

ADDITIONAL RECORDS OF LEGUMINOSAE-MIMOSOIDEAE
FOR THAILAND*Prachaya Srisanga*^{1,2}, *Chusie Trisonthi*², and *Ivan C. Nielsen*³

ABSTRACT

Archidendron alternifoliolatum (T. L. Wu) Nielsen and *Entada rheedei* Spreng. subsp. *sinohimalensis* (GRIERSON & LONG) Panigrahi are reported as new records for the flora of Thailand from Doi Phu Kha National Park, Nan Province. Descriptions, illustrations and information on their distribution are provided.

Key words: *Archidendron*, *Entada*, Leguminosae-Mimosoideae, new record, Doi Phu Kha National Park, Thailand.

INTRODUCTION

Since the publication of Leguminosae-Mimosoideae in Flora of Thailand by NIELSEN (1985), much botanical exploration has taken place and additional records have been reported, viz. *Archidendron robinsonii* (Gagnep.) Nielsen by MAXWELL (1998), *Entada reticulata* Gagnep. by CHUAKUL & NIELSEN (1998), and *Acacia tonkinensis* Nielsen by SRISANGA & SASIRAT (2000). During a floristic survey of vascular plants of Doi Phu Kha National Park, Nan Province between 1999–2001, specimens belonging to *Archidendron* and *Entada* were collected. They were later identified as *Archidendron alternifoliolatum* (T. L. Wu) Nielsen and *Entada rheedei* Spreng. subsp. *sinohimalensis* (Grierson & Long) Panigrahi, respectively, and represent new records for the flora of Thailand. The descriptions are based on the Thai collections examined.

Archidendron alternifoliolatum (T. L. Wu) Nielsen, Acta Phytotax. Sin. 21 (2): 164. 1983; Nielsen, Baretta-Kuipers and Guinet, Opera Bot. 76: 77. 1984. *Cylindrokelupha alternifoliolata* T. L. Wu, Acta Phytotax. Sin. 19 (2): 219. Pl. 9, 3. 1981. *Albizia alternifoliolata* (T. L. Wu) Y. H. Huang, Acta Bot. Yunnanica 5 (2): 139. 1983. Figures 1–4.

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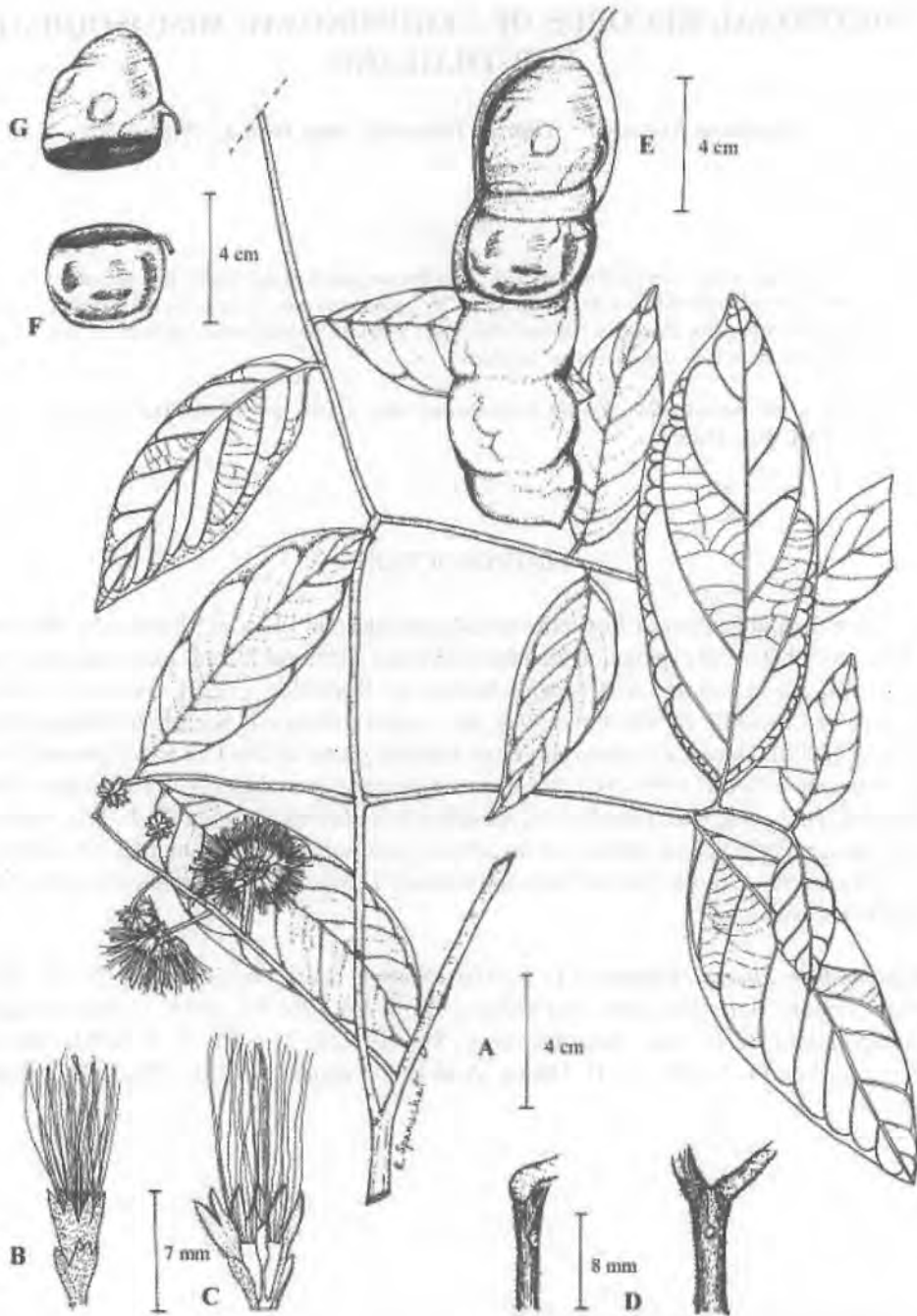


Figure 1 *Archidendron alternifoliolatum* (T. L. Wu) Nielsen: A. flowering branch; B. flower; C. opened flower; D. distal pinna gland, lateral view (left), dorsal view (right); E. pod; F. middle seed with funiculus; G. proximal seed with funiculus. A–D from Srisanga 539 (QBG); E–G from Srisanga et al. 792 (QBG).



Figure 2. *Archidendron alternifoliolatum* (T. L. Wu) Nielsen: Flowers (Same tree as *Srisanga* 539). Photo by P. Srisanga, 18 March 1999.



Figures 3, 4. *Archidendron alternifoliolatum* (T. L. Wu) Nielsen: Fruit (Same tree as *Srisanga* 1990). Photo by P. Srisanga, 7 July 2001.

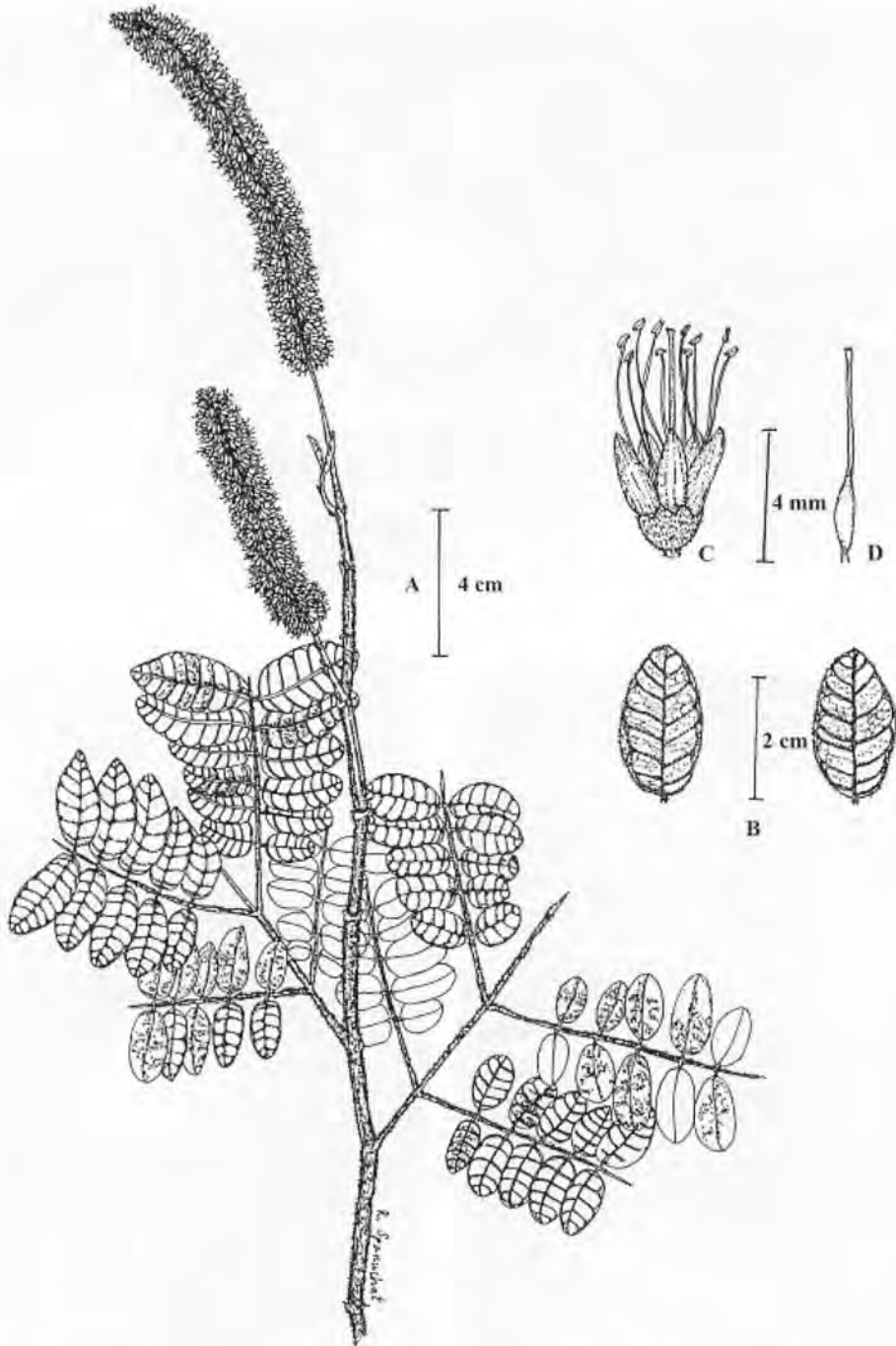


Figure 5. *Entada rheedei* Spreng. subsp. *sinohimalensis* (Grierson & Long) Panigrahi: A. flowering branch; B. leaflet, upper surface (left), lower surface (right); C. flower; D. pistil. All from Srisanga & Wathana 643 (QBG).

Tree 10–15 m high; branchlets terete with longitudinal ridges, brownish, lenticellate, puberulous to glabrous. Leaves: rachis (7–) 9–12 cm long, puberulous to glabrescent; gland 2–4.5 cm above the base, c. 1 mm long, sessile, elliptic or circular in outline; pinnae 1–2 pairs, 5–15 cm long, puberulous; glands 1–3 mm below the junctions of the petiolules, 0.5–1 mm diam., circular, often with raised margins; leaflets (2–) 3 (–4) pairs, proximal pairs alternate, distal pair always opposite, chartaceous, 6–19 cm long, 2.5–6 cm wide, lanceolate to elliptic; base cuneate often asymmetrical; apex acuminate; midrib and veins prominent on lower surface, both surfaces glabrous or with few hairs along midrib and leaf base; petiolule 2–4 mm long, puberulous. Inflorescences of axillary and terminal panicles, up to 12 cm long, puberulous; peduncle 0.8–2 cm long, puberulous to sericeous, bearing a head of 15–22 sessile or subsessile flowers, each subtended by a c. 1 mm long, triangular, sericeous bract. Flowers: Calyx 2–2.5 mm long, funnel-shaped, sericeous, lobes 5, triangular. Corolla white, 5–6 mm, funnel-shaped, sericeous, lobes 5, 1.5–2 mm long. Staminal tube shorter than corolla tube, 2–2.5 mm long. Ovary 1.5–2 mm long, glabrous, stipitate; stipe c. 1.5 mm long, glabrous. Pod (*Srisanga et al.* 1992) 9–14 cm long, c. 4.5 cm wide, oblong, glabrous, dehiscent along both sutures. Seeds about 5–7, ellipsoid, flattened, discoid, c. 2.8 cm long, 2 cm wide, 1–2 cm high, the terminal ones turbinate-truncate.

Distribution.—China (Yunnan, *Wang Chi-wu* 82790, holotype SCBI !) and northern Thailand.

Ecology.—Hill evergreen forest; 1,500–1,650 m altitude.

Phenology.—Flowering: March–April; Fruiting: July–September.

Thai material studied.—Doi Phu Kha National Park, Pua District, Nan Province, 19° 13' N, 101° 05' E: *Pooma* 1388 (CMU), 23 September 1996, fr.; *Srisanga* 539 (QBG), 18 March 1999, fl.; *Srisanga, Watthana & La-onsri* 792 (QBG), 1 July 1999, fr.; *Srisanga* 1990 (QBG), 7 July 2001, fr.

Note.—*Archidendron alternifoliolatum* was previously known only from Yunnan, China and this is the first description of its flowers. NIELSEN (1983) and NIELSEN, BARETTA-KUIPERS, & GUINET (1984) transferred this species to *Archidendron*.

***Entada rheedei* Spreng. subsp. *sinohimalensis* (Grierson & Long) Panigrahi**, Taxon 34 (4): 714. 1985; Grierson & Long in Fl. Bhutan 1 (3): 638. 1987. *E. pursaetha* DC. subsp. *sinohimalensis* Grierson & Long, Notes Roy. Bot. Gard. Edinb. 37 (2): 348. 1979; Nielsen in Fl. C.L.V. 19: 24. Pl. 3, 7–8. 1981. *E. scandens* auct. non (L.) Benth.: Baker in Fl. Br. Ind. 2: 287. 1878 p.p. *E. laotica* Gagnep., Bull. Soc. Bot. Fr. 99: 46. 1952; Nielsen, Adansonia, ser. 2, 19 (3): 342. 1980. *E. "Entity C"* Brenan, Kew Bull. 1955: 165. 1955. Figure 5.

Woody climber; branchlets terete with longitudinal shallow grooves, brown puberulous to velutinous. Leaves: rachis 5–8 cm long, brown puberulous to velutinous; pinnae (1–) 2 pairs, (4–) 6–10 (–15) cm long, brown puberulous to velutinous; leaflets (4–) 5–6 pairs, opposite or subopposite, (1.3–) 2–4 (–5.5) cm long, 1–2.3 cm wide, elliptic, oblong to narrowly obovate; base rounded to subcordate, often asymmetrical; apex rounded, obtuse

to broadly acute, puberulous on both surfaces especially along midrib and margin, distal pair usually larger than proximal pairs; petiolule 0.5–2 mm long, densely puberulous. Inflorescence spikes, solitary in the leaf axils or sometimes more spikes from a short-shoot; rachis 8.5–15 cm long, brown puberulous to velutinous. Flowers foetid, sessile, each subtended by a *c.* 1 mm long, brown puberulous to velutinous bract. Calyx green, campanulate, 1–1.3 mm long, brown puberulous to velutinous, lobes 5, broad triangular. Petals yellowish, elliptic, 2–3 mm long, glabrous. Stamens white; filaments 5–6 mm long; anthers *c.* 0.8 mm long. Ovary *c.* 1 mm long, glabrous, sessile or subsessile. Pod straight to slightly curved, oblong, up to 2 m long, 7–15 cm wide; endocarp and exocarp woody. Seeds subcircular, flattened, *c.* 4 cm long and wide, 1–1.5 cm thick.

Distribution.—Eastern Himalaya: Nepal, Sikkim, northeastern India, Bangladesh to China (Yunnan), Laos and northern Thailand.

Ecology.—Hill evergreen forest, often in open disturbed places; 600–1,500 m altitude.

Phenology.—Flowering: February–June; Fruiting: September–October.

Thai material studied.—Doi Phu Kha National Park, Pua District, Nan Province, 19° 13' N, 101° 06' E: *Pooma, Mauric & Greijmans* 1409 (CMU), 26 February 1997, fl.; *Srisanga & Watthana* 643 (QBG), 8 April 1999, fl.; *Srisanga* 1418 (QBG), 25 May 2000, sterile. Ru-see Cave area along the main road, Doi Suthep–Pui National Park, Muang District, Chiang Mai Province: *Maxwell* 88-1227 (AAU, CMU), 22 October 1988, fr. Khun Jae National Park, Wieng Bah Bao District, Chiang Rai Province: *Maxwell* 98-387 (CMU), 3 April 1998, fl.

Notes.—According to PANIGRAHI (1985), the correct spelling of this species is *E. rheedei* in accordance with Art. 73.7 of the International Code of Botanical Nomenclature 1988.

E. rheedei subsp. *sinohimalensis* is easily distinguished by its brown puberulous to velutinous leaflet blade segments, inflorescence, and calyx.

E. rheedei subsp. *rheedei* is widely distributed throughout the Old World tropics from Africa, Mascarene Islands, tropical Asia to northern Australia and Oceania, usually recorded from elevations up to 900 m. Its distribution is more southerly whilst *E. rheedei* subsp. *sinohimalensis* is confined to Eastern Himalaya, China (Yunnan), Laos and northern Thailand, but in some areas it seems to be sympatric with subsp. *rheedei*. Therefore one could argue that subsp. *sinohimalensis* deserves varietal rank only. Population studies of the site preferences of the two subspecies in northern Thailand are needed in order to confirm this.

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REFERENCES

- CHUAKUL, W. AND I. C. NIELSEN. 1998. *Entada reticulata* Gagnep. (Leguminosae-Mimosoideae), newly recorded for Thailand. *Thai For. Bull. (Bot.)* 26: 18–24.
- MAXWELL, J. F. 1998. Botanical notes on the Flora of Northern Thailand: 6. *Nat. Hist. Bull. Siam Soc.* 46 (2): 150.
- NIELSEN, I. C. 1983. Additional notes on Chinese and Indo-Chinese species of *Archidendron*. *Acta Phytotax. Sin.* 21 (2): 164–169.
- NIELSEN, I. C. 1985. Leguminosae-Mimosoideae. *Flora of Thailand* 4 (2): 131–222.
- NIELSEN, I. C., T. BARETTA-KUIPERS, AND PH. GUINET. 1984. The genus *Archidendron* (Leguminosae-Mimosoideae). *Opera Botanica* 76: 1–120.
- PANIGRAHI, G. 1985. Proposal to amend the type citation of 3468 *Entada* Adans. *nom. cons.*, and of *Gigalobium* P. Browne *nom. rej.* (Fabaceae). *Taxon* 34 (4): 714–715.
- SRISANGA, P. AND S. SASIRAT. 2000. *Acacia tonkinensis* I. C. Nielsen (Leguminosae-Mimosoideae), a new record for Thailand. *Thai For. Bull. (Bot.)* 28: 25–31.

