Marhold. 2018. International code of nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. Koeltz Botanical Books, Glashütten. <https://doi.org/10.12705/Code.2018> (Retrieved 5 March 2021).

(Received for publication 27 August 2021)