



A synopsis of the Asian and Australasian genus *Phanera* Lour. (Cercideae: Caesalpinioideae: Leguminosae) including 19 new combinations

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Abstract

Historically, many authors of regional accounts of the Leguminosae (Fabaceae) tribe Cercideae divided the caesalpinoid genus *Bauhinia sens. lat.* into several segregate genera including the genus *Phanera*. However, during the last fifty years, *Bauhinia* has more often been recognised as a broadly circumscribed taxon with *Phanera* reduced to a subgenus of *Bauhinia sens. lat.* The reinstatement of *Phanera* at generic rank based on molecular and morphological evidence has now been widely accepted, resulting in the need for new combinations in *Phanera* for many taxa described in *Bauhinia*. Some of those names have been published recently by other authors so here we make the necessary combinations for those taxa still lacking names in *Phanera*. In addition, we include all published *Phanera* binomials and trinomials here and to each assign a status of accepted name, synonym or excluded name. The recent reinstatement of the New World genus *Schnella* to which c. 40 *Phanera* species were moved transforms *Phanera* into a strictly Asian and Australasian taxon. *Phanera* can be distinguished from *Bauhinia sens. str.* and from *Schnella* by a combination of morphological characters, but the morphological boundary with another closely related Asiatic genus, *Lasiobema* is unclear and warrants further investigation. We present a table comparing morphological characters of *Phanera*, *Schnella*, *Lasiobema* and *Bauhinia sens. str.*

Introduction

Leguminosae is the third largest of the angiosperm families, numbering c. 19,500 species (LPWG 2013). Three subfamilies are traditionally recognised. The smallest is Caesalpinioideae comprising c. 2300 species in 171 genera arranged in 4 tribes. One of those tribes, Cercideae, accommodates two subtribes, Cercidinae and Bauhiniinae as recognised by Wunderlin (1979) and Wunderlin *et al.* (1981). Subtribe Cercidinae comprises three genera, namely *Cercis* L., *Adenolobus* (Harv. ex Benth. & Hook.f.) Torre. & Hillc. and *Griffonia* Baill., whilst the number of genera recognized in subtribe Bauhiniinae has varied from as many as 26 genera (Wunderlin 1976) to a single genus *Bauhinia sens. lat.* (Wunderlin *et al.* 1981). Since 1981, the majority of authors of regional taxonomic accounts have upheld the concept of a broadly circumscribed heterogeneous *Bauhinia sens. lat.* (Larsen *et al.* 1980, 1984, 1996, Li *et al.* 2010). Phylogenetic analyses of nucleotide sequence data have provided convincing evidence that *Bauhinia sens. lat.* is not a natural taxon (Bruneau *et al.* 2001 & 2008, Hao *et al.* 2003, Sinou *et al.* 2009) and the proposal by Lewis & Forest (2005) to recognise eight generic segregates, namely *Bauhinia sens. str.*, *Barkyla* F.Muell., *Brenierea* Humbert, *Gigasiphon* Drake, *Lasiobema* (Korth.) Miq., *Lysiphyllum* (Benth.) de Wit, *Phanera* Lour., *Piliostigma* Hochst. and *Tylosema* (Schweinf.) Torre & Hillc. was largely supported by the findings of Sinou *et al.* (2009) in the most broadly sampled published phylogenetic study of tribe Cercideae to date. Additional molecular-based evidence comes from a study of the *rp12* intron which is present in chloroplast DNA of most angiosperms including *Phanera* but absent from *Bauhinia sens. str.* (Lai *et al.* 1997). Non-molecular characters that distinguish *Phanera* from *Bauhinia sens. str.* include habit, morphology (de Wit 1956), pollen morphology (Larsen 1975), flavonoid data (Salatino *et al.* 1999) and volatile oil data (Duarte-Almeida *et al.* 2004).

Phanera variegata (L.) Benth. in Miq., *Pl. Jungh.* 2: 262. 1852. = **Bauhinia variegata** L. Sp. Pl.: 375. 1753.
Phanera velutina Benth. in Miq., *Pl. Jungh.* 2: 262. 1852. = **Bauhinia pottsii** G. Don var. **velutina** (Wall. ex Benth.) K. Larsen & S.S. Larsen, *Bot. Tidsskr.* 74: 8. 1979.

Doubtful or poorly known names

Here we list *Phanera* names which are not validly published or whose application is uncertain.

Phanera cordifolia Miq., *Fl. Ned. Ind.* 1(1): 66. 1855. = *Bauhinia cordifolia* Roxb. *Fl. Ind., ed. 2:* 332. 1824. Type unknown. According to Hou *et al.* (1996), these names apply to a taxon described from the Molucca Is. and the specific epithet alludes to leaf shape and venation. *Phanera cordifolia* Miq belongs to *P. finlaysonianana* but cannot be placed in one of the varieties with any certainty.

Phanera dasycarpa Miq., *Fl. Ind. Bat.* 1(1): 1078. 1858. The name refers to a single fruiting collection made by Teijsmann in Sumatra which De Wit (1956) referred (in synonymy) to *Bauhinia (Phanera) rahmattii*, a designation disputed by Hou *et al.* (1996), who were unable to place the collection definitively.

Phanera maculata A. Rich. ex Teijsm. & Binn., *Cat. Hort. Bog.:* 268. 1866 “Bourbon”. *nomen. nud.*

Phanera ochroleuca Miq., *Fl. Ned. Ind.* 1(1): 69. 1855. Refers to a *Blume s.n.* collection (not seen), a possible variant of *Phanera glauca* possessing leaves that are slightly hairier below and bearing more numerous secondary veins than typical *P. glauca*.

Phanera parvifolia Teijsm. & Binn., *Cat. Hort. Bog.:* 268. 1866. “China”. *nomen. nud.*

De Wit (1956) notes that this name is represented by sterile herbarium specimens (in BO) which probably belong to *Bauhinia corymbosa* Roxb.

Phanera rosea A. Rich. ex Teijsm. & Binn., *Cat. Hort. Bog.:* 268. 1866. “Madagascar”. *nomen. nud.*

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