

Nomenclatural Notes on *Boesenbergia* Kuntze (Zingiberaceae)

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A nomenclatural survey of *Boesenbergia rotunda* (L.) Mansf. (Zingiberaceae) is presented. The binomial, *Boesenbergia phyllostachya* (Gagnep.) K. Larsen, is validated. Comment on the inaccurate lectotypification of *Boesenbergia loerzingii* is provided.

Key Words: *Boesenbergia*, India, new combination, SE Asia, Sri Lanka, Zingiberaceae

INTRODUCTION

Boesenbergia rotunda (L.) Mansf. (Zingiberaceae) is widely cultivated in Asia from Sri Lanka to China, Indonesia and is presently also grown in the Philippines (B.C. Tan, pers. comm.). Like many cultivated plants its origin is uncertain. Early Western authors have suggested various provenances: Sri Lanka (Hermann 1689, Van Rheede 1692), India in the wide sense (Linnaeus, 1753, and later authors, e.g. Roxburgh 1810, Ridley 1899, Schlechter 1913), Sumatra (Roxburgh 1814), Java and Bali (Rumphius 1747, Ibrahim & Nugroho 1999). Perhaps a phylogenetic analysis based on molecular data may provide a suggestion (Mood, in progress).

The name was lectotypified by Burt & R.M. Smith (1972) with a plate in Van Rheede (1692: t. 10; see Fig. 4), because the description and plate were the base for Linnaeus's concept of both the genus *Curcuma* L. and the species *C. rotunda*. Nevertheless, to conserve traditional use of the generic name, *Curcuma* is lectotypified with *C. longa* L. There is no indication that Linnaeus ever saw a plant, dead or alive. He mentioned the species in the *Musa Cliffortiana* (1736), but there is nothing in the *Hortus Cliffortianus* (1737), BM-Clifford, WAG-Clifford, or his own herbarium in LINN. This suggests that it was not cultivated in The Netherlands or Sweden in his time. This implies that the appointment of an epitype might be useful.

An established synonym is *Kaempferia pandurata* Roxb. (1810) (See Fig. 5, 6). No Roxburgh specimens have come to my attention. None are mentioned for BR, E, LIV, OXF by Forman (1997). Unfortunately he could not include the collections in BM, K, and K-W, because it would have been too time-consuming to find them in the huge general herbaria. There is a Roxburgh material in G that was either directly given to the De Candolles by Wallich (De Candolle & Radcliffe-Smith 1981) or acquired when the 2,000—2,250 specimens in the Lambert collection were bought (Miller 1970). There are few original specimens to be expected in CAL. King (1895) wrote: "No Indian plants of his [Roxburgh], however, now exist in the Calcutta Herbarium. It is indeed asserted by Griffith in his report on the Calcutta Garden written while he acted for Dr. Wallich in 1834, that the latter had carried off all Roxburgh's collections from Calcutta." So, any that are there now were returned at a later date.

***Boesenbergia rotunda* (L.) Mansf.**

Boesenbergia rotunda (L.) Mansf., Kulturpflanze 6 (1958) 239. --- [*Manja-kua* Rheede, Hort. Malab. 11 (1692) 19, t. 10, nom. inval., cited by L., *Musa Cliff.* (1736) 15]. --- *Curcuma rotunda* L., Sp. Pl. 1 (1753) 2. --- *Kaempferia ovata* Roscoe, Trans. Linn. Soc. London 8 (1807) 351, nom. nov. propter *K. rotundam* L. (1753). --- *Gastrochilus rotundus* (L.) Alston, Handb. Fl. Ceylon 6 (1931) 281. --- Lectotype: *Rheede, Hort. Malab. 11: t. 10*, designated



Figure 1. *Boesenbergia rotundata* (photograph Axel Dalberg Poulsen)



Figure 2. *Boesenbergia rotundata* (photograph Axel Dalberg Poulsen)

by Burt & R.M. Smith (1972). --- Fig. 4.

[*Curcuma radice rotunda* Hermann, Prodr. (1689) 330; Burm., Thes. Zeylan. (1736) 84; L., Fl. Zeyl. (1748) 3, # 6. --- Voucher: not known].

[*Curcuma foliis latioribus & rotundioribus* Breyne, Prodr. 2 (1689) 40. --- Voucher: not extant].

[*Curcuma foliis ovatis utrimque acuminatis: nervis lateralibus paucissimis* Royen, Fl. Leyd. Prodr. ("Lugd." in Linnaeus) (1740) 12. --- Voucher: not found in L].

[*Zerumbet claviculatum* Rumph., Herb. Amboin. 5 (1747) 172, t. 69, f. 1. --- Voucher: the illustration]. --- Fig. 7.

Kaempferia pandurata Roxb., Asiat. Res. 11 (1810) 328, t. 2 (excl. syn. Van Rheede); Hort. Beng. (1814) 1 (incl. syn. Van Rheede); Fl. Ind. 1 (1832) 18 (excl. syn. Van Rheede). --- *Gastrochilus panduratus* (Roxb.) Ridl., J. Straits Branch Roy. Asiat. Soc. 32 (1899) (110) 114. --- *Boesenbergia pandurata* (Roxb.) Schltr. in Fedde, Repert. 12 (1913) 316 ["(Ridl.)"]. --- Lectotype: No specimens known; *Roxburgh (1810) t. 2*, drawn by F. Dormieux from a plant cultivated in the Calcutta Botanical Garden, said to have been introduced from Sumatra, **designated here**. Possibly with artist's licence based on *Roxb. Icon. ined. 1765* (CAL, K). Turner (2000: 44) did not mention a type. --- Fig. 5, 6.



Figure 3. *Boesenbergia rotunda* (L.) Mansf. --- http://en.wikipedia.org/wiki/Boesenbergia_rotunda stated the local name used by the author is “Kembangraps”

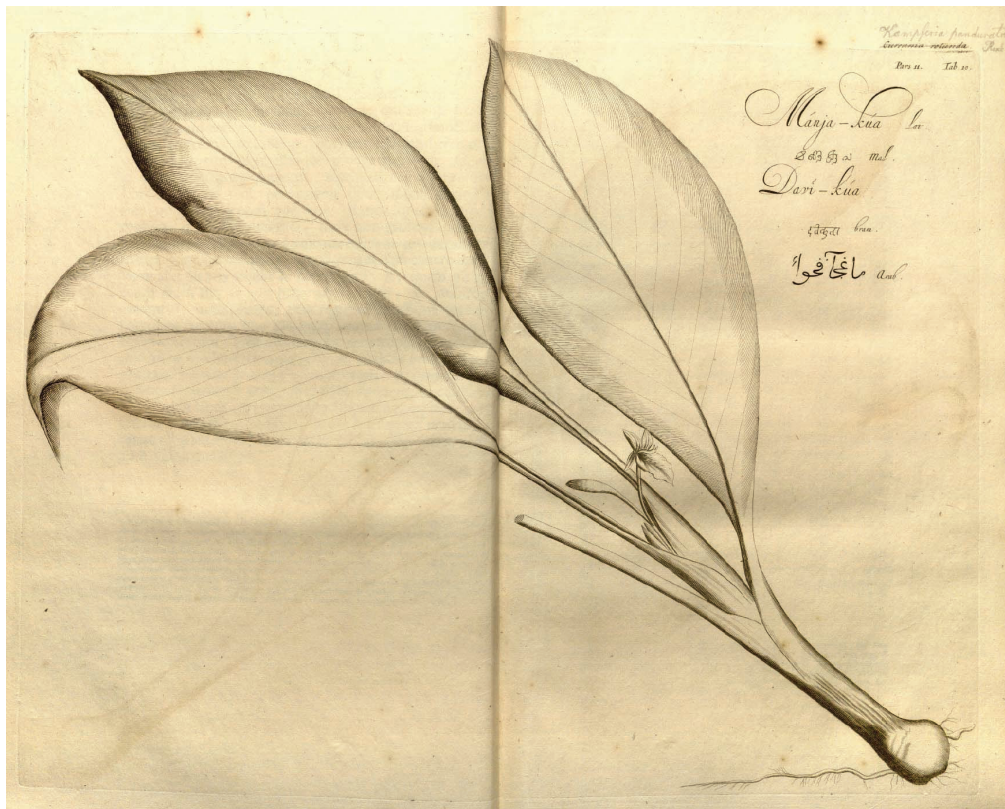


Figure 4. *Manja-kua* Rheede, Hort. Malab. 11 (1692) 19, t. 10. <http://www.biodiversitylibrary.org/item/14380#page/27/mode/1up>

[*Zingiber xanthorhizum* Moon, Cat. Ceylon (1824) 1, nom. nud. --- Not in Thwaites (1861: 5), Alston (1931: 281), Burt & Smith (1983: 508). --- Voucher: *Herb. Moon* (presumably in BM)].

Kaempferia cochinchinensis Gagnep., Bull. Soc. Bot. France 54 (1907) 165; Fl. Indo-Chine 6 (1908) 53, t. iii,

f. 21--29. --- *Boesenbergia cochinchinensis* (Gagnep.) Loes. in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 15a (1930) 571. --- Type: *Thorel s.n.* (P, holo), Cochinchina, Thu-dau-moth.

Perennial, 30--80 cm tall. Rhizome at the base of the leafy shoots only, composed of more or less globose, fused

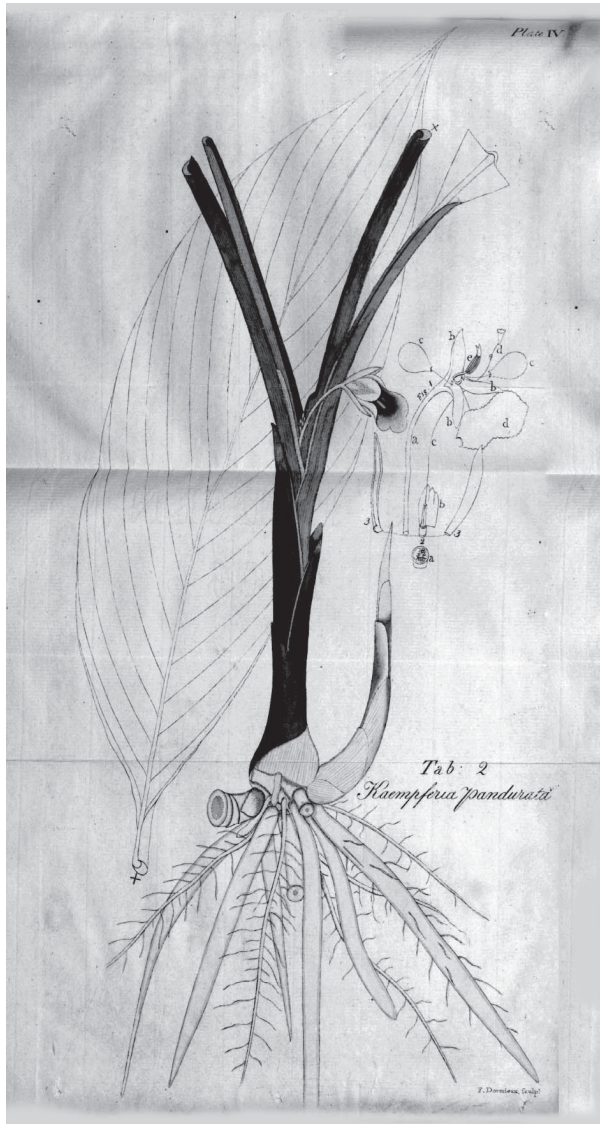


Figure 5. *Kaempferia pandurata* (Roxburgh 1810, t. 2). --- Lectotype, designated here.

joints, up to 2 cm in diameter, yellow-brown outside, bright yellow inside, fragrant when bruised. Roots tuberous and fleshy, subclavate, 5--30 by 0.5-2 cm, colour and fragrance like the rhizome. Cataphylls ca. 3, bladeless, reddish. Leaves alternate, biseriate, erect, 3--5(--7), hardly fragrant when bruised; sheaths not very robust, 9--19 cm long, together forming a short pseudostem; ligule broadly triangular, up to 1.5 cm long, arachnoid-pubescent, auricled, soon withering; petiole canaliculate, up to 30 cm long, glabrous; blade elliptical-oblong to broadly lanceolate, 12--50 by 5-17 cm, dark green, glabrous, with several raised, parallel veins and scattered dots above, pale green, glabrous to arachnoid-pubescent and densely white-dotted below. Inflorescence on a terminal shoot, i.e. developed after the leaves, spike-like, 10--15 cm long, almost completely hidden by the upper leaf sheaths,



Figure 6. *Kaempferia pandurata* Roxb., Icon. Ined. 1765 (Courtesy Royal Botanic Gardens, Kew).

bearing about 10 flowers; peduncle 1--2 cm long; rachis short, crowded with distichous, equitant bracts; flowers far exserted, appearing in succession, situated in the axil of a bract and a bracteole; bracts and bracteoles oblong-lanceolate, 4 by 0.7 cm, green; calyx shortly tubular, about 1.5 cm long, apex bifid; corolla with an about 6 cm long white tube and 3 unequal, oblong, up to 1.7 cm long, incurved, pink lobes at apex; labellum (central staminode) patent, oblong-obovate or panduriform, 2--3.5 by 1.5-2.5 cm, apex obtuse, crenate, undulate plicate, upper half pink, lower half white or pale pink, with red-violet dots within; lateral staminodes erect, petaloid, broadly obovate, 1.5--2 by ca. 1 cm, pink; filament ca. 5 mm long, white, hairy, anther ca. 5 mm long, yellow-white anther, anther dehiscing longitudinally, crest narrow, bilobed, reflexed; ovary 3-locular, ca. 5.5 mm long, glabrous, stylodes slender, style filiform, stigma protruding beyond the anther, funnel-shaped, yellow-white. $2n = 36$. --- (after Ibrahim & Nugroho 1999).

It is a minor question who sent the specimen to Calcutta from which the illustration was drawn. In 1810 none was named, in 1814 the son is cited, in 1832 it is attributed to



Figure 7. *Zerumbet claviculatum* / *Tommon contsji* Rumph., Herb. Amboin. 5 (1747) t. 69, f. 1. <http://www.biodiversitylibrary.org/item/10355#page/247/mode/1up>

Charles Campbell (ca. 1765—1808), which was accepted by Das & Sikdar (1986).

The name was also based on *Zerumbet claviculatum* Rumphius (1747) (See Fig. 6), with the note “I could almost wish to quote *Manja-kua* Rheede 11: t. 10 ... and again by Roscoe for his *Kaempferia ovata*, which seems to differ from our plant ...”. This is therefore not a renaming of *Curcuma rotunda* L. which was based on the Van Rheede illustration

It seems hazardous to me to lectotypify the name of a plant originating from Sumatra with a plate depicting an Amboinese one, even for a widely cultivated species. The preferred lectotype therefore is the illustration in Roxburgh (1810).

Vernacular names --- Chinese keys, Fingerroots (En.), Temu kunci (Malay), and many others, e.g. in Thailand krachai (กระชาย) and in China 凹唇姜 (ao chun jiang).

Uses --- Medicinal (stomachic, against cough, dysentery, ringworm, after parturition, anti-rheumatism, muscular pains, tonsillitis). Said to be an aphrodisiac, perhaps due to the Galenian rule of signatures: the penile shape of the secondary roots. However, Sudwan et al. (2007) did not observe any effect on sexual behaviour nor in serum androgenic levels of male rats.

Bhamarapavati et al. (2006) observed that extracts of pinostrobin and red oil from the roots were active against *Helicobacter pylori* which causes gastritis, dyspepsia, peptic ulcers as well as gastric and colon cancer. They suggested that these diseases are rare in Thailand because of the common use.

Pinostrobin has been reported as a leukaemia chemopreventive agent (Smolarz et al. 2006).

Sometimes warnings are given that the roots should be used externally only, but this is obviously against their general use as pickled or salted snacks, or as an ingredient of vegetable mixtures (sambalans, sayurs), fish dishes and curries.

Notes --- During this study it became apparent that two combinations in *Boesenbergia* were invalidly published by Larsen (1997) as there was no reference to the place of valid publication of the basionym required by the Botanical Code Art. 32.5, 33.4. The first one was later validated by Newman et al. (2004)

Boesenbergia loerzingii (Valeton) K. Larsen ex M. Newman, A. Lhuillier & A.D. Poulsen

Boesenbergia loerzingii (Valeton) K. Larsen ex M. Newman, A. Lhuillier & A.D. Poulsen, *Blumea* Suppl. 16 (2004) 56. --- *Gastrochilus loerzingii* Valeton, *Bull. Jard. Bot. Buitenzorg* II, 27 (1918) 94. --- Type: *Lörzing 4812* (BO, holo; L), Sumatra, E Coast, Sibolangit 300--500 m, 2 Mar 1917.

Gastrochilus loerzingii Valeton var. *bandarensis* Valeton, *Bull. Jard. Bot. Buitenzorg* II, 27 (1918) 95; M. Newman et al., *Blumea* Suppl. 16 (2004) 87. --- Type: *Lörzing 1728* (BO, holo, “4728”; L), Sumatra, E Coast, Sibolangit above Bandar, 1000 m, see note.

Gastrochilus loerzingii Valeton var. *bencoolensis* Valeton, *Bull. Jard. Bot. Buitenzorg* II, 27 (1918) 94; M. Newman et al., *Blumea* Suppl. 16 (2004) 87. --- Type: *Bünnemeijer 532* (BO, holo), Sumatra, Bengkulu, Gunong Talamau, see note. (Poulsen 2276, BO, cites this as Talamau).

Notes --- Larsen lectotypified *B. loerzingii* with *Bünnemeijer 532* (“*Bunnemeyer*”) said to be in L, where I could not find it. This typification is incorrect, as this is the type of var. *B. bencoolensis*. Lörzing’s top set is in BO, where Valeton worked.

Lörzing had the unfortunate habit of collating his collections later under a new number, thus, the parts cannot be matched with the collecting dates/places.

Specimens found in BO and L:

Lörzing 3889, 20 Dec 1927 (therefore not type material), originally from Bandarbaru, S of Sibolangit, grown in the garden of Sibolangit and noted that after a few years it was indistinguishable from the typical form.

Lörzing 4728, 15 Feb 1917, NE of the Sibayak, above Bandarbaru, c. 1000 m. The specimen in BO is labelled as “4728”, but on a tag the number is “1728”! See also *12859*.

Lörzing 4812, 2 Mar 1917, Sibolangit Nature Reserve, 300--500 m. Could be type material.

Lörzing 5296, 28 Sep 1917, Sibolangit Nature Reserve, 400 m. Could be type material.

Lörzing 7366, 6 Oct 1920, Padang & Bedagei, Plantage Badjalinggi, c. 100 m (because of date, locality, not type material).

Lörzing 12858, 20 Dec. 1927. This is a composite of *Lörzing 3888*, 20 Dec 1927, Sibolangit Nature Reserve, 300--550 m, also cultivated in the garden (because of date not type material). The three shoots have intermingled roots, so appear to be a single collection.

Lörzing 12859, labelled by Larsen as type of var. *bandarensis* Val. (1918), but Valeton cited *Lörzing 1728* (BO, not found in L). Sheet in L composed of loose shoots, loose leaves, and with two origins: Cult in Hort. Bot. Bog. XI.B.VI.24. 17 Nov 1927. *Irsan s.n.* from Sumatra, Sibolangit. Flower white; top part of lip yellow, at base a little purple, but the specimen consists of leaves only. Same: 2 Nov 1923. *Kornassi s.n.* Leaves.

Boesenbergia phyllostachya (Gagnep.) K. Larsen [Nordic J. Bot. 17 (1997) 363, *nom. inval., sine basionym* ref.] ex Veldkamp, **validated here**: *Gastrochilus phyllostachyus* Gagnep., Bull. Soc. Bot. France 53 (1906) 146. (“*phyllostachya*”). --- Lectotype: *Pierre s.n.*, Sep 1865 (P, holo), Vietnam, Ri-hao, designated by K. Larsen (1997).

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Gardens, Kew, *Kaempferia pandurata* Roxb., Icon. Ined. 1765, could be included. The identity of the author of the photograph of the roots (Kembangraps) could not be traced.

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