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Research Communication

Lectotypification of the basionym and a synonym of *Givotia moluccana* (Euphorbiaceae) ensuring its unambiguous use

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Abstract

A second-step lectotype is designated for the Linnaean name *Croton moluccanus* ensuring its unambiguous use as *Givotia moluccana* (L.) Sreem., for a species treated in most of the Indian and Ceylonese Floras as *Givotia rottleriformis* Griff. ex Wight. A lectotype is also designated for the synonym *G. rottleriformis* as the earlier lectotypification of this name was not based on the original material used for describing the species.

Keywords

Euphorbiaceae; *Givotia moluccana*; *Givotia rottleriformis*; lectotypification; accepted name

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Introduction

The genus *Givotia* Griff. is represented by four species, distributed in East Africa, Madagascar and peninsular India to Sri Lanka (1). The sole species occurring in India and Sri Lanka has been treated as *Givotia rottleriformis* Griff. ex Wight in most of the related Floras (as cited in nomenclature part). However, Sreemadhavan (2) placed the Linnaean name *Croton moluccanus* under *Givotia* thereby making a new combination *G. moluccana* (L.) Sreem. and treated *G. rottleriformis* as its synonym. Matthew (3), who overlooked the publication of Sreemadhavan (2), made the same combination

again. Govaerts *et al.* (4), followed by Noltie (5) treated *G. moluccana* as the accepted name of the combined species but Londhe (6), Balakrishnan & Chakrabarty (7) and Chakrabarty & Balakrishnan (8) continued to use *G. rottleriformis* on the ground that Smith (9) rejected the Linnaean name *C. moluccanus* as *nomen confusum*.

Materials and methods

The present investigation was undertaken mainly to ascertain the correct usage of the accepted name of the sole species of *Givotia* occurring in

peninsular India and Sri Lanka and it is based on the examination of herbarium specimens including images of materials from a few European and North American herbaria and literature. The following herbaria were consulted: B, BM, BSD, BSI, CAL, DD, E, K, LINN, M, MH, NY, P, PCM and RHT (acronyms according to Thiers (10)).

Discussion

The protologue of *Croton moluccanus* (11) contains: “*Fl. zeyl.* 346”; “*Nux juglans moluccana bifida. Burm. zeyl.* 170” and “*Habitat in Zeylona, Moluccis.*” The specific name, “*Croton moluccanum*” was obviously attributed by Linnaeus from this *Nux juglans moluccana bifida* of Burman (12). The mention of *Flora Zeylanica* explains the inclusion of two widely separated localities, “Zeylona” (Sri Lanka) and “Moluccis” (Moluccas) in the original description. It is worth mentioning that Trimen (13) had clearly pointed out that Linnaeus rendered some of his species obscure by erroneous synonymy. Smith (9) considered the Linnaean name as *nomen confusum* as he himself was confused because under *Croton moluccanum*, Linnaeus (11) referred to the Paul Hermann’s herbarium No. 346 (14) in his *Flora Zeylanica* (15) as well as the *Nux juglans moluccana bifida* of Burman (12). As regard the Burman’s plant, there is no interpretation available hitherto to its identity though Smith (9) suggested it to be *Aleurites moluccanus* (L.) Willd., based on *Jatropha moluccana* L., another member of the family Euphorbiaceae. Next, Sreemadhavan (2), unaware of the Prain’s publication (16), pointed out that the Hermann specimens (mentioned in the protologue) may be considered as the syntypes of *Croton moluccanum* and one of them be designated as the lectotype. Consequently, he (2) transferred this name to *Givotia* and merged *G. rottleriformis* under it. It was Jarvis (17) who first accepted the type citation of the name *C. moluccanus* by Prain (16) as the lectotype. This is in accordance with Art. 9.3 and Art. 9.10 of the ICN (18) because Prain (16) clearly used the word “type” in his statement: “The plant upon which Linnaeus based that species was collected by Hermann in Ceylon. The type is still in the Hermann herbarium; it belongs to the species now known as *Givotia rottleriformis*, Griff.” This is sufficient to identify the species unambiguously (McNeill, pers. comm., dated 3 Oct. 2018). Wajer (pers. comm., dated 3 Oct. 2018) compared the images on page 33 of Vol. 1 of Hermann’s collections and their database (14) and clarified that only the specimens with barcodes BM000621346 and BM000621347 qualify as the original material for *Croton moluccanus* L. However, as there are two specimens involved with separate barcodes, it is construed here that as per Art. 9.17 of the ICN (18), Prain’s treatment (16) can be taken as a first-step lectotypification, now to be narrowed to a single specimen in a second-

step lectotypification. Hence, one of the elements of the original material is designated here as the second-step lectotype of the Linnaean name *Croton moluccanus*, ensuring its unambiguous use as *Givotia moluccana* (L.) Sreem. (2).

As regards the synonym *Givotia rottleriformis*, the lectotype designated by Smith (9) to a specimen collected by Benjamin Heyne from peninsular India (Wallich 7918 C in the Wallich’s herbarium in Kew, K000246859: image!) does not represent the original material (Art. 9.4. of the Code (18)) used for describing the species. Noltie (5) clearly pointed out that there are nine syntype specimens of the Wight’s species available in the Edinburgh herbarium (E). Hence another lectotype for the name is designated here.

Nomenclature and lectotypification

Givotia moluccana (L.) Sreem. in Taxon 24: 696. 1975; Govaerts *et al.*, World Checkl. Bibliogr. Euphorb. 3: 937. 2000 – Isonym: *Givotia moluccana* (L.) Wheeler ex K.M. Matthew in Kew Bull. 46(3): 545. 1991 – Basionym: *Croton moluccanus* L., Sp. Pl. 2: 1005. 1753, *p.p.* (as *moluccanum*).

- **Type** (first-step lectotype, designated by Prain, 1918, p. 67): SRI LANKA. Herb. Hermann 1: 33, No. 346 (BM). Second-step lectotype (designated here): SRI LANKA. Herb. Hermann 1: 33, No. 346 (BM000621346: image!; isolectotype BM000621347: image!).

= *Givotia rottleriformis* Griff. ex Wight, Icon. Pl. Ind. Orient. 5(2): 24, t. 1889. 1852; Dalzell & A. Gibson, Bombay Fl. 228. 1861; Thwaites, Enum. Pl. Zeyl. 278. 1861; Müll.Arg. in DC., Prodr. 15(2): 1112. 1866; Hook.f., Fl. Brit. India 5: 395. 1887; Trimen, Handb. Fl. Ceylon 4: 50. 1898; Radcl.-Sm. in Kew Bull. 22: 504. 1968; T. Cooke, Fl. Bombay 2: 602. 1906; Gamble, Fl. Madras 1342. 1925; Rani in K.M. Matthew, Fl. Tamilnadu Carnatic 3(2): 1443. 1983; Chandrab. in A.N. Henry *et al.*, Fl. Tamil Nadu 2: 230. 1987; C.J. Saldanha, Fl. Karnataka 2: 143. 1996; Philcox in Dassan. & Clayton, Rev. Handb. Fl. Ceylon 11: 103. 1997; Londhe in N.P. Singh *et al.*, Fl. Maharashtra 2: 886. 2001; N.P. Balakr. & Chakrab., Fam. Euphorb. India 232. 2007; Chakrab. & N.P. Balakr. in N.P. Balakr. *et al.*, Fl. India 23: 264. 2012.

- **Type** (lectotype, designated here): INDIA. Tamil Nadu, Tirunelveli District, Courtallam, Apr. 1835, *Wight* 806 (E00179743: image!). *Residual syntypes*: INDIA. Tamil Nadu, Tirunelveli District, Courtallam, Aug. 1835, *Wight* 806 A (E00179744: image!); *ibid.*, Mar. 1835, *Wight* 806 B (E00179745: image!); *ibid.*, Sept. 1835, *Wight* 806 C (E00179746: image!); *ibid.*, *Wight* 778 (E00179747: image!). Village of Thervocatchy, Coormum, *Wight s.n.* (E00179748: image!). Peninsula Indiae Orientalis, without precise locality, *Wight*

s.n. (E00179749, E00179751: images!); *ibid.*, *Wight* 2842 (E00179750: image!); *ibid.*, *Wight* 2638 (CAL0000031605!, CAL0000031606!, M0241946, M0241947: images!, NY00263419: image!).

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Competing interests

The authors declared that they have no competing interest.

Authors' contributions

Both authors contributed equally to the work presented in this paper.

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