

## Seven new combinations in *Phanera* (Fabaceae: Caesalpinioideae: Cercideae)

Subir Bandyopadhyay<sup>1</sup> and Partha Pratim Ghoshal

*Botanical Survey of India, Central National Herbarium, Howrah 711103, West Bengal, India.*

<sup>1</sup>Author for correspondence: [subirbandyopadhyay@yahoo.com](mailto:subirbandyopadhyay@yahoo.com)

### Abstract

Seven new combinations in *Phanera* Lour. are made for species that were either described in *Lasiobema* (Korth.) Miq. or later transferred to *Lasiobema* from *Bauhinia* L.

### Introduction

In five recent publications (Wunderlin 2011, Bandyopadhyay et al. 2012, Bandyopadhyay 2013, Mackinder and Clark 2014, Krishnaraj 2014), a total of 73 new combinations have been made in *Phanera* Lour. occurring in the Palaeotropical region because *Bauhinia* subgenus *Phanera* (Lour.) Kurz (Wunderlin et al. 1987, Bandyopadhyay 1999) is now recognized as a distinct genus based on recent advances in molecular phylogeny (Lewis and Forest 2005, Bruneau et al. 2008, Sinou et al. 2009).

Lewis and Forest (2005) treated *Lasiobema* (Korth.) Miq. as a distinct genus but stated that an unpublished molecular analysis suggests that *Lasiobema* could perhaps be better treated as an infrageneric taxon of *Phanera*. Wunderlin (2010) treated *Lasiobema* as a synonym of *Phanera* on the basis of available molecular data and his personal knowledge of these taxonomic groups. Sinou and Bruneau (2013) presented phylogenetic analyses for *Bauhinia s.l.* and other genera in Cercideae based on sequence data from two plastid (trnL-F, matK-trnK) and two nuclear (*Leafy*, *LegCyc*) regions. This multi-locus dataset suggests that *Lasiobema* (Korth.) Miq. should be recognised as a section of *Phanera*.

Thus we make here seven new combinations in *Phanera* for those species which were either described in *Lasiobema* or later transferred to *Lasiobema* from *Bauhinia*.

#### 1. *Phanera comosa* (Craib) Bandyop. & Ghoshal, *comb. nov.*

*Bauhinia comosa* Craib, *Bulletin of Miscellaneous Information, Royal Gardens, Kew* 1913: 352. 1913.

*Lasiobema comosa* (Craib) A.Schmitz, *Bulletin de la Societe Royale de Botanique de Belgique* 110: 14. 1977.

Type: A. Henry 13358 (K000760720, image!).

**Distribution:** China.

#### 2. *Phanera curtisii* (Prain) Bandyop. & Ghoshal, *comb. nov.*

*Bauhinia curtisii* Prain, *Journal of the Asiatic Society of Bengal, Part 2, Natural History* 66: 195. 1897.

*Lasiobema curtisii* (Prain) de Wit, *Reinwardtia* 3: 424. 1956.

Lectotype (designated by de Wit 1956: 425): C. Curtis 1682 (K000760957 image!). See note on typification below.

**Distribution:** Thailand, Laos, Cambodia, Vietnam and Malesia.

**Note:** The author attribution of *B. curtisii* is ‘Prain’ and not ‘Prain ex King’ because Prain is the author of the family Leguminosae (see King 1897: 1, 21).

There is only one collection of *C. Curtis 1682* at K (K000760957). In our opinion, although not annotated by de Wit, this sheet is likely to be the lectotype designated by de Wit (1956: 425). Larsen and Larsen (1996: 499) cited ‘*Curtis 1682* (K holo), Langkawi I.’ but this cannot be a holotype because Prain cited two collections in the protologue, viz. *Curtis 1682* and *Curtis 2619*.

**3. *Phanera flava*** (de Wit) Bandyop. & Ghoshal, *comb. nov.*

*Lasiobema flavum* de Wit, *Reinwardtia* 3: 425. 1956.

*Bauhinia flava* (de Wit) G.Cusset, *Adansonia* 6: 278. 1966.

Holotype: M.R. Henderson, *Singapore Field No. 29146* (K000760956 image!), iso (K000760955 image!).

**Distribution:** Malesia.

**Note:** De Wit annotated the sheets K000760956 and K000760955 as holotype and isotype, respectively, in May 1951.

**4. *Phanera harmsiana*** (Hosseus) Bandyop. & Ghoshal, *comb. nov.*

*Bauhinia harmsiana* Hosseus, *Repertorium Specierum Novarum Regni Vegetabilis* 4: 290. 1907.

*Lasiobema harmsianum* (Hosseus) de Wit, *Reinwardtia* 3: 423. 1956.

Neotype (designated here): Banks of Meh Ping, rapids up to Chiangmai, about 450–1000 ft, 11 Dec. 1908, *Kerr 507* (K000623233 image!), isoneo (TCD 0016440, n.v.).

**Distribution:** Thailand and Cambodia.

**Note:** Hosseus (1907) in the protologue stated ‘Typus in herb. Hoss.’ Larsen and Larsen (1980: 180) cited ‘*Hosseus 172 A*, Thaïlande (lecto-, K)’ but Dr. Ruth Clark confirmed that this specimen is not available at K. Dr. Hans-Joachim (Hajo) Esser informed us that they had “a list of specimens that were included in the Hosseus collection given to us in the year 1912, and this included *Bauhinia harmsiana* (172a)”. However, this specimen cannot now be located at M.

There is a sheet at K, *Kerr 507* (K000623233) with the annotation ‘Compared with Type in Hb. Berol. 7.10.09’ by H.H.W.P. [Henry Harold Welch Pearson]. This indicates that there was a type of *B. harmsiana* at B in 1909 but Dr. Robert Vogt informed us that the type specimen is no longer extant at B; probably lost in World War 2. Referring to Stafleu and Cowan (1979), it was found that herbarium and types of Hosseus from Thailand can also be at BAF, BM, C, CORDE, G, L, MO and P but communications with those herbaria with respect to *Hosseus 172a*, revealed that the type is not available. We have therefore neotypified the name.

**5. *Phanera harmsiana*** (Hosseus) Bandyop. & Ghoshal var. ***media*** (Craib) Bandyop. & Ghoshal, *comb. nov.*

*Bauhinia media* Craib, *Bulletin of Miscellaneous Information, Royal Gardens, Kew* 1927: 389. 1927.

*Bauhinia harmsiana* Hosseus var. *media* (Craib) K.Larsen & S.S.Larsen, *Natural History Bulletin of the Siam Society* 25: 11. 1973.

*Lasiobema harmsianum* (Hosseus) de Wit var. *media* (Craib) A.Schmitz, *Bulletin de la Societe Royale de Botanique de Belgique* 110: 13. 1977.

Lectotype (designated by Larsen and Larsen 1984: 33): *Noe 103* (ABD, image!), isolecto (K000760819 image!).

**Distribution:** Thailand.

**6. *Phanera strychnoidea*** (Prain) Bandyop. & Ghoshal, *comb. nov.*

*Bauhinia strychnoidea* Prain, *Journal of the Asiatic Society of Bengal*, Part 2, *Natural History* 66: 195. 1897.

*Lasiobema strychnoideum* (Prain) de Wit, *Reinwardtia* 3: 429. 1956.

Lectotype (first-step, designated by de Wit 1956: 429): *Kunstler 5914* (K000760953 image!, K000760954 image!); (second-step, designated here): (K000760953 image!). See note on typification below.

**Distribution:** Malesia.

**Note:** As in *B. curtisii*, the author of *B. strychnoidea* is ‘Prain’ not ‘Prain ex King’.

A lectotype at K was designated by de Wit (1956: 429). However, there are two sheets available at K (K000760953, K000760954) but neither of them is annotated by de Wit. So we consider de Wit’s citation of a lectotype as a first-step lectotypification and we here choose one of these sheets as a second-step lectotype of the name following Art. 9.17 (McNeill et al. 2012). Note that de Wit (1956) inadvertently gave the collector’s number as ‘5194’ instead of ‘5914’.

### 7. *Phanera tubicalyx* (Craib) Bandyop. & Ghoshal, *comb. nov.*

*Bauhinia tubicalyx* Craib, *Bulletin of Miscellaneous Information, Royal Gardens, Kew* 1928: 64. 1928.

*Lasiobema tubicalyx* (Craib) de Wit, *Reinwardtia* 3: 430. 1956.

Lectotype (designated by de Wit 1956: 430): *Kerr 12407*, (K000760951 image!); isolecto (ABD image!, BM000958860 image!). See note on typification below.

**Distribution:** Thailand and Malesia.

**Note:** De Wit (1956: 430) cited *Kerr 12407* at K as ‘holotype’. He annotated a sheet at Kew (K000760951) as ‘*Lasiobema tubicalyx* (CRAIB) DE WIT, *comb. nov.*’ in May 1951 but did not mark it as holotype. As there is only a single sheet of *Kerr 12407* (K000760951) at K, we assume this is the specimen that de Wit (1956) cited as the holotype. The line drawing of *L. tubicalyx* provided by de Wit (1956, fig. 9) is based on K000760951. Craib (1928) described the leaves as ‘5–11 cm. longa, 2.5–5 cm. lata’ but if we look at one of the mature leaves of K000760951, situated just below the three leaves on the left hand top corner, we find that it is 4.5 cm long and 2 cm broad. Further, the maximum length of the leaves in K000760951 is c. 9.4 cm. Therefore K000760951 cannot be the holotype, although it is definitely original material under Art.9.3 (McNeill et al. 2012). So, we correct de Wit’s (1956) citation of holotype to lectotype following Art. 9.9 (McNeill et al. 2012).

## Acknowledgments

We thank Dr. Paramjit Singh, Director, Botanical Survey of India and Dr. P. Lakshinarasimhan, Scientist ‘E’, In-charge, Central National Herbarium, BSI for the facilities. We also thank the Curators of BM and K for making available to us the images of the type specimens, the anonymous reviewer and Dr. Peter G. Wilson for their helpful suggestions. Last, but not the least, we thank Dr. Ruth Clark (K) for the valuable information regarding some type specimens at K and Directors/Correspondents/Curators of B, BAF, BM, C, CORD, E, G, L, M, MO and P for confirming that the type specimen of *B. harmsiana* is not available in their respective herbaria.

## References

- Bandyopadhyay S (1999) Nomenclatural replacements in *Bauhinia* (Leguminosae: Caesalpinioideae). *Kew Bulletin* 54: 974.
- Bandyopadhyay S (2013) Two new varietal combinations in *Phanera* (Leguminosae: Caesalpinioideae). *Edinburgh Journal of Botany* 70: 363–365.
- Bandyopadhyay S, Ghoshal PP, Pathak MK (2012) Fifty new combinations in *Phanera* Lour. (Leguminosae: Caesalpinioideae) from Paleotropical region. *Bangladesh Journal of Plant Taxonomy* 19: 55–61.
- Bruneau A, Mercure M, Lewis GP, Herendeen PS (2008) Phylogenetic patterns and diversification in the caesalpinoid legumes. *Botany* 86: 697–718.
- Craib WG (1928) Contributions to the flora of Siam. Additamentum XXIV. *Bulletin of Miscellaneous Information, Royal Gardens, Kew* 1928: 62–72.
- Hosseus CC (1907) Leguminosae novae siamensis. *Repertorium Specierum Novarum Regni Vegetabilis* 4: 290–291.
- King G (1897) Materials for a Flora of the Malayan Peninsula. *Journal of the Asiatic Society of Bengal, Part 2, Natural History* 66(2): 1–345.
- Krishnaraj MV (2014) A New Combination in *Phanera* (Cercideae: Caesalpinioideae: Leguminosae). *Phytotaxa* 183: 284–286.
- Larsen K, Larsen SS (1980) *Bauhinia*. Pp. 146–210. In Aubréville A, Leroy J-F (eds), *Flore du Cambodge du Laos et du Viêt-nam* 18 (Paris).
- Larsen K, Larsen SS (1984) *Bauhinia*. Pp. 4–45. In Smitinand T, Larsen K (eds), *Flora of Thailand* 4 (Bangkok).
- Larsen K, Larsen SS (1996) *Bauhinia*. Pp. 442–535. In Kalkman C, Kirkup DW, Nooteboom HP, Stevens PF, Wilde WJJO de (eds.), *Flora Malesiana* 12(2). (Rijksherbarium/Hortus Botanicus, Leiden University, The Netherlands).
- Lewis GP, Forest F (2005) Tribe Cercideae. Pp. 57–67. In Lewis G, Schrire B, Mackinder B, Lock M (eds.) *Legumes of the World* (Royal Botanic Gardens, Kew).
- Mackinder BA, Clark R (2014) A synopsis of the Asian and Australasian genus *Phanera* Lour. (Cercideae: Caesalpinioideae: Leguminosae) including 19 new combinations. *Phytotaxa* 166: 49–68.
- McNeill J, Barrie FR, Buck WR, Demoulin V, Greuter W, Hawksworth DL, Herendeen PS, Knapp S, Marhold K, Prado J, Prud’homme van Reine WF, Smith GF, Wierssema JH Turland NJ (eds.) (2012) *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code)*. Adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011, A.R.G. Gantner Verlag KG. [Regnum Veg. 154].

- Prain D (1897) Order XXXVIII. Leguminosæ. In King G, Materials for a Flora of Malayan Peninsula. *Journal of the Asiatic Society of Bengal*, Part 2, Natural History 66(2): 21–275.
- Sinou C, Bruneau A (2013) Multi-locus phylogenetic analysis of the genus *Bauhinia* s.l. (Cercideae, Leguminosae). Abstract of the oral presentation in the Systematics Section / American Society of Plant taxonomists, Botany 2013, Rosedown/Riverside Hilton, July 29th, 2013.  
<http://2013.botanyconference.org/engine/search/index.php?func=detail&aid=554>
- Sinou C, Forest F, Lewis GP, Bruneau A (2009) The genus *Bauhinia* s.l. (Leguminosae): a phylogeny based on the plastid trnL–trnF region. *Botany* 87: 947–960.
- Stafleu FA, Cowan RS (1979) *Taxonomic literature*, Second edition, Volume 2. (Bohn, Scheltema & Holkema, Utrecht, dr. W. Junk b.v., Publishers, The Hague).
- Wit HCD (1956) *A revision of Malaysian Bauhinieae*. *Reinwardtia* 3: 381–539.
- Wunderlin RP (2010) Reorganization of the Cercideae (Fabaceae: Caesalpinioideae). *Phytoneuron* 2010-48: 1–5.
- Wunderlin RP (2011) New combination in *Phanera* (Fabaceae). *Phytoneuron* 2011-19: 1–2.
- Wunderlin R, Larsen K, Larsen SS (1987) Reorganization of the Cercideae (Fabaceae: Caesalpinioideae). *Biologiske Skrifter* 28: 1–40.

Manuscript received 24 March 2015, accepted 19 June 2015