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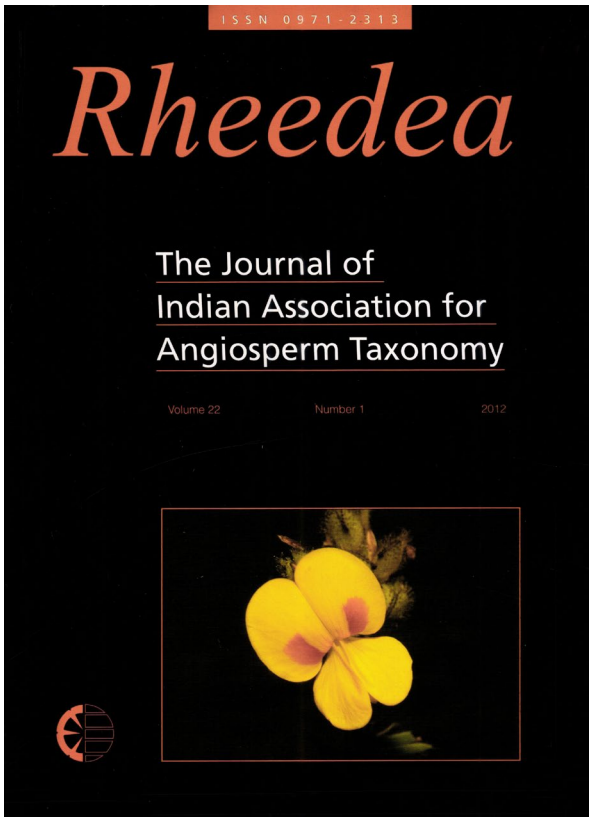

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Notes on the status of *Desmodium wynaadense* (Desmodieae – Fabaceae)

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Abstract

Taxonomic status of *Desmodium wynaadense* Bedd. ex Gamble is reinstated based on morphological analysis. Lectotype is also designated.

Keywords: *Desmodium ferrugineum*, *Desmodium wynaadense*, Lectotype

Introduction

Based on a collection by R.H. Beddome (Nilgiri hills, Carcoor Ghats, March 1880, *Beddome s.n.*), J.S. Gamble (1918, 1919) described *Desmodium wynaadense* and included in Flora of the Presidency of Madras with the comment: "A handsome erect undershrub with large purple flowers, lanceolate leaflets and curved rather broad reticulate pod with dehiscent joints". In the detailed diagnosis, Gamble (1919) noted: "*D. rufescenti* DC. *affinis, foliolis longioribus lanceolatis acutis, pedicellis longioribus filiformibus, leguminibus latioribus curvatis fere glabris conspicue reticulates differt*". Ohashi (1973) in his studies on the Asiatic species of *Desmodium* Desv. and allied genera treated *D. wynaadense* as a subspecies of *D. ferrugineum* Wall. ex Thwaites. But Pedley (1996) commented that "*Desmodium wynaadense* Bedd. ex Gamble from southern India, which Ohashi referred to *D. ferrugineum* as a subspecies, seems to be a distinct species". However all Indian workers (Manilal, 1988; Sanjappa, 1992; Sivarajan & Mathew, 1997; Sasidharan, 1998, 2004; Anil Kumar *et al.*, 2005; Nayar *et al.*, 2006) followed Ohashi (*l.c.*) and considered it as a subspecies of *D. ferrugineum* Wall. ex Thwaites. Neither Gamble (1919) designated type for *D. wynaadense* nor subsequent workers selected one from among several specimens (syntypes) cited by Gamble.

As part of the studies on Fabaceae of Kerala, we examined live plants from southern India as well as specimens deposited at various herbaria (CAL, CALI, K, MH, RHK, TBGT). On a critical study of specimens cited by Ohashi (*Gamble* 18404*; A. Meebold* 13204*; C.E.C. Fischer* 3279 all from CAL) and our own fresh collections, we could confirm several characteristic features that could clearly distinguish *D. wynaadense* as a distinct species as circumscribed by Gamble. Hence, the species status of *D. wynaadense* Bedd. ex Gamble is reinstated. Detailed description, illustrations and a comparison with *D. ferrugineum* (Table 1) are provided here to support Gamble's circumscription of species as a distinct one. Since there is no specimen available at Kew, annotated by J.S. Gamble (V.P. Prasad, pers. comm. dt. 18.5.2010), a lectotype and Isolectotype are selected from existing syntypes deposited at CAL and MH.

Desmodium wynaadense Bedd. ex Gamble, Fl. Madras: 346. 1918 & Bull. Misc. Inform. Kew 1919: 223. 1919. *D. ferrugineum* Wall. ex Thwaites subsp. *wynaadense* (Bedd. ex Gamble) Ohashi, Ginkgoana 1: 126. 1973; Manilal, Fl. Silent Valley: 76. 1988; Sanjappa, Legumes Ind.: 153. 1992; Sivar. & Mathew, Fl. Nilambur: 192. 1997; Sasidh., Biod. Doc. Kerala 6: 129. 2004; Anil Kumar *et al*., Fl. Pathanamthitta: 174. 2005; Nayar *et al*., Fl. Pl. Kerala: 283. 2006. *D. rufescens* sensu Wight & Arn., Prodr. Fl. Ind. Orient.: 228. 1834, non DC. 1825. **Fig. 1, 2**.

Lectotype (designated here): INDIA, **Tamil Nadu**, Nilgiri district, Nellialum, ± 670 m, November 1886, *Gamble* 18404 [CAL! (barcode No.: 0000006809); Isolectotype, MH! (Acc. No.: 15443)].

Erect, profusely branched shrubs or undershrubs, 3 − 4 m high; stems terete, spreading, ferruginous to yellowish hairy throughout. Leaves 3-foliolate, 2 − 10 cm long; stipules triangular, *c.*

Fig. 1. Lectotype of *Desmodium wynaadense* Bedd. ex Gamble (*Gamble* 18404, CAL).

6 × 1.5 − 2 mm, striate, pubescent, brownish, persistent; petioles 1 − 3 cm long, ferruginous-pubescent; stipels subulate, 5 − 6 mm long, pubescent. Terminal leaflets ovate-elliptic or lanceolate, 2.3 − 7 × 1 − 3 cm, obtuse at apex, appressed pubescent beneath; lateral leaflets, 1.5 − 6 × 1 − 2.5 cm, similar as terminal leaflets; petiolules *c*. 2 mm long, appressed pubescent. Raceme axillary and terminal, 8 − 13 cm long; rachis ferruginous-hirsute. Flowers strictly 2 per node, *c*. 7 mm long, purple; pedicels *c*. 5.5 mm long; bracts ovate, *c*. 5 × 2 mm, ciliate at margins, acuminate at apex, striate; bracteoles absent. Calyx *c*. 4 mm long; tube *c*. 2 mm long; lobes triangular, subequal, *c*. 2 × 2 mm, ciliate at margins. Standard broadly ovate, *c*. 6 × 5 mm, glabrous, purple; wings ovate, *c*. 3.5 × 2 mm; keels *c*. 3.5 × 2 mm; claw short or absent, if present, *c*. 2 mm long. Staminal tube *c*. 6 mm long; filaments *c*. 0.75 mm long; anthers ovoid, *c*. 0.5 × 0.3 mm. Ovary *c*. 6 × 0.25 mm, densely ferruginous-pubescent; style *c*. 3 mm long, recurved; stigma subcapitate. Lomentum 2.5 − 3.5 × *c*. 0.6 cm, recurved, glabrescent, strongly reticulate-veined and black-spotted throughout, dehiscing through lower suture; upper suture slightly undulate, thickened; lower suture undulate; seeds reniform, *c*. 3 × 2 mm, smooth, greyish.

Flowering & Fruiting: November – January.

Distribution & Habitat: It is endemic to Western Ghats of Kerala and Tamil Nadu. Vajravelu (1984) and Ahmedulla & Nayar (1986) reported it as a rare species. Nayar (1997) categorized it as a vulnerable species. Whereas, Nayar *et al*. (2006) reported its occurrence throughout Kerala. However, our field observations and herbarium studies conducted since 2007 reveal that this taxon is still vulnerable. During the field studies only few individuals were found across Kerala. It's distribution ranges from 750 to 2500 m. Further studies are needed to assess its present threat status as per the recent guidelines for application of IUCN Red List criteria.

Specimens examined: INDIA, **Kerala**, Idukki district, Koodakkadu, 2.2.1987, *M.C. Lukose* 2241 (RHK); Peruvanthanum, 28.11.1996, *N. Ravi & N. Mohanan* 13375 (TBGT); Mannavanchola, 1650 m, 25.2.2003, *I.K. Nishimitha* 90442 (CALI); Munnar, 3.1.2008, *M.V. Krishnaraj* 61975 (TBGT); Kottayam district, Adukkom, 19.11.1984, *M.C. Lukose* 452 (RHK, MH); Melukavu, 750 m, 11.12.1985, *Sunny Mathew* 1677 (RHK); Vagamon hills, 20.2.2008, *M.V. Krishnaraj* 61804 (TBGT); Kozhikode district, Muthappanpuzha, 17.11.1997, *A.K. Pradeep* 56528; Palakkad district, Silent Valley, 4.12.1981, *C. Sathish Kumar* 10107 (CALI); Silent Valley, 13.1.1993, *A. Nazarudeen* 19372; Silent Valley, 13.1.1993, *E.S. Santhosh Kumar* 6685; Nelliampathy, 11.12.2007, *M.V. Krishnaraj* 61914; Thiruvananthapuram district, Ponmudi, 8.1.1994, *K. Radhakrishnan* 13388 (TBGT). **Tamil Nadu**, Chennai district, Madras, without precise locality, *s. die, Wight* 714 (CAL, K); Madras, without precise locality, *s. die*, *J.S. Gamble* 18404; Coimbatore district, Udumban shola, *s. die*, 1520 m, *A. Meebold* 13204; Coimbatore, without precise locality, *s. die*, *C.E.C. Fischer* 743; Attakatti, Anaimalai hills, *s. die*, 975 m, *C.E.C. Fischer* 3279 (CAL); Dindigul district, Shembaganoor shola, 13.9.1905, *C.A. Barber* 7277; Madurai district, Madurai, without precise locality, 25.4.1965, *K. Ramamurthy* 23457; Nilgiri district, Goodalur Ghats, 10.1.1903, *C.A. Barber* 5551 (MH); Salem district, Salem, without precise locality, 5.2.1979, *P.C. Perumal & C. Manoharan* 00279 (TBGT); Tirunelveli district, Tinnevelly, without precise locality, *s. die*, *D. Hooper & M.S. Ramaswami* 38596 (CAL).

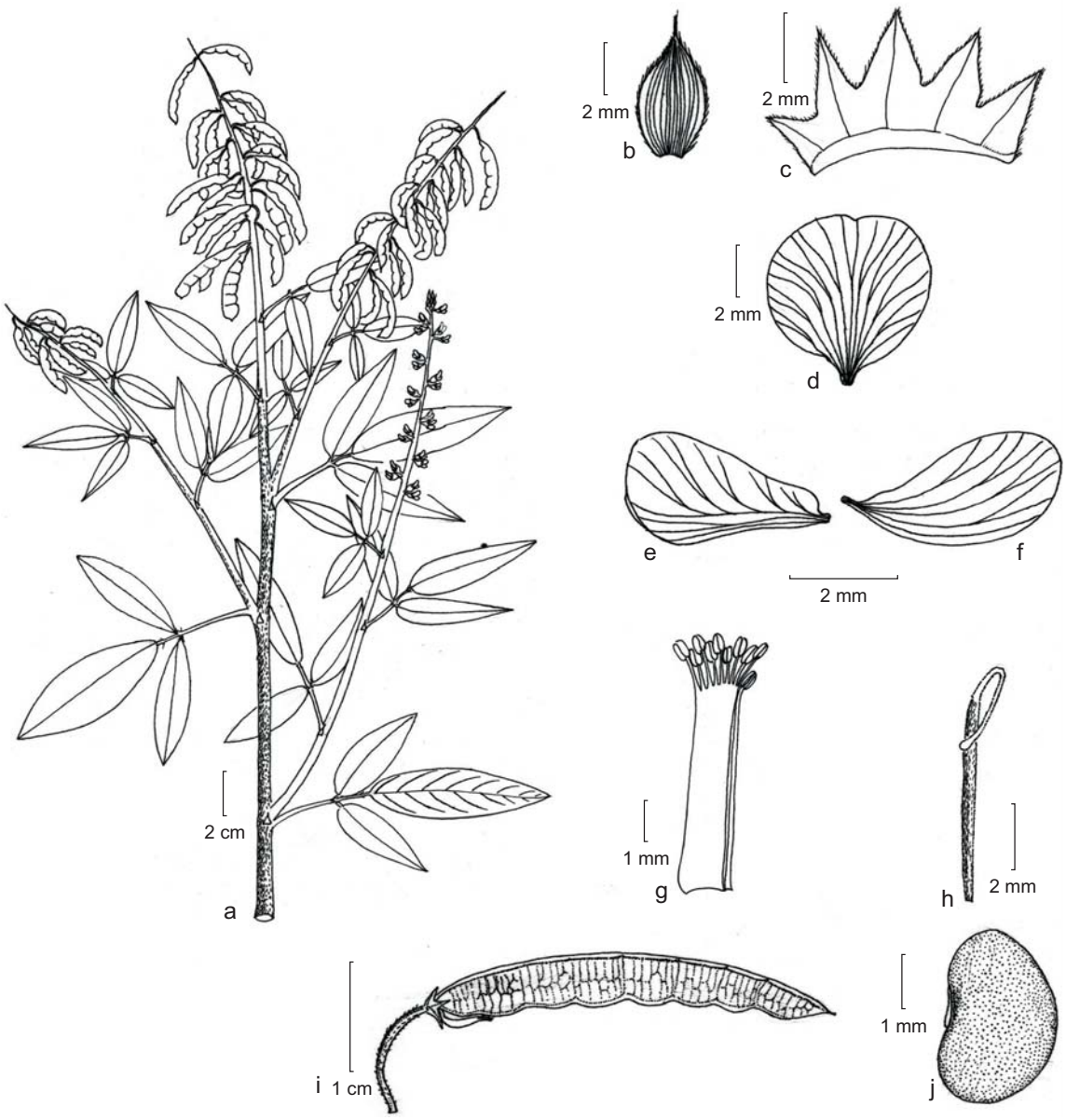

Fig. 2. *Desmodium wynaadense* Bedd. ex Gamble: a. Habit; b. Bract; c. Calyx; d. Vexillum; e. Wing petal; f. Keel petal; g. Staminal tube split open; h. Pistil; i. Lomentum; g. Seed.

Notes: While examining specimens housed at various Indian herbaria and live plants in the field, it was observed that *D. ferrugineum* Wall. ex Thwaites (= *D. rufescens* sensu Wight & Arn., non DC.) has light blue flowers during the first day of opening. This was clearly illustrated in Wight's (1846 – 1851) t. 57 by Rungiah (**Fig. 3**) whereas in Wight's (1840 – 1850) t. 79 flowers were illustrated in purple colour (**Fig. 4**). Gamble (*l.c.*) and Ohashi (*l.c.*) stated the flowers are purple in colour. This is because the flowers turn purple during post maturity period. This phenomenon is common in some species of legumes (Fantz & Predeep, 1995). This may be one of the reasons that prompted Ohashi (*l.c.*) to propose a new status under *D. ferrugineum,* since flower colour forms one of the delimiting characters at specific and intraspecific levels.

Some species of *Desmodium* disperse seeds by disarticulation of lomentum. But through field observations and carpological studies, we observed that lomentum opens along lower suture in *D. wynaadense*

Table 1. Comparison between *D. ferrugineum* and *D. wynaadense*

Characters	*D. ferrugineum* Wall. ex Thwaites	*D. wynaadense* Bedd. ex Gamble
Stem	Glabrescent below, ferruginous-hairy above	Ferruginous to yellowish hairy throughout
Leaflets	Ovate-obovate, apiculate at apex; apicules 2 − 3 mm long	Ovate-elliptic or lanceolate, obtuse at apex
Flowers	*c.* 1.5 cm long, light blue	*c.* 7 mm long, purple
Standard petal	*c.* 1.2 × 1.5 cm	*c.* 6 × 5 mm
Wing petals	*c.* 1.2 × 0.6 cm	*c.* 3.5 × 2 mm
Keel petals	*c.* 1.4 × 0.6 cm; claw *c.* 6 mm long	*c.* 3.5 × 2 mm; claw if present *c.* 2 mm long
Staminal tube	*c.* 1 cm long	*c.* 6 mm long
Ovary	*c.* 1.5 × 0.25 cm	*c.* 6 × 0.25 mm
Lomentum	Straight; upper and lower sutures uniformly thickened; lower suture undulate on the lower margin; each article reticulately veined on the middle only, breaking into 1-seeded loments	Curved; upper suture thickened, slightly undulate; lower suture thin, undulate, reticulately veined throughout, dehiscing through lower suture

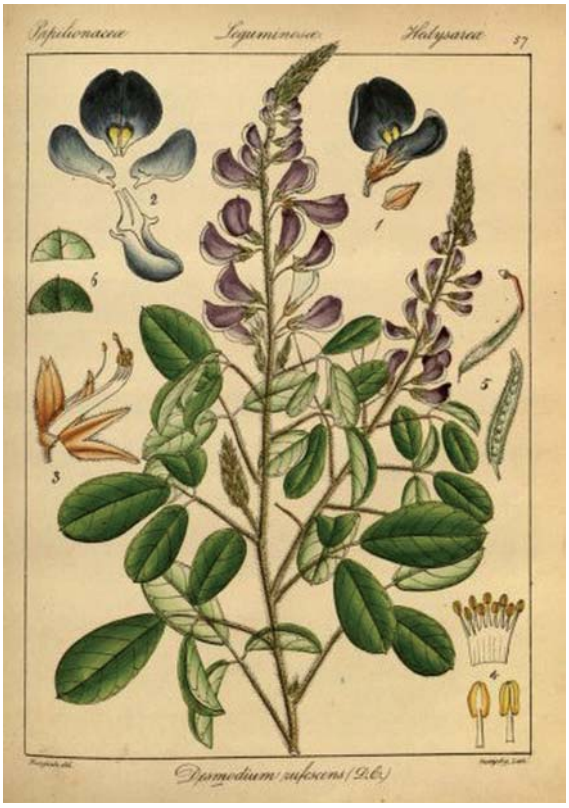

Fig. 3. *Desmodium rufescens* sensu Wight & Arn. non DC. (≡ *D. ferrugineum* Wall. ex Thwaites. Wight, Ill.: t. 57.)

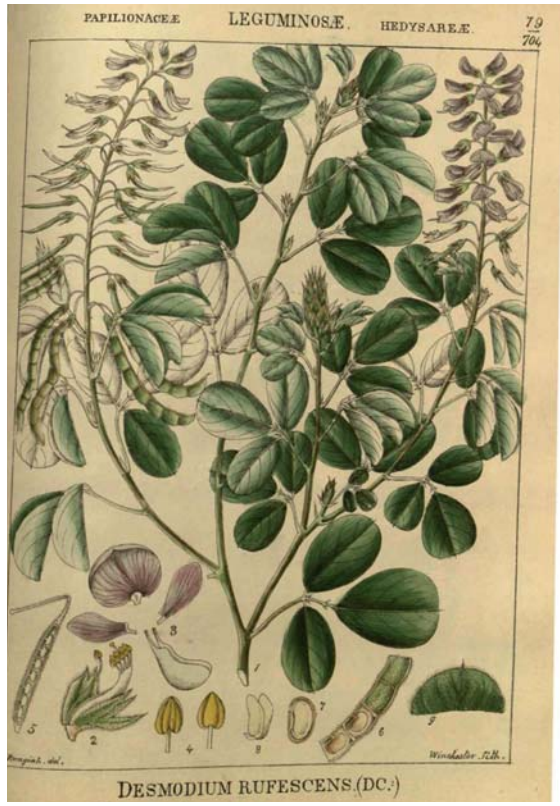

Fig. 4. *Desmodium rufescens* sensu Wight & Arn. non DC. (≡ *D. ferrugineum* Wall. ex Thwaites. Wight, Ill.: t. 79.)

due to prominent reticulations throughout the articles. But in herbarium specimens, the pressure of pressing during its preparation results in the breakage of joints and leads to misinterpretations.

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