

Padbruggea (Fabaceae: Papilionoideae), a new generic record for India

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Abstract: *Padbruggea filipes* (Dunn) Craib (Fabaceae: Papilionoideae: Wisterieae) is recorded here for the first time from India, based on a collection from Manipur in 2016. This finding represents a new addition to the Indian legume flora and marks the country's first report of the genus *Padbruggea* Miq. The present study provides a description of the species, accompanied by a photographic plate to aid its identification. Additionally, an identification key to the genera of the tribe Wisterieae X.Y.Zhu in India is presented to facilitate distinction among related genera.

Keywords: Legume, Liana, Manipur, Northeastern India, *Padbruggea filipes*, Wisterieae.

Introduction

Fabaceae Lindl. (*nom. alt.* Leguminosae Juss.) is the third largest family of angiosperms globally, following Asteraceae and Orchidaceae, comprising approximately 765 genera and over 19,500 species (LPWG, 2017). In India, the family is represented 1368 taxa under 174 genera (Sanjappa, 2020).

During a floristic survey conducted in 2016 in the Chandel district of Manipur, a noteworthy legume was collected in its fruits. Following detailed morphological examination and consultation of pertinent taxonomic literature (Wei & Pedley, 2010; Compton *et al.*, 2019; Sirichamorn & Mattapha, 2020) along with comparative analysis of the digital images of type

specimens housed in the Kew Herbarium (K), the specimens were identified as *Padbruggea filipes* (Dunn) Craib. Voucher specimens were prepared following routine herbarium techniques as prescribed by Jain and Rao (1977) and deposited at Central National Herbarium, Botanical Survey of India (CAL), Howrah and Central Herbarium of Assam University, Silchar (AUSCH). The genus *Padbruggea* Miq. comprises three species distributed across southern China and Laos, Myanmar, Thailand, Vietnam (POWO, 2025).

The present report from Manipur documents *Padbruggea filipes* as a new addition to the Indian flora, reporting the first record of the genus *Padbruggea* Miq. from India. Detailed morphological descriptions, photographic plates, and a diagnostic key to the genera of the tribe Wisterieae in India are provided to aid the accurate identification and taxonomic placement.

Key to the Genera of Tribe Wisterieae in India (Compton *et al.*, 2019)

- 1a. Bracteole absent; standard glabrous; ovary glabrous; pod septate..... *Endosamara*
- 1b. Bracteole present; standard pubescent; ovary pubescent; pod sub-septate..... 2
- 2a. Pods inflated, oblique ridges and furrows at surface..... *Padbruggea*
- 2b. Pods compressed, absence of ridges and furrows at surface..... 3

- 3a. Seed 1–5, lenticular-orbicular; seed hilum 1–2 mm long *Wisteria*
 3b. Seed 1–6, lenticular-ovoid; seed hilum 2–5 mm long *Callerya*

Taxonomic treatment

Padbruggea Miq., Fl. Ned. Ind. 1(1): 150. 1855; J.Compton *et al.*, Phytokeys 125: 83. 2019; Sirich. & Mattapha in Balslev & Chantar. Fl. Thailand 4(3): 472. 2020. *Lectotype* (designated by Schot, 1994: 20): *Padbruggea dasyphylla* Miq.

Woody climbers; young branches dark green, terete, densely brown pubescent becoming glabrescent at maturity. Stipules ovate to lanceolate, sericeous, caducous; stipels present, rarely absent. Leaves imparipinnate, both surface pubescent when young, glabrescent to sparsely pubescent at maturity. Leaflets 9–19, opposite, oblong, ovate to elliptic, base rounded to obtuse, entire margin, apex obtuse, acute to acuminate. Inflorescences terminal to axillary, racemose, leafy or cauliflorous panicle. Pedicels dense pubescent. Bracts linear-lanceolate, ovate to cupuliform, caducous; bracteoles linear-lanceolate, caducous, dense pubescent. Calyx campanulate, 5-lobed, pubescent abaxially; lobes indistinct, triangular, acute to rounded at apex. Corolla white, pale pinkish, pale violet to bluish. Standard orbicular, basal callosities, emarginated at apex; wing falcate to elliptic, rounded at apex, glabrous, clawed. Keel white, navicular, acute to rounded at apex, pubescent to glabrous, clawed. Stamens 10, diadelphous (9+1), glabrous. Disc tubular to cylindrical. Ovary dense pubescent to sericeous, 2–3 ovuled; style glabrous, tufted at base, curved upwards at apex; stigma capitate. Pods dehiscent, inflated, woody, coarsely ridged to rugose, velutinous, subseptate. Seeds 1–3, ellipsoid to ovate, thick; hilum elongate to ligulate.

Habitat: Hill slopes of open and evergreen forest.

Distribution: Borneo, China South-Central, China Southeast, India (Manipur), Jawa, Laos, Malaya, Myanmar, Sumatera, Thailand, Vietnam. Three

species in the world viz. *Padbruggea dasyphylla* Miq.; *P. filipes* (Dunn) Craib and *P. maingayi* (Baker) Dunnand; one species in India (Manipur).

Padbruggea filipes (Dunn) Craib Fl. Siam. 1(3): 397. 1928; J.Compton *et al.*, Phytokeys 125: 83. 2019; Sirich. & Mattapha in Balslev & Chantar. Fl. Thailand 4(3): 472. 2020. *Adinobotrys filipes* Dunn in Bull. Misc. Inform. Kew 1911: 195.1911. *Afgekia filipes* (Dunn) R.Geesink, Leiden Bot. Ser. 8: 77. 1984; Z.Wei & Pedley in Wu *et al.* (eds.), Fl. China 10: 174. 2010.

Lectotype (designated by Compton *et al.*, 2019): CHINA, **Yunnan**, Szemao [Simao], east mountain forests 6700 ft [1520 m], long climber fls pale purple” presented by Dr A. Henry in 1900, *Henry* 11610(K, [K000881062 digital image!]); isolecto US [US00003999!], CAL, MO, [MO-022362].

Whitfordiodendron filipes Dunn var. *tomentosum* Z.Wei in Acta Phytotax. Sin. 27: 75. 1989. *Afgekia filipes* (Dunn) R.Geesink var. *tomentosa* (Z.Wei) Y.F.Deng & H.N.Qin in Ann. Bot. Fenn. 42: 133. 2005. *Padbruggea filipes* Craib var. *tomentosa* (Z.Wei) J.Compton, Sirich. & Schrire, Phytokeys 125: 84. 2019. *Type*: CHINA, **Yunnan**, Yan-shan hsien, Bar-garh, alt. 1100 m. in bushes, 01.11.1939, C.W.Wang 84801 (holo PE [PE00320036]); iso, IBSC, KUN.

Fig. 1

Woody climber, evergreen, up to 20 m long. Young branches densely golden-brown pubescent, turning glabrous at maturity. Stipules lanceolate, 4–5 × 1.5–2 mm, acute at apex, dorsally pubescent, caducous. Leaves compound, alternate, imparipinnate, pubescent when young, glabrous at maturity, light green. Petiole c. 4.5 cm long, densely pubescent; rachis c. 20 cm long, densely pubescent; pulvinus 6–7 mm long, densely pubescent; petiolules 3–4 mm long, densely pubescent. Leaflets 13, lateral opposite, sub-coriaceous; terminal one narrowly elliptic, 6.5–10 × 2–3.5 cm, cuneate at base, entire at margin, acuminate at apex; acumen 0.5–1.5 cm long, both surface glabrous; lateral ones narrowly elliptic-oblong, 5–10 × 2–3 cm, rounded at base, slightly oblique,

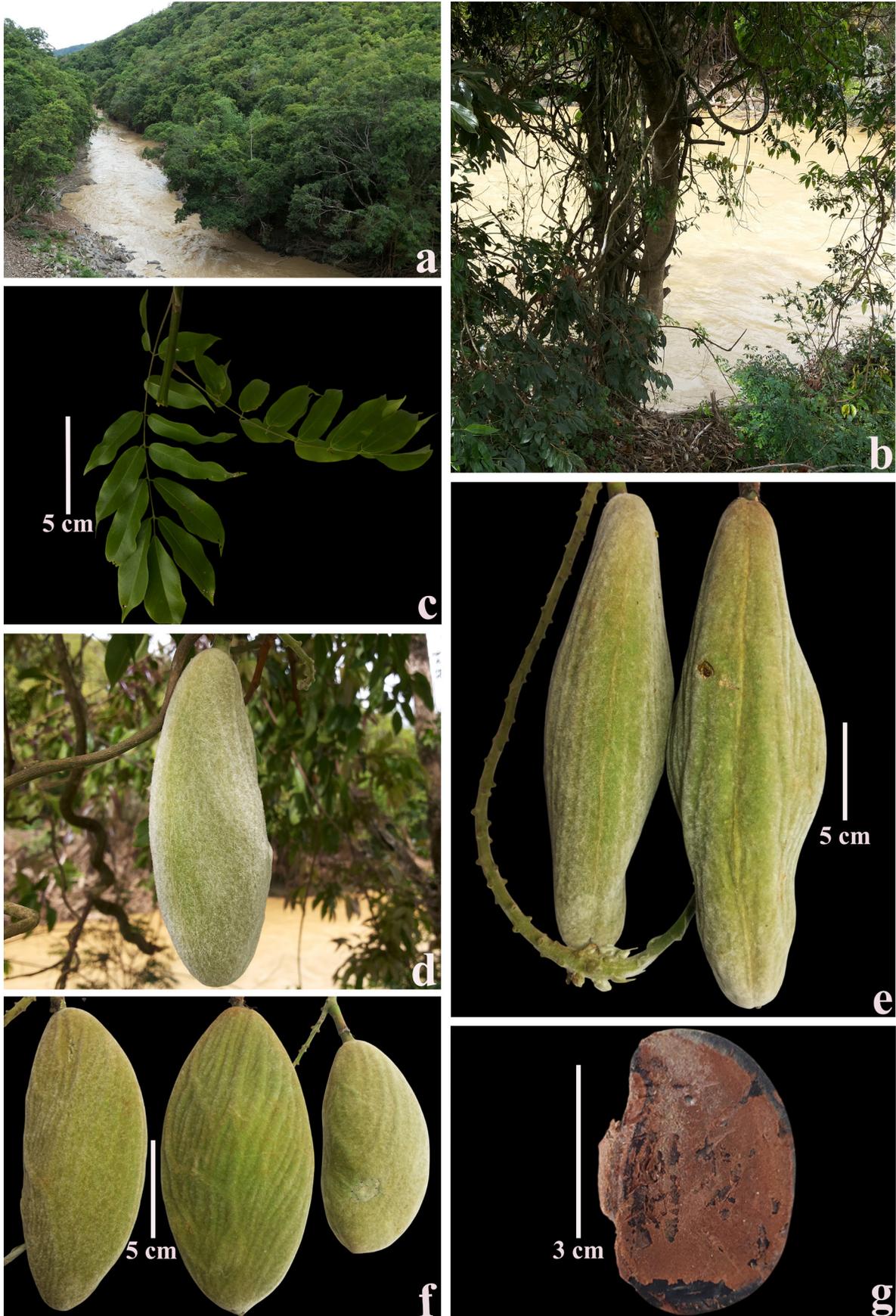


Fig. 1. *Padbruggea filipes* (Dunn) Craib: **a.** place of occurrence; **b.** habit; **c.** leaves; **d.** fruiting twig; **e.** pod lateral view; **f.** pod; **g.** seed (Photos by L. M. Chanu).

entire at margin, acuminate at apex; acumen 0.5–1.5 cm long, both surface glabrous; lateral nerves 8–10 pairs, obscure. Inflorescence axillary, racemose, cluster at apex of branch forming leafy panicle, 7.5–15 cm long. Bracts ovate, *c.* 2 × *c.* 1 cm, both surfaces pubescent; bracteoles linear, *c.* 2 mm long, both surfaces pubescent. Pedicel 1.5–2.5 cm long, pubescent. Calyx campanulate, *c.* 5 mm long, pubescent outside, purplish; lobes deltoid, 1–1.5 × 2–3.3 cm long. Corolla lilac, bluish-violet, fragrant. Standard ovate-orbicular, shortly clawed, papillate callosities at base, 2–2.5 × 2–2.2 cm, emarginated at apex, bluish violet with central yellow patch; claw 0.35–0.5 cm long. Wings free, elliptic-falcate, *c.* 2 × 0.8–1 cm, rounded at apex; claw 0.4–0.5 cm long. Keels cymbiform, 1.3–1.5 × 0.9–1 cm, rounded at apex, white; claw 0.7–1 cm long. Stamens diadelphous (9+1); sheath 1.5–2 cm long; filaments free 4–5 mm long; anthers basifixed, 0.1–0.15 × 0.02–0.05 cm. Ovary 0.8–1 cm long, 2–3-ovuled, densely sericeous; style 5–6 mm long, curved, glabrous; stigma capitate. Pods inflated, broadly elliptic, ovate-oblong, 11–17 × 6–8 cm, obtuse at apex, woody, oblique furrow ridged, densely white tomentose, light green, persistently hanging on branches. Seeds 1, oblong-orbicular, 5–8 × 4–5 cm, dark brown; testa rugose; hilum ligulate, *c.* 2 cm long.

Flowering & fruiting: Flowering and fruiting from July to November.

Habitat: In open forests along river banks.

Distribution: India (Manipur), China, Laos, Myanmar, Thailand, Vietnam.

Specimen examined: INDIA, **Manipur**, Chandel district, Khuyam khulen, N 24020'45.1", E 93090'10.6", *c.* 1000 m, 10.06.2016, *L.M. Chanu* 25414(CAL, AUSCH). CHINA, **Lungchow**, 1901, *H.B. Morse* 642, fl. (K [K000881063!]). THAILAND, **Muanj Kaurj, Chienj Dao**. 800 m, 31.05.1921, *A.F.G. Kerr* 5530, fr. (K [K003517087!]); **Doi Chiengdao**, Valley between peaks, 1580 m, 18.03.1940, *H.B.G. Garrett* 1170, fl. (K [K003517088!]).

Conservation status: Based on the currently available data, the species is considered Near Threatened (IUCN, 2024), pending further evaluation of habitat conditions and ongoing threats.

Note: Miquel (1855), first described the tribe Millettieae based on the type genus *Millettia* Wight & Arn. including eight genera: *Brachypterum* (Wight & Arn.) Benth., *Derris* Lour., *Pongamia* Adans., *Padbruggea* Miq., *Aganope* Miq., *Millettia* Wight & Arn., *Otosema* Benth. and *Mundulea* Benth. He described the genus *Padbruggea* Miq. based on the type species *P. dasyphylla* Miq. (1855), revealed that pods were readily distinguished from others in the *Callerya* group by their inflated but broadly flattened-cuboid shape with distinct longitudinal ridges and furrows and by the 1 or 2 compressed obovoid seeds possessing long strap-shaped hila. Geesink (1984) combined the genera *Padbruggea* Miq., *Whitfordiodendron* Elmer, and paniculate species of *Millettia* sections 'urybotryae' and 'ustromillettia' under *Callerya* Endl. *Callerya* was further revised by Schot (1994) and was treated as belonging in Tribe Millettieae. Schot (1994) in her synonymy of *Callerya dasyphylla* also included *Millettia oocarpa* Prain, *Padbruggea dasyphylla*, and *M. maingayi* Baker. However, Compton *et al.* (2019), through a comprehensive reassessment of the tribe Wisterieae incorporating both morphological and molecular evidences, redefined the tribe to include 14 genera and reinstated *Padbruggea* as a distinct genus.

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