

Two Species of *Tarenna* Gaertn. (Rubiaceae), New Records for Thailand

WIROT KESONBUA AND PRANOM CHANTARANOTHAI*

*Applied Taxonomic Research Center, Department of Biology, Faculty of Science,
Khon Kaen University, Khon Kaen 40002, THAILAND*

ABSTRACT.— Two species of *Tarenna*, *T. harmandiana* Pitard and *T. membranacea* Pitard are newly recorded for Thailand, both species are described and illustrated.

KEY WORDS: Thailand *Tarenna*; Rubiaceae; new record; Thailand

INTRODUCTION

Tarenna Gaertn. contains ca. 370 species, distributed in the old world tropics (Mabberley, 1987). The species occur in lowlands as well as at higher altitudes. In the account of the genus in *Florae Siamensis Enumeratio* (Craib, 1932), 22 species and 11 varieties were enumerated. *T. harmandiana* and *T. membranacea* were excluded from the account, although the both species has been recorded from Indo-Chinese region (Pitard, 1924). During a revision of the genus for the Flora of Thailand, we found specimens of these species. Descriptions and illustrations are provided for each.

MATERIALS AND METHODS

The present study was based mainly on an intensive search through available taxonomic literature and on the study of herbarium specimens at the herbaria in Thailand: Bangkok herbarium (BK), The Forest Herbarium,

National Park, Wildlife and Plant Conservation (BKF), Herbarium of Khon Kaen University (KKU), Queen Sirikit Botanic Garden, Chiang Mai (QBG), Herbarium of Biology Department, Chiang Mai University. Herbaria abroad also were visited at the Natural History Museum, London (BM), the Royal Botanic Gardens, Kew, U.K. (K), the Rijksherium, Leiden, The Netherlands (L), Museum National d'Histoire Naturelle, Paris, France (P) and School of Botany, Trinity College, Dublin, Ireland (TCD). Field work was carried out throughout Thailand and ecological data and location were recorded.

SYSTEMATICS

Tarenna harmandiana Pitard

Tarenna harmandiana Pitard, Fl. Gén. de l' Chine 3: 214. 1923. Type: Cambodia, Pursat, *Harmand* 6186 (holotype P!). Fig. 1.

Large shrub or small tree, up to 5 m high; young branches terete in cross-section, with a groove running longitudinally in the middle on the wider side, bark greenish, glabrous or with sparsely short hairs; older branches subterete to rounded, bark brownish, smooth or corky, usually glabrous.

* Corresponding author:

Tel: (6643)-342-908

Fax: (6643)-364-169

E-mail: pranom@kku.ac.th

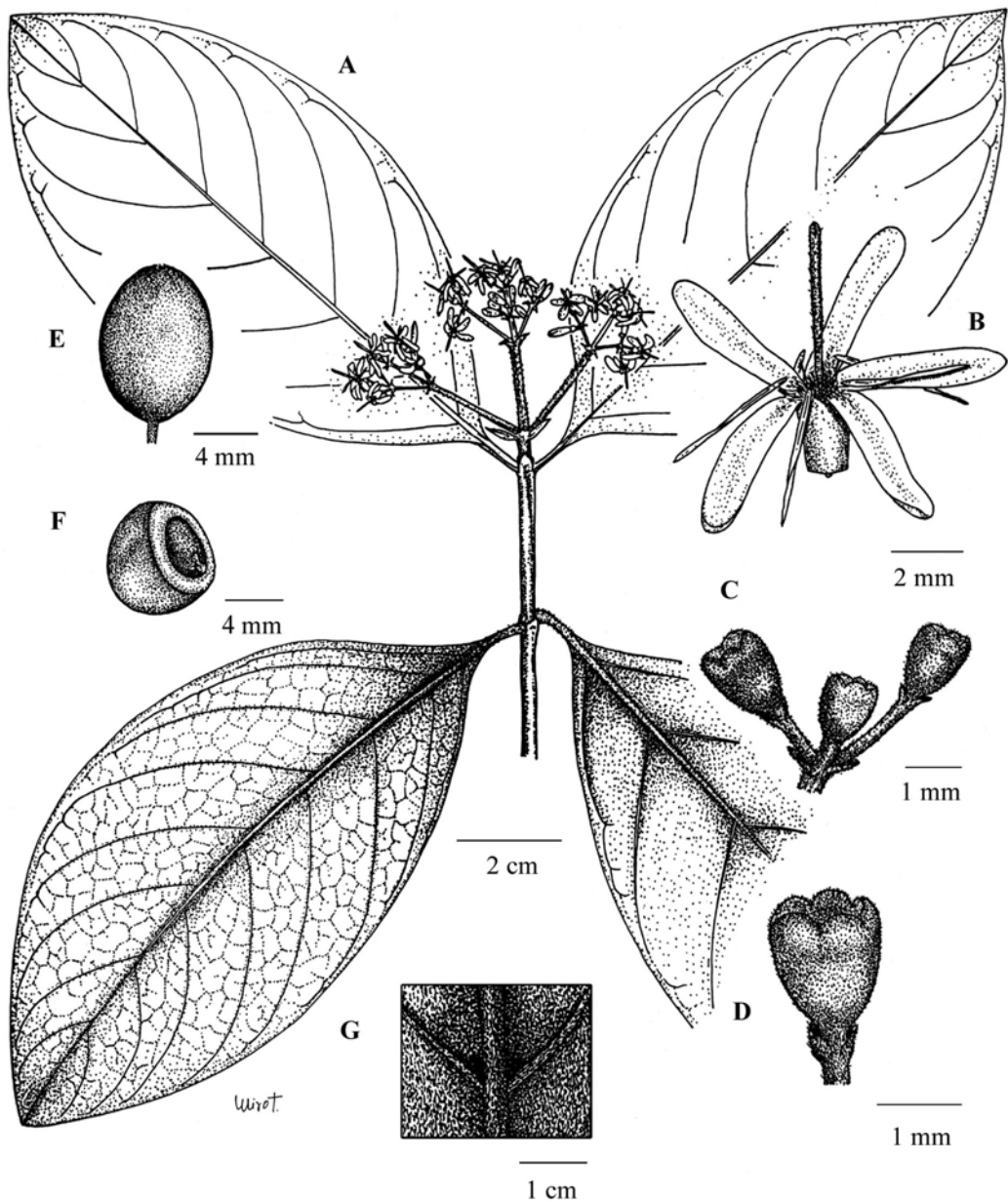


FIGURE 1. *Tarenna harmandiana*: **A.** flowering branch; **B.** corolla, stamens, style and stigma; **C.** ultimate flower triad; **D.** bracteoles, ovary and calyx; **E.** fruit; **F.** seed; **G.** lower leaf surface. **A:** Kerr 6889A; **B-D:** Maxwell 71-363; **E-G:** Phengkklai 1999. Drawn by Wirot Kesonbua.

Leaves elliptic, 4.5-9 by 11-18 cm, base attenuate or cuneate, apex acute, margin entire; lateral nerves 7-9 pairs, conspicuous beneath, usually with domatia at the angle of the lateral nerves; coriaceous; upper surface green,

glabrous or with spreading hairs at nerves; lower surface greenish, pubescent, drying dark brown. Petiole 0.5-1.5 cm long, pubescent. Interpetiolar stipules broadly triangular, 2.5-5 mm long, usually caducous.

Inflorescence terminal on main or lateral branches, erect; trichotomously branched brachiate dicasial cyme, denser, with 3-4 main branches, 3-5 by 4-6 cm, the inflorescence-supporting leaf pairs with elliptic smaller than the vegetative leaves, 0.8-0.9 by 2-3 mm; peduncle short, up to 1 cm long; axes, pedicels and calyx spreading covered with short hairs; central first order axes 1.2-2 cm long, lateral first order axes 1.5-2 cm long; first order bracts without the stipular part, the latter rather loose, the foliar part narrowly triangular and vaulted; Flowers in threes at the branchlet ends, the outer two flowers of the triad with a pedicel 1-3 mm long, the center flower with a pedicel up to 0.5 mm long or sessile, bracteoles present on most pedicels, opposite at the base of the ovary or on the pedicel, filiform or narrowly triangular with acuminate tips, densely hairy.

Flower 5-merous, fragrant, bisexual. Calyx green, hairy; tube short, 0.3-0.5 mm long; lobe ovate, with rounded tips, shorter than the cup, 0.2-0.4 mm long. Corolla white, base slightly overlapping, tube 2.5-3 mm long, upper part near the throat with silky hairs, lower part glabrous, outside pubescent; lobes oblong, 1-1.5 by 4.5-6 mm, with rounded apex, inside glabrous or pubescent at the base, outside spreading ciliate hairs. Stamens inserted at the corolla throat, alternate with the corolla lobes, attached to the throat by a short filament, filament tubular, up to 1 mm long, glabrous; anther yellowish grey, linear, basifixed, with the basal lobes directed downward, opening by means of longitudinal slits, twisted after spreading. Style-stigma complex conspicuously long-exserted, 8-11 mm long, style with densely soft hairs at the upper part near stigma; stigma fusiform, acentric apices, exserted, 5-7 mm long beyond the corolla throat. Ovary small, usually cup-shaped, 1-1.5 mm long, with 2 locules, each axil placentation with one ovule, disc conspicuous.

Fruits berry-like, ellipsoid, 6-9 by 9-12 mm, with short persistent calyx teeth or calyx scar at the apex, glabrous or with spreading hairs, green. Seed one per fruit, globose or

subglobose, 4-5 by 5-6 mm, brownish or black, testa smooth.

Thailand. – SOUTH-WESTERN: Prachuap Khiri Khan [Pranburi district, in dry evergreen forest, alt. 10 m, 17 August 1965, *Phengnaren* 91 (BKF)]; SOUTH-EASTERN: Sa Kao [Aranyaprathet, district, Klong Nam Sai, 19 November 1964, *Sutheeson* 169 (BK)]; Chon Buri [Sattahip district, Ban Toong Prong, near sea level, 3 May 1971, *Maxwell* 71-361 (BK) & 71-363 (AAU)]; Khao Khieo, common on hill, alt. 50 m, 5 February 1969, *Phengkklai* 1999 (L)]; Trat [Koh Chang, near sea level, 5 April 1923, *Kerr* 6889A (AAU, BK, K)].

Distribution. – Cambodia.

Ecology. – In dry evergreen forest; alt. 0-50 m.

Notes. – *Tarenna harmandiana* is distinguished from all other Thai species of *Tarenna* by having large and thick leaves, with pubescence in the lower leaf surface and inflorescences.

Tarenna membranacea Pitard

Tarenna membranacea Pitard, Fl. Gén. de l'Chine 3: 215. 1923. Type: Vietnam, Cochinchine, March 1877, *Pierre* 3168 (holotype P!; isotype K!). Fig. 2.

Shrub up to 3 m high; young branches subterete in cross-section, with a groove running longitudinally in the middle on the wider side, bark whitish brown and glabrous; older branches subterete to rounded, bark grey or brownish, smooth or shallowly cracked, glabrous.

Leaves simple, opposite decussate, blades elliptic or ovate, 3-4.5 by 6.5-10 cm, base attenuate or cuneate, apex acute, margin entire; lateral nerves 6-8 pairs, inconspicuous beneath, usually without domatia; membraceous, upper surface pale green, lower surface greenish, drying brownish, glabrous on both surfaces. Petiole 0.3-1 cm long, glabrous. Interpetiolar stipules triangular, 0.5-1 mm long, usually caducous.

Inflorescence terminal on main or lateral branches, erect; trichotomously branched

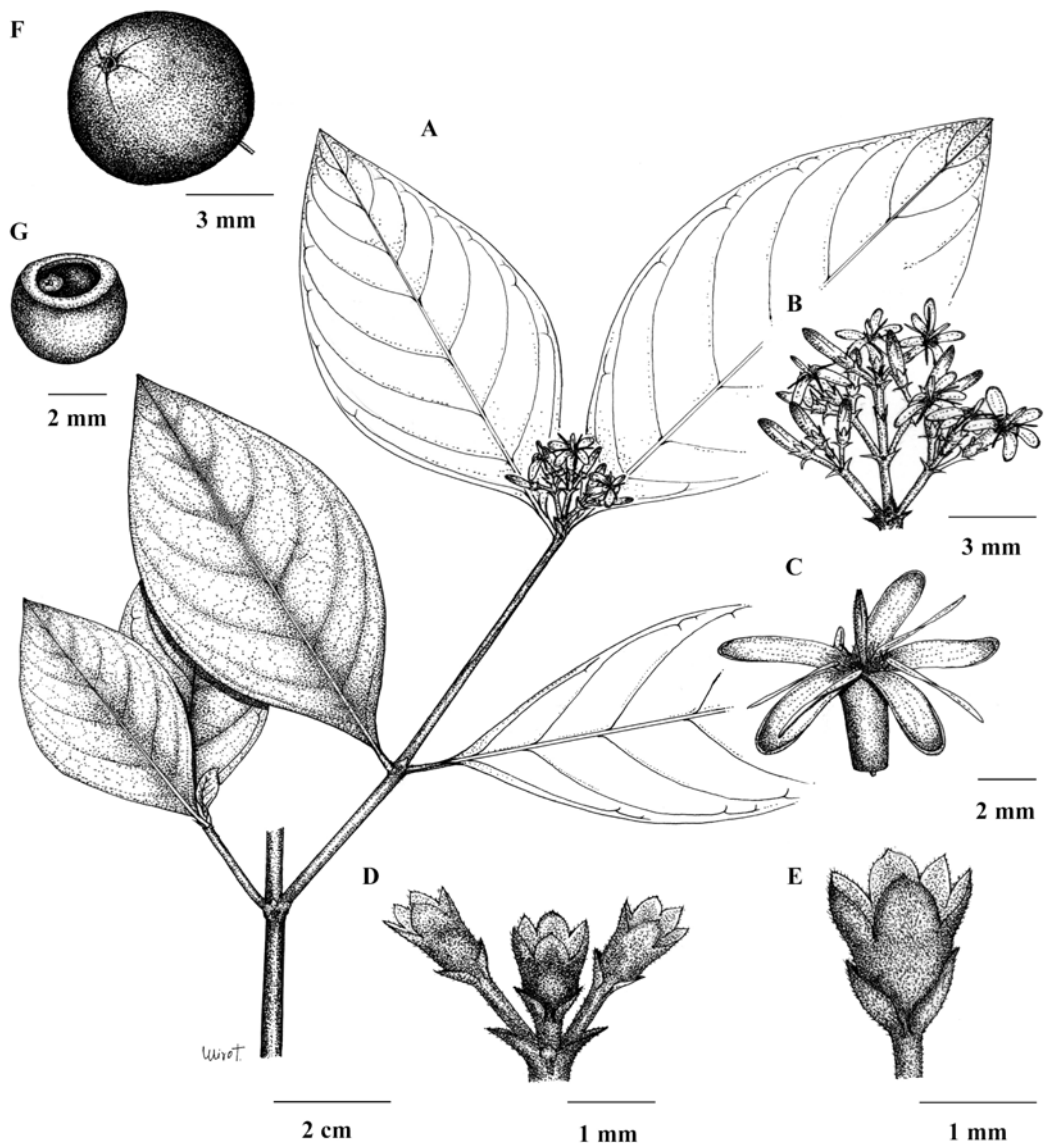


FIGURE 2. *Tarenna membranacea*: **A.** flowering branch; **B.** inflorescence; **C.** corolla, stamens, style and stigma; **D.** ultimate flower triad; **E.** bracteoles, ovary and calyx; **F.** fruit; **G.** seed. **A-E:** W. Kesonbua 170; **F-G:** Chamchumroon & Puff 1119. Drawn by Wirot Kesonbua.

brachiate dicasial cyme, densed, with 2-3 main branches; 0.7-1.5 by 1-2 cm, peduncle short; axes, pedicels and calyx covered with sparsely short hairs; central first order axes 2-5 mm long, lateral first order axes 3-6 mm long; usually with stipular part all main bract; the folia part triangular, with acute at the apex, up to 1 mm long. Flowers in threes at the

branchlet ends, the outer two flowers of the triad with a pedicel 1-1.5 mm long, the center flower with a pedicel up to 0.5 mm long or sessile, bracteoles usually present on most pedicels, opposite at the base of the ovary or on the pedicel; filiform or narrowly triangular with acute tips, 0.5-1 mm long, with spreading hairs.

Flower 5-merous, fragrant, bisexual. Calyx green, with short hairs; tube short, 0.1-0.2 mm long; lobe broadly triangular or ovate, with acute tips, shorter than the cup, 0.5-1 mm long; Corolla white or cream, their base slightly overlapping, tube 2.5-3 mm long, upper part near the throat with silky hairs, lower part glabrous, outside glabrous; lobes oblong, 1-1.5 by 2.5-3.5 mm, with rounded apex, inside glabrous or pubescent at the base, outside glabrous. Stamens inserted at the corolla throat, alternate with the corolla lobes, attached to the throat by a short filament, filament tubular, up to 0.5 mm long, glabrous; anther white, linear, 2.5-3 mm, twisted after spreading, basifixed, with the basal lobes directed downward, opening by means of longitudinal slits. Style-stigma complex conspicuously long-exserted, 6-7 mm long, style with densely soft hairs at the middle part; stigma fusiform, acentric apices, exserted, 3-4 mm long beyond the corolla throat. Ovary small, usually cup-shaped, 0.5-1 mm, with 2 locules, each axil placentation with one ovule, disc conspicuous.

Fruits berry-like, globose or subglobose, 4-6 by 5-7 mm, with short persistent calyx teeth or calyx scar at the apex, glabrous, green. Seed one per fruit, subglobose, 3.5-4 by 4-5 mm, brownish or black, testa smooth.

Thailand. – EASTERN: Nakhon Ratchasima [Khao Yai National Park, alt. 600-800 m, 17 March 1965, *Kasem* 423 (BK), 19 July 1973, *Murata, Fukuoka & Phengklai* T-16293 (AAU, BKF, L)]; SOUTH-WESTERN: Prachuap Khiri Khan [Tap Sakae district, Huai Yang waterfall, in dry evergreen forest, alt. 300 m, 25 August 2002, *Middleton, Suddee & Hemrat* 1303 (Herb. of Biology Dept., Chiang Mai University), 7 October 1930, *Put* 3241 (AAU, K), 7 February 1970, *van Beusekom & Santisuk* 2697 (AAU, BKF, L, P)]; CENTRAL: Saraburi [Sam Lan forest, along stream, alt. 200 m, 1 April 1974, *Maxwell* 74-256 (AAU, BK); Hin Lap, 9 August 1929, *Put* 2407 (AAU, BK, K, L)]; SOUTH-EASTERN: Chanthaburi [Pong Num Ron district, Pa Rawang, alt. 400 m, 8 October 1955, *Bunnak* 522 (BKF); Khao Soi Dao, alt. 200 m, 30 June 2001,

Chamchumroon & Puff 1119 (BKF); 12°45' N, 102°10'E, in evergreen forest, 13 May 1974, *Geesink, Hattink, Phengklai* 6719 (BKF, K, L), in evergreen forest, 28 April 2005, *Kesonbua* 170 (KKU); Khao Satap, in evergreen forest, alt. 600 m, 7 January 1930, *Kerr* 17997 (BK, BM, K, P)].

Distribution. – Laos, Vietnam.

Ecology. – Primary or dry evergreen forest, sometimes along streams or damp places; alt. 200-800 m.

Notes. – *Tarenna membranacea* is characterized by its white young branch, ovate leaves, small inflorescence and broadly triangular calyx. The species is similar to *T. adangensis* in leaf shape and size. It differs in having membranous leaves, broadly triangular or ovate calyx lobes, and a smaller inflorescence.

ACKNOWLEDGEMENTS

We thank the Faculty of Science, Ubon Ratchathani University and the Department of Biology, Faculty of Science, Khon Kaen University for supporting this study. We also thank the directors and curators of AAU, BK, BKF, BM, K, KKU, L, P, PSU, QBG, TCD and Herbarium of Biology Department, Chiang Mai University for making the specimens available for this study.

LITERATURE CITED

- Craib, W.G. 1932. *Florae Siamensis Enumeratio* II. Siam Society, Bangkok, pp. 177-234.
 Mabberley, D.J. 1987. *The Plant Book*. Cambridge University Press, Cambridge, 858 pp.
 Pitard, J. 1924. Rubiaceae (suite). In: M.H. Lecomte (Ed.), *Flore Générale de l'Indo-Chine*, vol. 3, fasc. 3. Paris: Masson, 20-442 pp.

Received: 25 November 2005

Accepted: 21 February 2006