

Typification of eight accepted names and two synonyms in Indian Euphorbiaceae

Tapas Chakrabarty^{1*} and Gopal Krishna²

¹4, Botanical Garden Lane, Howrah – 711 103, West Bengal, India.

²Central National Herbarium, Botanical Survey of India, Botanic Garden, Howrah – 711 103, West Bengal, India.

*Corresponding author: tchakrab@gmail.com

भारतीय यूफोर्बिएसी में आठ नामों का टाइपिफिकेशन एवं दो का सामानार्थन

तापस चक्रवर्ती एवं गोपाल कृष्णा

सारांश

यूफोर्बिया कैशिमिरियाना, यू. जैक्यूमोन्टाई जिसमें यू. जैक्यूमोन्टाई प्रभेद लैथियोकार्पा का एक समानार्थ भी सम्मिलित है के लिये लेक्टोटाइप निर्धारित किया गया है। यू. नोटोप्टेरा, मैकारैन्गा गैम्बेलाई, मै. इंडिका, मैलोटस नेपालेन्सिस के लिये सही नामों का निर्धारण किया गया है। वहीं क्रोटोन जोफ्रा एवं मैकारैन्गा अंडमानिका नामों के लिये नये नियोटाइप का निर्धारण किया गया है, जिसमें इसके समानार्थ मै. ब्रान्डीसाई का लेक्टोटाइपिफिकेशन भी सम्मिलित है।

ABSTRACT

Lectotypes are designated here for the names *Euphorbia cashmeriana*, *E. jacquemontii* (including its synonym *E. jacquemontii* var. *lasiocarpa*), *E. notoptera*, *Macaranga gamblei*, *M. indica* and *Mallotus nepalensis* for correct application of these names. Neotypes are designated for the names *Croton joufra* and *Macaranga andamanica* along with lectotypification of its synonym *M. brandisii*.

Keywords: *Croton*, *Euphorbia*, *Macaranga*, *Mallotus*, lectotypification, neotypification

INTRODUCTION

The cosmopolitan family Euphorbiaceae, as per its present circumscription (APG, 2016), comprises 214 genera and about 5600 species (Mabberley, 2017). Balakrishnan & Chakrabarty (2007), in their regional revision of the family in India recognized 73 genera and 413 species which, however, included the segregate families Phyllanthaceae, Picrodendraceae and Putranjivaceae. After excluding these families, the family Euphorbiaceae sensu stricto is now represented in India by 52 genera and 259 species as per the present estimate by the first author. This includes one recently introduced South American genus *Astraea* Klotzsch (1841) (Gaikawad & al., 2012, Das & al., 2016) and 7 cultivated genera, *Aleurites* J.R.Forst. & J.G.A. Forst. (1776), *Codiaeum* A.Juss. (1824), *Hevea* Aubl. (1775), *Hura* L. (1753b), *Manihot* Mill. (1754), *Ricinus* L. (1753b) and *Vernicia* Lour. (1790). The largest genus is *Euphorbia* L. (1753a) [including *Chamaesyce*

Gray (1822), *Monadenium* Pax (1894), *Pedilanthus* Neck. ex Poit. (1812) and *Synadenium* Boiss. (1862)] with 91 species (including 11 cultivated species).

While preparing the revised edition of the publication “Family Euphorbiaceae in India” (Balakrishnan & Chakrabarty, 2007) by the first author, it has been found that, that a number of names in the family require redesignation of types for the correct application and unambiguous use of these names.

The present paper deals with nomenclatural lectotypification of six accepted names, two synonyms and neotypification of two accepted names in Indian (including adjacent countries) Euphorbiaceae.

MATERIALS AND METHODS

The present investigation is based on the study of herbarium specimens and literature. The following herbaria were consulted: A, BM, CAL, E, G, HBG, K, M,



Fig. 1. Neotype of *Croton joufra* (© The Board of Trustees of the RBG, Kew). Available at: <http://specimens.kew.org/herbarium/K001127772>

MH, MPU, NY, P, PBL, S, US and W. Except for CAL, MH and PBL, the specimens in all other herbaria were examined in the form of digital images.

DISCUSSION

Croton joufra Roxb. (1832) was described on the basis of specimens collected from trees grown at “Calcutta Botanic Garden”, introduced from Sylhet in Bangladesh (“Joufra, the vernacular name in Silhet, where it grows to be a large tree.”). Müller (1866), in his treatment of Euphorbiaceae, having seen no specimen, recognized *C. joufra* based on Roxburgh’s description. Kurz (1877) recorded the occurrence of the species in Myanmar and added description of the fruits. Subsequently Hooker (1887) also recognized and accepted *C. joufra* as a distinct species and cited several specimens including one from “Silhet” (now Sylhet in Bangladesh), collected by Roxburgh. Chakrabarty & Balakrishnan (1997), in their revision of the genus *Croton* L. (1753b) in the Indian subcontinent, cited the type as: “Type: Sylhet, Roxburgh s.n. (K? - n.v.). Roxburgh, Fl. Ind. Icon No. 2812 (CAL).” It may be mentioned that there is no Roxburgh collection of *C. joufra* from Sylhet at the Kew herbarium (Ms. Laura Pearce, pers. comm.), nor at BM, BR, CAL and G. Moreover, Chakrabarty & Balakrishnan (1997) also erred in citing ‘Roxburgh, Fl. Ind. Icon No. 2812 (CAL)’, as no such drawing of *C. joufra* exists at CAL (Sanjappa & al., 1994). There is also no such drawing at K (Sealy, 1956). Forman (1997) also did not mention *C. joufra* in his paper concerning the typification of Roxburgh names. In absence any original material and any collection from “Calcutta Botanic Garden” from where the species was originally described, we are designating herewith a specimen of Wallich from Sylhet as the neotype of *C. joufra*.

Euphorbia cashmeriana Royle (1836) was described from “Cashmere and neighbouring mountains” based on author’s own collections. Binojkumar & Balakrishnan Boiss. (1862) (2010) combined *E. edgeworthii* under *E. cashmeriana* and stated that it is a very rare species distributed from Afghanistan to western Himalaya and in India it occurs in Jammu & Kashmir and Himachal Pradesh in the temperate and alpine regions above 3000 m altitude. Subsequently Geltman (2012) reinstated *E. edgeworthii*, originally described from Kumaon in Uttarakhand, India to specific rank and recorded its occurrence also in China. Binojkumar & Balakrishnan (2010) cited the type of *E. cashmeriana* as: “Type: Royle, Illus. Bot. Himal. 309, t. 82, f. 4. 1839 (based on materials collected from Kashmir by Royle. No specimen is known to exist).” In absence of the typification statement “designated here” (hic designatus) or an equivalent (Art. 7.11: Turland & al., 2018), this was not an effective lectotypification. During the present

studies, we succeeded in locating an original material of *E. cashmeriana* at Liverpool (LIV). The specimen, collected by Royle, is not good, bearing only fragments of leaves. On the other hand, the excellent drawing in the protologue depicts details of the floral parts. As per Art. 9.12 (Turland & al., 2018), an uncited original specimen as well as a drawing have equal priority in lectotype designation. Hence, the original drawing is designated here as the lectotype of the name.

Euphorbia jacquemontii Boiss. (1862) is known to occur in Jammu & Kashmir in India and Kashmir in Pakistan (var. *lasiocarpa*) above 3000 m altitude (Radcliffe-Smith, 1986, Binojkumar & Balakrishnan, 2010). It was originally described with two varieties, viz. var. *jacquemontii* and var. *lasiocarpa* Boiss. (1862); the former on the basis of a collection of Jacquemont (collection number 1182) at P and the latter based on one collections of Jacquemont (collection number 482) at P and two collection of Hügel (collections numbers 956 and 1067) at Wien (W). Radcliffe-Smith (1986) recognized *E. jacquemontii* var. *lasiocarpa* as a distinct variety but Binojkumar & Balakrishnan (2010) united the variety with the species. The type of *E. jacquemontii* was cited by Binojkumar & Balakrishnan (2010) as: “Type: N.W. Himalaya, Jacquemont s.n. (P, photo!).” In absence of the typification statement as per Art. 7.11 (Turland & al., 2018), this again does not amount to effective lectotypification. The type at P, Jacquemont 1182 is represented by two duplicates, both bearing two twigs with late flowering and fruiting. According to Art. 9.6 and Art. 40, Note 1 (Turland & al., 2018), these duplicates are to be regarded as syntypes and a lectotype should be designated using one of them. Now, of these, the duplicate (P00606730) is identified by Boissier in his own handwriting and, therefore, this specimen is designated here as the lectotype. Further, an examination of the syntypes of var. *lasiocrpa* at P and W reveals that the specimen at P (P00606732) was identified by Boisser in his own handwriting and also has pencil sketches of the dissected parts. Hence this syntype at P is designated here as the lectotype of the name.

Euphorbia notoptera Boiss. (1862) is endemic to India occurring from plains to lower slopes of hilly tracts and rocky plateau, up to 400 m elevation in Maharashtra, Goa and Karnataka (Binojkumar & Balakrishnan, 2010). The species was described on the basis of four gatherings collected by Dalzell from Bombay, Stocks & Law from Malabar and Concan, Law from Canara and Mysore and by Stocks from Malabar. Binojkumar & Balakrishnan (2010) cited the specimen Bombay, Dalzell s.n. at K (K000246185) as the lectotype and noted that the specimen collected by Dalzell from Bombay was found to be the appropriate specimen for the lectotype (p. 198). However, in absence of the statement, “designated here”



Fig.2. Lectotype of *Euphorbia jacquemontii* (© Muséum National d'Histoire Naturelle, Paris). Available at: <https://science.mnhn.fr/institution/mnhn/collection/p/item/p00606730>

(hic designatus) or an equivalent as per Art. 7.11 (Turland & al., 2018), this was not an effective lectotypification. While choosing the most appropriate specimen for lectotypification, we came across two specimens at G. Of these, the specimen (G00441433, Boissier' herbarium) is an excellent specimen bearing several twigs in flowering and fruiting and also bearing handwriting of Boissier. Hence this specimen is designated here as the lectotype.

Macaranga andamanica Kurz (1877) was originally described from "Tropical forests of the Andamans" presumably on the basis of collections by Kurz himself and it is now known to occur also in Myanmar, Thailand, Vietnam, Cambodia, China, Laos and Malaysia (Susila Rani & Balakrishnan, 2012). As per the personal observations of one of us (first author), the species (shrubs or trees, up to 6 m high) is fairly common on the Andaman Islands in edges of inland forests on hillocks, often along streams on rocky or clayey loam up to 200 m altitude. The original material of *M. andamanica* collected by Kurz is missing and a search (especially at CAL, K and HBG) to locate the same proved futile. Hence a neotype is designated here for the name as per Art. 9.13 (Turland & al., 2018). The neotype bears simple male inflorescences (thyrses) which distinguishes the species from its immediate allies (Whitmore, 1978). Further, Airy Shaw (1965) united *M. brandisii* King ex Hook.f. (1887) of Myanmar under *M. andamanica*, described on the basis of two fruiting collections by Beddome and Gallatly. These specimens are available at K (two duplicates of the collection of Gallatly and one sheet by Beddome). George King first identified these sheets (in pencil in his own handwriting) as "*Macaranga brandisii* King". We are designating the most profusely fruiting sheet out of these three specimens representing a typical condition as the lectotype of the name *M. brandisii*.

Macaranga gamblei Hook.f. (1887) was originally described on the basis of male flowering specimens collected by Gamble from "Sikkim Terai, at Dulkathar", a locality now falling in Darjeeling District of West Bengal. The species is now known to occur also in Sikkim, Assam and Arunachal Pradesh of India and extending to Myanmar (Susila Rani & Balakrishnan, 2012). The present study reveals that the original material of the species is represented by five specimens collected by Gamble bearing field numbers 503B (CAL0000014008), 503C (K000247154), 503D (K000247030), 503E (CAL0000014009) and 503G (CAL0000023933). It was Whitmore (1978) who first cited the type as: "Sikkim at Dulkajhar (type, K!)" and further elaborated, "*Gamble* 503C, 503D, at K!" Thus, Whitmore (1978) definitely accepted *Gamble* 503C and 503D in the Kew herbarium as the type, satisfying Art. 7.11 (Turland & al., 2018), presumably on the assumption that they represent a

single gathering (Art. 8.2) (see also McNeill 2014). Thus, as per Art. 9.17 (Turland & al., 2018), Whitmore's treatment can be taken as a first-step lectotypification, now to be narrowed to a single specimen in a second-step lectotypification. Both the specimens are identified by Whitmore as type and the specimen bearing a short description of the male flowers is designated here as the lectotype.

Macaranga indica Wight (1852) was originally described from the Nilgiri hills and Courtallam of Tamil Nadu, India. It is a widespread species, distributed in Sri Lanka, India (peninsular India, north-eastern India and Andaman & Nicobar Islands), Nepal, Bhutan, Bangladesh, Myanmar, China, Laos, Vietnam, Thailand, Malaysia and Indonesia (Sumatra) (Susila Rani & Balakrishnan, 2012). Noltie (2005) mentioned that there are three possible isosyntype specimens of *M. indica* available at E, agreeing well with the original description and plate of Wight. They include one collection by Wight from Courtallam, collected in August 1835 (E00179337) while the other two sheets represent a single gathering by Wight from an unspecified locality in peninsular India (E00179338, E00179339). Whitmore (2008) also cited two collections by Wight at K as possible syntypes: Kew Distrib. No. 2632 (K, P) and Kew Distrib. No. 2633 (K, P, W), from the Nilgiri hills. During the present studies, it was found that the specimens assorted under the Kew Distribution Numbers 2632 and 2633 were distributed to several other herbaria. After taking into account all the original materials available, we are designating herewith a specimen at Kew (K000247031) as the lectotype of the name because it agrees well with the original description and drawing and exhibiting the characteristic features of the species such as conspicuous petiolar glands, the dense paniculate female inflorescences and the small fruits, c. 3 mm in diameter (Whitmore, 1978).

Mallotus nepalensis Müll.Arg. (1865) occurs in India (West Bengal, Sikkim, Nagaland and Meghalaya), Nepal, China and Myanmar (Susila Rani & Balakrishnan, 2012). It was originally described from Nepal on the basis of a collection of Wallich (Numer. List No. 7824) at K and the protologue contains short description of the inflorescences, male and female flowers and fruits. The present studies revealed that there are three duplicates of this Wallich's collection at K and one duplicate at BM. Of these, while three specimens bear male flowering twigs, one specimen at K (K001128022) bears two twigs with female inflorescences and one twig bearing male flowers and one fragment of male inflorescence indicating that this gathering (Wallich 7824) represents a mixed assemblage because the plants of *Mallotus* Lour. (1790) are dioecious (although to be regarded as a single gathering as per Art. 8.2, footnote 1: Turland & al., 2018). As per



Fig. 3. Neotype of *Macaranga andamanica* (© Director, Botanical Survey of India, Kolkata).

the provisions of Art. 9.6, Art. 9.12 and Art. 40, Note 1 (Turland & al., 2018), the specimen at K (K000246996), bearing two twigs with male inflorescences is designated here as the lectotype of the name.

TYPIFICATION

Croton joufra Roxb. [Hort. Bengal. 104. 1814, nom. nud.] Fl. Ind., ed. Carey 3: 685. 1832; Müll.Arg. in DC., Prodr. 15(2): 519. 1866; Kurz, Forest Fl. Burma 2: 373. 1877; Hook.f., Fl. Brit. India 5: 387. 1887; Chakrab. & N.P. Balakr. in Bull. Bot. Surv. India 34: 51. 1997. **Fig. 1**

Neotype (designated here): Bangladesh, Sylhet, *Wallich* 7735 C (K001127772: image!; isoneotypes K000246821, K000246822, images!).

Croton persimilis Müll.Arg. in Linnaea 34: 116. 1865, p.p., quoad specimina *Wallich* 7735 C, p.p.

Euphorbia cashmeriana Royle, Ill. Bot. Himal. Mts. 329, t. 82, f. 4. 1836; Binojk. & N.P. Balakr., Gen. Euphorbia India 248. 2010.

Lectotype (designated here): [icon] Royle, Ill. Bot. Himal. Mts. 329, tab. 82, fig. 4. 1836. Remaining original material: India, Jammu & Kashmir, Kashmir and neighbouring mountains, *Royle* s.n. (fragm. LIV, herb. acc. no. LIV 1952.121.3219: image!).

Euphorbia jacquemontii Boiss. in DC., Prodr. 15(2): 113. 1862; Radcl.-Sm. in Fl. Pakistan 172: 141. 1986; Binojk. & N.P. Balakr., Gen. Euphorbia India 260. 1910. **Fig. 2**

Lectotype (designated here): India, Kashmir, *Jacquemont* 1182 (P00606730: image!; isolectotypes MPU014762, P00606731, US00109379, images!).

= *Euphorbia jacquemontii* Boiss. var. *lasiocarpa* Boiss. in DC., Prodr. 15(2): 113. 1862.

Lectotype (designated here): India, Kashmir, Pir Panjal Range, *Jacquemont* 482 (P00606732: image!; isolectotypes fragm. A00047920, A00047921, images!). Syntypes: Pakistan, Baltistan, Skardu, *Hügel* 956 (W0031062: image!); *Hügel* 1067, n.v.

Euphorbia notopectera Boiss. in DC., Prodr. 15(2): 26. 1862; Binojk. & N.P. Balakr., Gen. Euphorbia India 196. 1910.

Lectotype (designated here): India, Malabar and Concan, *Stocks & Law* s.n. (G00441433: image!; isolectotypes BM001050492, G00310409, images!, CAL0000022380!, K000246183, S13-12931, images!). Syntypes: India, Canara and Mysore, *Law* s.n. (K000246186: image!). Malabar, *Stocks* s.n. (K000246184, K000246187, images!). Bombay, *Dalzell* s.n. (K000246185, K001080112, images!).

Macaranga andamanica Kurz, Forest Fl. Burma 2: 389. 1877; Airy Shaw in Kew Bull. 19: 318. 1965; Whitmore in Gard. Bull. Singapore 31: 53. 1978; Susila Rani & N.P. Balakr. in N.P. Balakr. & al., Fl. India 23: 129. 2012. **Fig. 3**

Neotype (designated here): India, Andaman & Nicobar Islands, South Andaman Island, Dhanikhari, 6 Feb. 1974, *N.G. Nair* 850 (PBL0000018614!; isoneotype L0240065: image!).

= *Macaranga brandisii* King ex Hook.f., Fl. Brit. India 5: 453. 1887.

Lectotype (designated here): Myanmar, Tenasserim, Moolyet, 22 March 1877, *Gallatly* 427 (K000247045: image!; isolectotype K000247046: image!). Syntype: Myanmar, Tenasserim, Moolyet, *Beddome* 71 (K000247047: image!).

Macaranga gamblei Hook.f., Fl. Brit. India 5: 445. 1887; Whitmore in Gard. Bull. Singapore 31: 54. 1978; Susila Rani & N.P. Balakr. in N.P. Balakr. & al., Fl. India 23: 132. 2012. **Fig. 4**

Lectotype (*First-step*, designated by Whitmore 1978: 54): India, "Sikkim at Dulkajhar (type, K!)." *Lectotype* (*Second-step*, designated here): India, West Bengal, Darjeeling District, Dulka Char, April 1876, *Gamble* 503 D (K000247030: image!; isolectotype K000247154: image!). Syntypes: India, West Bengal, Darjeeling District, Dulka Char, April 1876, *Gamble* 503B (CAL0000014008!), 503E (CAL0000014009!), 503G (CAL0000023933!).

Macaranga indica Wight, Icon. Pl. Ind. Orient. 5(2): 23, t. 1883. 1852; Whitmore in Gard. Bull. Singapore 31: 54. 1978; Susila Rani & N.P. Balakr. in N.P. Balakr. & al., Fl. India 23: 132. 2012. **Fig. 5**

Lectotype (designated here): India, Tamil Nadu, Nilgiri District, Connoor, Nov. 1851, *Wight* Kew Distrib. No. 2632 (K000247031: image!). Syntypes: India, Tamil Nadu, Tirunelveli District, Courtallam, Aug. 1835, *Wight* 721 (E00179337: image!); Nielgherry, 1848, *Wight* Kew Distrib. No. 2632 (G00441919: image!); Neelgherry, Sept. 1848, *Wight* Kew Distrib. No. 2633 (M0233227: image!); By Sispara, Valla Caudoo, December 1850, *Wight* Kew Distrib. No. 2633 (K000247032: image!); Peninsula Indiae Orientalis, without precise locality, *Wight* Kew Distrib. No. 2633 (K000247033, M0233228, NY00263562, P00635186, S07-14688, images!); sine loc., *Wight* 109 (E00179338, E00179339, images!); sine loc., *Wight* Kew Distrib. No. 2632 (P00635187: image!).

Note: The Kew Distribution numbers often represent mixed gatherings.

Mallotus nepalensis Müll.Arg. in Linnaea 34: 188. 1865; Susila Rani & N.P. Balakr. in N.P. Balakr. & al., Fl. India 23: 157. 2012. **Fig. 6**

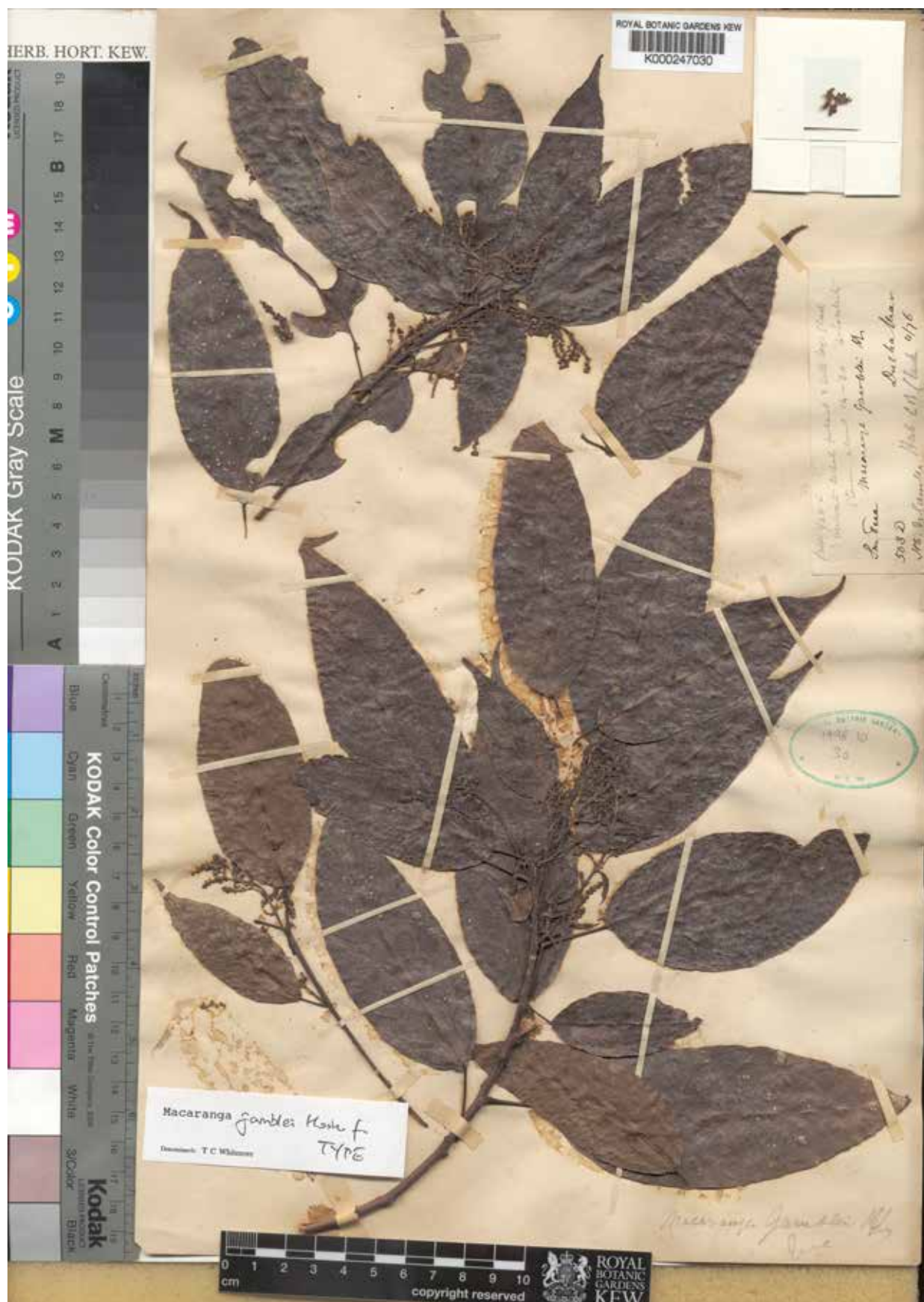


Fig. 4. Lectotype of *Macaranga gamblei* (© The Board of Trustees of the RBG, Kew). Available at: <http://specimens.kew.org/herbarium/K000247030>



Fig. 5. Lectotype of *Macaranga indica* (© The Board of Trustees of the RBG, Kew). Available at: <http://specimens.kew.org/herbarium/K000247031>



Fig. 6. Lectotype of *Mallotus nepalensis* (© The Board of Trustees of the RBG, Kew). Available at: <http://specimens.kew.org/herbarium/K000246996>

Lectotype (designated here): Nepal, sine loc., 1821, Wallich 7824 (K000246996: image!; isolectotypes BM000521802, K001128021, K001128022, images!).

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