

Flora of Singapore precursors, 36: Notes on Pentaphragmataceae in Singapore

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ABSTRACT. The nomenclature and typification of *Pentaphragma* Wall. ex G.Don (Pentaphragmataceae) and its Singapore representative are briefly reviewed. A lectotype is designated for the only generic synonym of *Pentaphragma*, *Francfleurya* A.Chev. & Gagnep. Four other lectotypifications for names of species or varieties are given, one at the second step.

Keywords. *Francfleurya*, lectotype, *Pentaphragma*

Introduction

Pentaphragma Wall. ex G.Don is the only genus of the family Pentaphragmataceae. Occurring from Myanmar and China to New Guinea, the 30 or so species are herbaceous to slightly woody plants of the tropical forest floor. Singapore has a single native species, *Pentaphragma ellipticum* Poulsen, that is easily seen on a visit to Bukit Timah Nature Reserve.

As a precursor to the account of the family for the *Flora of Singapore*, a review of the nomenclature and typification of the genus and the Singapore species is presented here. A short discussion on the infraspecific taxa of *Pentaphragma ellipticum* is given.

Nomenclature and typification of the genus

Pentaphragma Wall. ex G.Don, Gen. Hist. 3: 731 (1834). – TYPE: *Pentaphragma begoniifolium* (Roxb. ex Jack) G.Don, as ‘*begoniaefolia*’.

Pentaphragma begoniifolium (Roxb. ex Jack) G.Don, Gen. Hist. 3: 731 (1834). – *Phyteuma begoniifolium* Roxb. ex Jack, Malayan Misc. 1(1): 5 (1820). – TYPE: [Malaysia], Penang, 1819, *W. Jack s.n.* (lectotype BM [BM014140216], designated here).

Francfleurya A.Chev. & Gagnep., Rev. Bot. Appl. Agric. Colon. 7: 662 (1927). – TYPE: *Francfleurya honbaensis* A.Chev. & Gagnep. (= *Pentaphragma honbaense* (A.Chev. & Gagnep.) Gagnep.) (lectotype designated here).

Pentaphragma honbaense (A.Chev. & Gagnep.) Gagnep., Rev. Bot. Appl. Agric. Trop. 8: 621 (1928). – *Francfleurya honbaensis* A.Chev. & Gagnep., Rev. Bot. Appl. Agric. Colon. 7: 664, pl. XIV (1927). – TYPE: Vietnam, prov. de Khanh Hoa, Nhatrang, 18 May 1923, *Poilane 6551* (lectotype P [P00650059], first step designated by Nguyen (1969: 45), second step designated here; isolectotypes P [P00650060, P00650061]).

Notes. The generic name *Pentaphragma* and its only known synonym *Francfleurya* are cited above. Each generic name is followed by a formal citation of the type species and the typification of these type species.

The generic name *Pentaphragma* is frequently attributed to Alphonse de Candolle (1830: 95). In this publication, under the generic name *Pentaphragma*, De Candolle cited ‘*Phyteuma Begonifolium* Roxb. *fl. ind.* 2 p. 108. *Pentaphragma Wall! herb. n.* 1313. Videtur *Scaevolis* affinis, propter stigma indusiatum. Habitu toto coelo à genere *Phyteuma* differt.’ The citation of Roxburgh’s *Flora Indica* account of *Phyteuma begoniifolium* does not validate *Pentaphragma* because a cited description needs to be of a genus or subdivision of a genus to validate a generic name (Turland et al., 2018, Art. 38.11). The citation of *Pentaphragma* is a reference to Wallich’s *Numerical list* (often referred to as Wallich’s Catalogue), where *Pentaphragma* appears but is not validated in the absence of a description or reference to one. The Latin text by De Candolle says that *Pentaphragma* is similar to *Scaevola* in possessing an indusiate stigma and differs from *Phyteuma* in habit. As there is no elucidation of the way in which *Pentaphragma* and *Phyteuma* differ in habit, this part can again be removed from further consideration. The descriptive content of De Candolle’s account is therefore reduced to the possession of an indusiate stigma. Airy Shaw (1954: 517) ‘discarded’ *Pentaphragma* Wall. ex A.DC. as a nomen nudum. While there is actually one character described, in my opinion this is insufficient to validate the generic name, and, following Airy Shaw, I consider George Don to have been the first to validate *Pentaphragma*. *Pentaphragma*, as now recognised, does not actually bear indusiate stigmas. As Airy Shaw (1954) noted, De Candolle must have been referring to material from another genus, probably *Scaevola*, when writing these notes.

William Jack validated William Roxburgh’s name *Phyteuma begoniifolium* for material from Penang. George Don then validated Nathaniel Wallich’s generic name *Pentaphragma* and transferred *Phyteuma begoniifolium* to it. There has been no report of a type specimen for Jack’s name upon which the genus is founded. While looking through the *Pentaphragma* specimens in BM, I came across a specimen labelled as coming from Wallich’s herbarium. It bears a ticket in Wallich’s hand stating ‘*Phyteuma? Begonifolia* Roxb. E Penang misit amiciß. Wm. Jack 1819’. This translates to ‘*Phyteuma begoniifolium* Roxb. From Penang sent by the most amicable William Jack in 1819’ which fits admirably the requirements of original material for Jack’s name, as does the specimen itself. It is therefore here designated the lectotype

of *Phyteuma begoniifolium* Roxb. ex Jack and hence the type of the generic name *Pentaphragma*.

The authors of *Francfleurya* (Chevalier & Gagnepain, 1927) very soon realised that they had erred in describing a new genus of Saxifragaceae (Gagnepain, 1928), when they had effectively redescribed *Pentaphragma*. Three species were included in *Francfleurya* by Chevalier & Gagnepain (1927), none of which has yet been selected as the type. *Francfleurya honbaensis* is selected as the equivalent of a lectotype here, as it is the only one of the three species names which provides an epithet in current use in *Pentaphragma*. Nguyen (1969) designated *Poilane 6551* in P as lectotype of *Francfleurya honbaense*, but did not effectively distinguish between the three duplicates under this number in P. This omission is dealt with here, by selecting at the second step the sheet that was photographed for inclusion in the protologue.

Nomenclature and typification of the Singapore species

Pentaphragma ellipticum Poulsen, Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn 1903: 321, t. IV (1903). – TYPE: [Peninsular Malaysia], Johore prope Singapore, November 1901, *Jensen s.n.* (lectotype C [C10024360], designated here; isolectotype K [K000854739]).

Pentaphragma ridleyi King & Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 74: 57 (1906 ['1905']). – TYPE: Singapore, Bukit Timah, damp ravines, 11 June 1889, *Ridley 103* (holotype K [K000854738]).

Pentaphragma scortechinii var. *focculosum* King & Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 74: 56 (1906 ['1905']), as '*focculosa*'. – *Pentaphragma ellipticum* var. *focculosum* (King & Gamble) Kiew, Malayan Nat. J. 43: 7 (1989). – TYPE: [Peninsular Malaysia], Johore, Gunung Pulai, 30 August 1879, *King s.n.* (lectotype CAL [CAL0000212288], designated by Kiew (1989: 55)).

Pentaphragma scortechinii var. *parvifolium* King & Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 74: 56 (1906 ['1905']), as '*parvifolia*'. – TYPE: Singapore, upper Bukit Timah, 13 July 1893, *Ridley s.n.* (lectotype CAL [CAL0000212291], designated here).

Notes. The protologue for *Pentaphragma ellipticum* reported the species from 'Malaccae prope Johore et insulae Singapore (Bukit Tima [sic])'. Kiew (1989) referred to the type as 'M. Jensen s.n. (1901), Bukit Timah, Singapore'. However, I have failed to trace any of Jensen's collections specifically from Bukit Timah, or Singapore in general. Possibly Jensen simply reported the species at Bukit Timah without collecting it, or the Singapore collections were used by Poulsen for his anatomical research and no material remains. I, therefore, select here the Johore collection in Copenhagen as the lectotype of Poulsen's name.

Kiew (1989) recognised two varieties of *Pentaphragma ellipticum*, *P. ellipticum* var. *ellipticum* and *P. ellipticum* var. *flocculosum* (King & Gamble) Kiew. The varieties are reported to differ in indumentum, leaf shape and relative distinctiveness of leaf venation. I have found that specimens can be distinguished on tomentum, essentially separating plants that are glabrous except for the ciliate margins to the bracteoles and calyx lobes from those that are sparsely to densely clothed on many surfaces with branched multicellular hairs. Glabrous and tomentose plants can be identical in all other characters, so there seems little point to me in formal taxonomic recognition of these phenotypes. There are multiple collections from Johore that conform to Kiew's definition of *Pentaphragma ellipticum* var. *flocculosum*. They also tend to have rather short inflorescences. However, there are plenty of specimens intermediate in form between the flocculose, short-inflorescenced Johore plants and the glabrous, long-inflorescenced plants that typify the species, and are the norm at Bukit Timah. Therefore, I do not propose to recognise any infraspecific taxa for *Pentaphragma ellipticum*. This patchy variation shown by *Pentaphragma ellipticum* led Airy Shaw (1954) to consider the 'species' a hybrid swarm, though he had no direct evidence for this supposition. The flower morphology actually seems rather consistent among the many specimens.

Pentaphragma scortechinii var. *parvifolium* King & Gamble simply represents a mix of a rather depauperate, and probably young, specimens. A specimen from Bukit Timah is here selected as lectotype.

The Thomas Lobb collection number 278 is labelled as collected from Singapore in 1846. The specimens are *Pentaphragma begoniifolium* (Roxb. ex Jack) G. Don, which is otherwise unknown from Singapore. Lobb was notorious for errors in collecting localities (Van Steenis, 1950), and it seems much more likely that Lobb's specimens came from Penang. Therefore, the species is not accepted as a record in the native flora of Singapore.

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