

**BOTANICAL NOTES ON THE VASCULAR FLORA
OF CHIANG MAI PROVINCE, THAILAND**

*J. F. Maxwell**

ABSTRACT

Fourteen species of flowering plants are discussed including one new combination, twelve new records for Thailand, and two emended descriptions. The family Lardizabalaceae is a new family record for Thailand.

ANNONACEAE

1. *Desmos sootepense* (Craib) Maxw., *comb. nov.*

Dasymaschalon sootepense Craib, Kew Bull. 1912: 144, and Contr. Fl. Siam, Dicots. Aberdeen Univ. Studies no. 57 (1912) 7.

Dr. A.F.G. Kerr collected the original material of this species on Doi Sutep (1050-1260 m elevation) which was described by Craib in 1912. I found fruiting material (Maxwell 87-1201) on Doi Sutep on 17 October 1987 at 1150 m elevation in primary evergreen forest in a stream valley.

The genus *Dasymaschalon* was reduced to a section of *Desmos* by SINCLAIR (1955) since he did not consider the differences in the number of petals between the two genera to be a generically significant feature. I agree with his reduction and also since the moniliform carpels are a characteristic feature common to both taxa, hence the new combination here.

2. *Orophea thorelii* Pierre NEW RECORD

This species, illustrated in 1881 from material collected by Pierre in South Vietnam, is also known from Cambodia and Laos (FINET & GAGNEPAIN, 1908). I collected flowering material of this species (Maxwell 89-315) from the east side of Doi Chiang Dao, a limestone mountain, on 11 March 1989 at 575 m elevation in a mixed evergreen/deciduous forest. The oblique grooves on the inside of the inner petals is a characteristic of this species.

LARDIZABALACEAE NEW FAMILY RECORD

3. *Parvattia brunoniana* Wall. ex Dcne. NEW RECORD

This species, originally listed by Wallich in his "Catalogue" in 1831 as *Stauntonia brunoniana*, an unpublished name, received its present and legitimate name by J. Decaisne based on specimens from Assam and the Khasia Hills in NE India. A

* Herbarium, Faculty of Pharmacy, Chiang Mai University, Chiang Mai 50002, Thailand.

very complete description of this species was made by F. GAGNEPAIN (1939) who noted that it is also known from Tonkin Province in N. Vietnam at 1600 m elevation.

I first found this species in Chang Kian Valley on the east side of Doi Sutep-Pui National Park on 9 January 1988 (Maxwell 88-30), a staminate collection, at 1400 m elevation. Dr. Hans Banziger collected female material (Banziger 28) at the same place on 23 January 1988. I have noticed that the staminate plant that I originally got material from produced flowers from late October to the middle of December 1988.

The first material of this species collected in Thailand was by Beusekom & Phengkklai (2597) at Doi Sutep on 18 December 1969 at c. 1,000 m (staminate). It remained unnoticed as a new record until now.

STERCULIACEAE

4. *Pterocymbium laoticum* Tard. *emend.* Maxw. NEW RECORD (Figures 1–3)

Mdm. Tardieu-Blot described this species in 1942 on the basis of inflorescence scraps and flowers from material collected in NW Laos. There is an illustration in a later publication of hers (TARDIEU-BLOT, 1945) plus a description which I used to identify this species. I have seen several individuals of this species, a deciduous canopy tree, in the lowland mixed evergreen/deciduous forests on the SE and east sides of Doi Chiang Dao, from 550-650 m elevation in early 1989. The tree is leafless from about late November to March and was observed to flower, when completely leafless, from January to mid-March and fruit, also when leafless, from mid-March to April. Doi Chiang Dao, a limestone mountain, has shale-granite bedrock on the SE side, but is entirely calcareous on the east side. This species is frequently found along streams, which are dry during the early part of the year. The following notes are from my own observations and collections (Maxwell 89–169, flowers and dry leaves, 5 February 1989 and 89-324, final flowers, dry leaves, and fruits/seeds, on 11 March 1989). All material has been collected on the ground since the height of all individuals precludes gathering intact material. New leaves were observed on the trees on the SE side of Doi Chiang Dao on 21 March 1989. Ripe fruits and seeds were found on the ground on 2 April 1989.

Deciduous tree, 35-45 m tall, dbh 35-106 cm, bark thin, flaking slightly near the base but otherwise smooth, grey. Bole straight, unbranched except near the spreading crown. Leaves simple. Blades oblong to elliptic, 10-23 x 6-18 cm, apex acuminate, base cordate, subcoriaceous. Main nerves slightly raised above, prominently so underneath; midnerve with 1-2 basal nerves plus 6-7 other secondary nerves on each side, mostly straight and curved only near the margin, finer venation reticulate-scalariform. Margin entire in the lower 1/2 and with an undulation or shallow (to 7 mm long) acute lobe at the middle and undulate in the upper part. Upper surface glabrous and drying dark brown, lower side softly villous throughout with simple patent hairs, drying medium brown. Petioles terete, with indumentum as on the blade undersurface, slightly thickened and geniculate at the tip, 5–10 cm long,



Figure 1. Habit of *Pterocymbium laoticum* Tard. *emend.* Maxw. on the SE side of Doi Chiang Dao, 5 Feb. 1989. Photo by S. Elliott.



Figure 2. Dry leaves and freshly fallen flowers from the tree in figure 1. Photo by S. Elliott.



Figure 3. Dry leaves, last flowers, and fruits with seeds from a tree on the east side of Doi Chiang Dao, 11 March 1989. Photo by M. Quatermaine.



Figure 4. Lower stem of *Tetrastigma laoticum* Gagnep. with developing fruits on the SE side of Doi Chiang Dao 25 June 1989 at 525 m. Photo: Sai Jai.

2–3.5 mm thick (in the middle), drying brown. Inflorescence/inflorescence axes drying brown, pedicels yellow-greenish to yellowish-orangish when fresh. Base of calyx tube dark yellowish or the entire tube yellow and becoming more orangish with thin reddish streaks on both surfaces, drying black. Anthers pale to medium light yellowish, androgynophore light yellowish. Follicles often several per flower, open, thin, the open part lanceolate, rounded at the tip, the “pouch” near the middle, broadly rounded at the tip, very sparsely puberulous, some of the hairs near the base capitate; pale light greenish, the “pouch” somewhat reddish, drying black; 8–8.5 cm long, medially c. 4 cm wide. Stalks 14–18 mm long, more densely covered with capitate, puberulous indumentum. Seed ovoid, 16–17 × 8–8.5 mm, densely covered with indumentum as on the stalks, light green and drying black.

VITACEAE

5. *Tetrastigma laoticum* Gagnep. NEW RECORD (Figure 4)

The flattened stems up to 17 cm diameter near the base and leaves with 5 palmately arranged and glabrous leaflets easily distinguish this species from other local species in this genus. I have found fruits in primary evergreen forest on Doi Sutep at 1000 m on 12 May 1988 (Maxwell 88-622), female flowers on the same mountain at 1425 m on 16 March 1989 (Maxwell 89-336), and female flowers in the limestone zone on the east side of Doi Chiang Dao on 20 April 1989 (Maxwell 89-471). It is known from Laos and Annam, North Vietnam (GAGNEPAIN, 1950).

I have been observing the developing fruits on several large-stemmed (ramiflorus) individuals on Doi Chiang Dao and it was not until October 1989 that the fruits, c. 2 cm diameter, matured.

I would like to thank Dr. Abdul Latiff, Universiti Kebangsaan Malaysia, for confirming the identification of this and other species of *Tetrastigma* that I sent him.

It should also be noted here that two of my collections from Doi Sutep (Maxwell 89-1447, fruits and 88-1043, female flowers) have been noted by Dr. Latiff as being *Tetrastigma* aff. *harmandii* Pl. This species, known from Vietnam, Laos and Cambodia (GAGNEPAIN, 1950), has yet to be recorded from Thailand.

LEGUMINOSAE (Papilionoideae)

6. *Crotalaria prostrata* Rottl. ex Willd. NEW RECORD

NIYOMDHAM (1978) notes that this species is expected to be found in Thailand since he had seen specimens collected from Vietnam. I found this inconspicuous, prostrate herb in flower and fruit (Maxwell 87-1394) on the east side of Doi Sutep at 975 m elevation in a basically deciduous forest with much bamboo interspersed in a disturbed area on 10 November 1987. This species is otherwise known from India, Sri Lanka, Malaysia, and the Philippines. It seems rather different from the closely related *C. acicularis* B.-H. ex Bth. which I have also found on Doi Sutep.

7. *Spatholobus spirei* Gagnep. NEW RECORD

I have found this attractive woody climber in flower on two recent occasions, first on the SW side of Doi Sutep at 500 m on 19 February 1989 (Maxwell 89-236) and on Doi Intanon at 1250 m on 24 February 1989 (Maxwell 89 – 246). Both collections were gathered along streams, the Doi Sutep site in a deciduous forest and the other collection in primary evergreen forest.

This species, described in 1913, is known from various locales in Cambodia, Laos, and Vietnam (THUAN, 1979).

ARALIACEAE

8. *Macropanax concinnus* Miq. NEW RECORD

This species, apparently differing from *M. undulatus* (Wall. ex G. Don) Seem. in the details of the inflorescence (PHILIPSON, 1979), is known from Java and according to VIGUIER (1923) Cambodia. It must be noted that Viguier considered *M. undulatus* a synonym of *M. concinnus*; however, PHILIPSON considers the two species distinct.

I found *M. concinnus* in fruit (Maxwell 89-49) on the east side of Doi Chiang Dao at 550 m elevation on 15 January 1989. The bedrock of the area is limestone and the habitat was primary evergreen forest along a seasonally dry stream. The entire leaflets of *M. concinnus* and overall aspect of dry material differ considerably from *M. dispersum* (Bl.) O.K. which I have collected in both flower and fruit on Doi Sutep. Flowering material of this species was found on the NE side of Doi Chiang Dao in a shale zone on 5 November 1989 (Maxwell 89 – 1352) at 525 m in a similar habitat.

CAPRIFOLIACEAE

9. *Viburnum garrettii* Craib *emend.* Maxw.

The original description of this species (CRAIB, 1920) was based on fruiting material collected at Me (Mae) Kang, Chiang Mai Province. Now that I have both flowers and fruits of this species (Maxwell 89-353) from Ban Bahng Bong, Doi Saget on 17 March 1989 at 1050 m, the flowers can be described. Craib notes that this species is close to *V. colebrookianum* Wall. ex Cl. and from Danguy's description and drawing (DANGUY, 1922) I strongly suspect that *V. garrettii* is the same.

This view was also noted by FUKUOKA (1967) in his unfortunately uncritical revision of the genus in Thailand. The species is known from Chiang Rai, Chiang Mai, and Tak Provinces from 800-1,360 m elevation.

Bracts lanceolate, 1.0-1.25 × 0.4 mm, acute at the tip, stellate-tomentose outside, glabrous inside; bracteoles similar and about half as large as the bracts. Pedicels-ovary glabrous, 5-angled, glabrous, whitish to light green. Calyx lobes 5, ovate, 1 × 0.5 mm, acute at the tip, glabrous to sparsely puberulous outside, glabrous inside, whitish to light greenish. Corolla campanulate, glabrous, white; tube 0.75 mm long; lobes 5, elliptic, rounded at the tip, 1.5 × 1 mm. Stamens 5, free, alternating

with the corolla lobes, glabrous; filaments white, c. 2 mm long; anthers 2-locular, c. 0.75×0.5 mm, whitish. Stigma whitish, style c. 1 mm long. Fruits oblong, $5 - 5.5 \times 3 - 3.5$ mm, glabrous; dull pink-red and ripening dark violet, juicy, drying black.

ERICACEAE

10. *Agapetes variegata* Wall. ex G. Don NEW RECORD

This species was known from NE India (Khasia Mountains), where it is noted to be common, Chittagon Hills in Bangladesh, and Burma (CLARKE, 1882). It was, therefore, surprising for me to find this species flowering on the summit of Doi Sutep at 1600 m elevation on 19 December 1987 (Maxwell 87-1623). It is an epiphytic shrub with swollen roots growing in the mostly single-storied evergreen forest.

The fascicled pedicels and large red corollas are distinctive. *Agapetes hosseana* Diels, also found in the summit region, has much smaller leaves and flowers.

SCROPHULARIACEAE

11. *Torenia benthamiana* Hance NEW RECORD

The specimens of this species that I collected on the east side of Doi Sutep (Maxwell 88-1050) at Gukao Falls at 550 m on 29 August 1988 differ slightly from YAMAZAKI's (1985) description and illustrations. The anterior pair of stamens in my collection are very reduced and are essentially staminodial and, therefore, recall the situation in *Lindernia*. The bilabiate, 5-angled calyx and oblique top of the ovary are, however, diagnostic features which confirm the identity of this species.

This species was originally described from Chinese material in 1862 and is also known from Vietnam where it grows in humid places along streams at 300-700 m elevation.

12. *Torenia thorelii* Bon. NEW RECORD

Described in 1908 from material collected in Cambodia by Thorel, this species is also known from Laos and Vietnam. In addition to having a bilabiate, 5-angled calyx it differs from several related species by its relatively small flowers and lack of appendages on the anterior filaments.

I found flowering and fruiting material of this species (Maxwell 89-1337) on the west side of Doi Pui at 1275 m on a seasonally moist granitic outcrop in the mixed primary evergreen-pine forest on 31 October 1989. The dimensions of most parts given by Yamazaki (1985) are slightly larger than in the material that I collected.

EUPHORBIACEAE

13. *Acalypha brachystachya* Horn. NEW RECORD

I have found this species at two locations on Doi Pui (Maxwell 88-1012 at 1,200 m and 89-1038 at 1,475 m) in August, while I have also seen it on the north side of Doi Sutep-Pui National Park at Mae Sa Falls at 525 m at the end of September. I recently collected it on the SE. foothills of Doi Chiang Dao (Maxwell 89-1173 at 550

m), also at the end of September. All material has been with ample flowers and fruits, and on granite bedrock at Doi Pui and granite-shale bedrock on Doi Chiang Dao.

This delicate, slightly succulent, and otherwise inconspicuous herb grows in seasonally moist, often fire-prone places, in lowland deciduous forests and in primary evergreen habitats at higher elevations; and in all places where I have found it there has been some bamboo growing.

The herbaceous habit, up to 10 mm long bisexual inflorescences, and deeply 3-lobed female bracts are some distinguishing characteristics of this species. It is known from Indo-China, temperate Himalayas, India-Sri Lanka, Africa and Java (GAGNEPAIN, 1925).

GRAMINEAE

14. *Eulalia bicornuta* Bor NEW RECORD

BOR (1960) notes that this species, which was described in 1950, is poorly known from the original Burmese material. I collected this species in the open deciduous dipterocarp-oak forest on the east side of Doi Sutep at 500 m on 1 December 1988 (Maxwell 88-1363). It is a rather inconspicuous annual grass which grows in fire-prone areas and does not seem to be widespread or abundant on Doi Sutep.

ACKNOWLEDGEMENTS

I would like to thank Dr. J.F. Veldkamp and Dr. R. Geesink of the Rijksherbarium, Leiden, Netherlands for their assistance and financial support which enabled me to attend the Flora Malesiana Symposium at Leiden from 21-29 August 1989, during which I was able to complete my work on this paper. Financial support from Wildlife Conservation International for my work on Doi Sutep-Pui and Doi Chiang Dao is gratefully acknowledged.

REFERENCES

- BOR, N.L. 1960. *The Grasses of Burma, Ceylon, India, and Pakistan*. Pergamon Press, Oxford; p. 155.
 CRAIB, W.G. 1920. Contributions to the Flora of Siam, Additamentum XI. *Kew Bulletin* 1920: 302.
 DANGUY, P. 1922. Caprifoliacées in *Flore Générale de L'Indo-Chine* III: 9-10 and fig. 2, 5-7 (p. 7).
 FINET, A. and F. GAGNEPAIN. 1908. Annonacées, in *Flore Générale de L'Indo-Chine* I: 118.
 FUKUOKA, N. 1967. *Sambucus* and *Viburnum* of Thailand. *Acta Phytotax. Geobot.* 22: 169-170.
 GAGNEPAIN, F. 1925. Euphorbiacées in *Flore Générale de L'Indo-Chine* V: 339-340.
 ———. 1939. Lardizabalacées in *Supplément, Flore Générale de L'Indo-Chine*, 147-148.
 ———. 1950. Ampelidacées in *Supplément, Flore Générale de L'Indo-Chine*: 874-876.
 NIYOMDHAM, C. 1978. A revision of the Genus *Crotalaria* Linn. (Papilionaceae) in Thailand. *Thai Forest Bulletin* 11: 115.
 PHILIPSON, W.R. 1979. Araliaceae I. *Flora Malesiana* 9: 1, 87.

- SINCLAIR, J. 1955. A Revision of the Malayan Annonaceae. *Gardens Bulletin Singapore* 14: 2, 262.
- TARDIEU-BLOT, Mdm. 1945. Sterculiacées in Supplément, *Flore Générale de L'Indo-Chine*: 394.
- THUAN, N.V. 1979. Légumineuses-Papilionoïdées (Phaseolées) in *Flore du Cambodge, du Laos, et du Viêt-Nam* 17: 104.
- VIGUIER, R. 1923. Araliacées in *Flora Générale de L'Indo-Chine* II: 1265.
- WALLICH, N. 1831. *A Numerical List of Dried Plants in the East India Company's Museum (Wallich's Catalogue)*, entry 4592.
- YAMAZAKI, T. 1985. Scrophulariacées in *Flore du Cambodge, du Laos, et du Viêt-Nam* 21: 139, 151 – 152 and plate 16, figures 1 – 3, 5 – 8 (p. 141).

