

Tarenna thorelii (Rubiaceae), a new record for Thailand

WIROT KESONBUA^{1,*} & PRANOM CHANTARANOTHAI^{1,2}

ABSTRACT

Tarenna thorelii is reported as a new record for Thailand based on collections from Khon Kaen and Roi Et Provinces. A morphological description based on Thai specimens, distribution, ecological information, conservation status, and short notes on the species as well as an illustration are provided. In addition, a lectotype for *T. thorelii* is proposed.

KEYWORDS: conservation, lectotype, Pavetteae, South-East Asia, taxonomy, Gentianales

Accepted for publication: 28 December 2022. Published online: 6 February 2023

INTRODUCTION

Tarenna Gaertn. is one of the largest genera in the tribe Pavetteae, subfamily Ixoroideae within the Rubiaceae. The genus consists of approximately 200 species, occurring in continental Africa, Madagascar, the western Indian Ocean islands, Asia and the Pacific region (De Block *et al.*, 2015). It is distributed in primary evergreen forests and scrub in the lowlands as well as at a higher elevations. The morphological characteristics of *Tarenna*, such as flower, fruit, seed and pollen type, remain variable (Robbrecht, 1988; De Block & Robbrecht, 1998; De Block *et al.*, 2001).

Affinities and systematic position of the genus have long been treated in a broad sense by various authors. Hooker (1873) considered the genus *Webera* Schreb., which is now placed as a synonym of *Tarenna*, into two sections for Asiatic species, based primarily on the number of ovules per locule. Bridson (1979) proposed six informal groups under *Tarenna s.l.* using the variation of placentation and seed type. Molecular phylogenetics showed that the Madagascan and Asian Pacific representatives each formed a monophyletic clade, but the continental African species were paraphyletic including members of *Pavetta* L. and *Cladoceras* Bremek. (De Block *et al.*, 2015). The general characteristics of the

Asiatic species of *Tarenna* in the sense of Bakhuizen van den Brink (1975), Bridson (1979) and Puff (2005), are the 5-merous flowers, the conspicuously long-exserted style-stigma complex, stamens inserted at the throat, a bilocular ovary with one or many ovules and a berry with one to numerous seeds.

In Thailand, the most recent taxonomic treatment of the genus *Tarenna* was published by Kesonbua & Chantaranothai (2008), in which 24 species and one variety were enumerated. As a part of work to revise the genus for the Flora of Thailand account, we collected an interesting flowering shrub during field surveys in dipterocarp forest in Khon Kaen and Roi Et Provinces. Based on literature and comparisons of herbarium specimens, it was identified as *T. thorelii* Pit., which, to date, was previously only known from Vietnam and our collection is a new record for Thailand. *Tarenna thorelii* is distinguished by its glabrous leaves, fruit with 6–8 seeds, corolla lobes as long as the tube, and calyx lobes shorter than the ovary. Moreover, from observations made during our intensive field work in Thailand and examination of herbarium specimens, the species distribution of *T. thorelii* in Thailand is restricted to the North-Eastern and Eastern floristic areas. A taxonomic treatment and additional information for *T. thorelii*, as well as a lectotypification, is given below.

¹ Department of Biological Science, Faculty of Science, Ubon Ratchathani University, Ubon Ratchathani 34190, Thailand.

² Department of Biology & Centre of Excellence on Biodiversity (BDC), Faculty of Science, Khon Kaen University, Khon Kaen 40002, Thailand.

³ Honorary Research Associate, Royal Botanic Gardens, Kew, Richmond TW9 3AE, UK

* Corresponding author: wirok.k@ubu.ac.th

TAXONOMIC TREATMENT

Tarennia thorelii Pit. in Lecomte, Fl. Indo-Chine 3: 212. 1923. Type: Vietnam, Phuoc Than (Dong Nai), *Thorel 1131* (lectotype **P** [MNHN-P-P03979781!], selected here; isoelectotype **P** [MNHN-P-P02273298!]). Fig. 1.

Erect shrub to 1 m tall; stem unbranched or branched, 5–10 mm in diam.; young branches terete with longitudinal grooves, older branches subterete to rounded; bark greenish, glabrous when young; brownish, smooth or corky, glabrous when old. *Leaves* opposite, entirely glabrous; petioles 3–6 mm long; blades membranaceous, elliptic or obovate, 6–15 × 3–6 cm, upper surface green, lower surface greenish white, drying dark brown; base attenuate or cuneate; margin entire; apex acute or acuminate; midrib flat on upper surface, prominent on lower surface; lateral veins 5–8 pairs, prominent on lower surface. *Stipules* triangular, 3–6 mm long, usually persistent. *Inflorescence* terminal on main or lateral branches, erect; trichotomously branched brachiate dichasial cyme, dense, with 1–4 main branches, 3–6 × 3–6 cm; inflorescence-supporting leaf pairs elliptic, smaller than the vegetative leaves, 1–3 × 0.5–1 cm; peduncle up to 1 cm long; axes, pedicels and calyx sparsely pubescent; central first order axes 0.5–1 cm long; lateral first order axes 1–1.5 cm long; first order bracts with the stipular part, the latter rather loose, the foliar part narrowly triangular; 3-flowered at the branchlet ends, the outer two flowers of the triad with a pedicel 1–2 mm long, the centre flower with a pedicel 0–0.5 mm long; bracteoles present on most pedicels, opposite at the base of the ovary or on the pedicel, filiform or narrowly triangular with acuminate tips, sparsely pubescent. *Flowers* 5-merous, bisexual. *Calyx* green, sparsely pubescent; tube 0.3–0.5 mm long; lobes 5, triangular, with acute tips, shorter than the cup, 0.3–0.5 mm long. *Corolla* white; tube cylindrical, 5–8 mm long, adaxial side at the upper part near the throat with dense hairs, adaxial side at the lower part glabrous or sparsely pubescent, abaxial side glabrous; lobes 5, contorted to the left in the bud, oblong, 5–7 × 1–1.5 mm, with rounded apex, adaxial side glabrous or sparsely pubescent at base, abaxial side glabrous. *Stamens* inserted in corolla throat, alternate with the corolla lobes, attached to the throat by a short filament; filaments up to 0.5 mm long, glabrous; anthers yellowish grey, linear, 5–6 mm long, basifixed, with

the basal lobes directed downward, opening through longitudinal slits, twisted after spreading. *Style-stigma complex* 1.5–2.5 cm long, conspicuously long-exserted, 0.5–1.7 cm long beyond the corolla throat; style sparsely pubescent at the upper part near stigma; stigma fusiform, acentric apices. *Ovary* small, usually cup-shaped, 0.6–1 mm long, with 2 locules, each axil placentation with 3–4 ovules; disk conspicuous. *Fruits* berry-like, (sub)globose, 6–7 × 6–9 mm, with short persistent calyx teeth or calyx scar at the apex, glabrous or sparsely pubescent, green. *Seeds* 6–8 per fruit, broadly triangular-pyramidal, 1.5–2 × 1.5–2 mm, brownish or black, testa smooth.

Specimen examined. Thailand.— NORTH-EASTERN: Khon Kaen [Mueang Whan village, Nam Phong, alt. ca 250 m, 16 May 2020, *Kesonbua 01-16/5/2020* (**KKU**, Department of Biological Science, Ubon Ratchathani University)]; EASTERN: Roi Et [Dong Khlang village, Selaphum, alt. ca 200 m, 17 May 2020, *Kesonbua 02-17/5/2020* (**KKU**, Department of Biological Science, Ubon Ratchathani University)].

Distribution.— Thailand, Vietnam.

Ecology.— Dry deciduous dipterocarp forest, usually growing in an open area, 150–250 m alt. Flowering in March–June and fruiting in July–September.

Vernacular.— Khem khao (เขมข้าว) (Proposed here).

Proposed IUCN conservation status.— *Tarennia thorelii* is found in a few locations in the North-Eastern and Eastern floristic regions of Thailand (Khon Kaen and Roi Et) and there is no detailed data on population size at present. For the distribution in Vietnam, we have seen only type specimens and no recent information is available. Following the IUCN Red List categories and criteria (IUCN Standards and Petitions Committee, 2022), this species is assessed as Data Deficient (DD).

Notes.— Pitard (1923) originally described *Tarennia thorelii* based on the materials in **P** which were collected from “Tonkin: Yen-the, pres Nha-nam, and Cochinchine: bois de Phuoc than (*Thorel*).” of Vietnam. Our examination of the herbarium specimens revealed that the former could be represented by the specimens *Bois 302* (MNHN-P-P03979782, MNHN-P-P03979783, UBD-LY0297516) and *Bois 262*

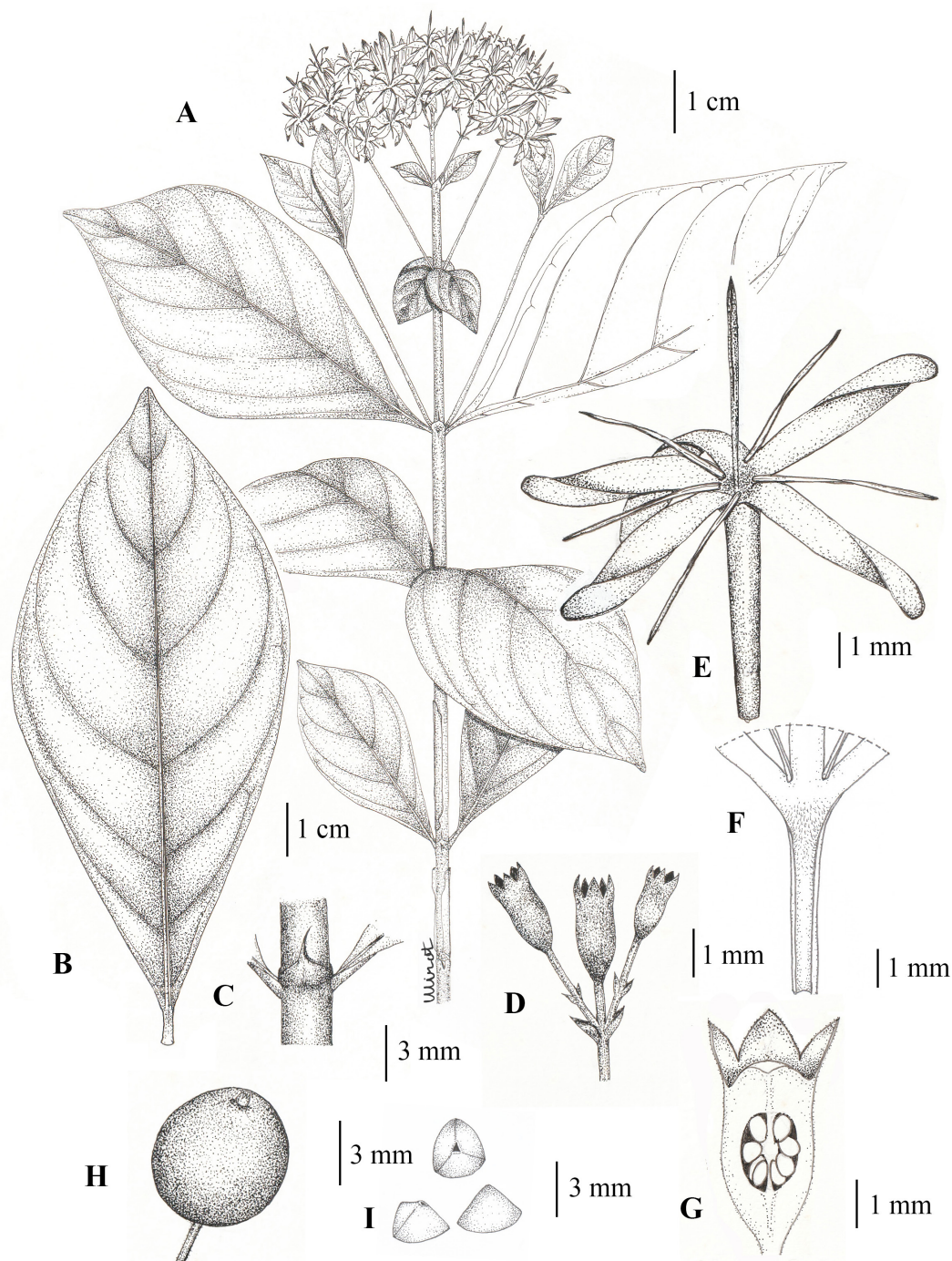


Figure 1. *Tarenna thorelii* Pit.: A. flowering branch; B. lower leaf surface; C. interpetiolar stipule; D. 3-flowered at the branchlet ends; E. corolla, stamens, style and stigma; F. adaxial side of corolla tube; G. longitudinal section of bicarpellary ovary; H. fruit; I. seeds. A–G. from Kesonbua 01-16/5/2020, H–I. from Kesonbua 02-17/5/2020. Drawn by W. Kesonbua.

(UBD-LY0297515), and the latter could be *Thorel 1131* (MNHN-P-P02273298, MNHN-P-P03979781), all of which had been noted by Pitard. After careful examination of these available syntypes, the specimen, MNHN-P-P03979781, is selected here as the lectotype, because it is a part of the samples used for the first description and has complete vegetative organs and more details of flowers. As the result, MNHN-P-P02273298 is isoelectotype. The remaining specimens, MNHN-P-P03979782, MNHN-P-P03979783, UBD-LY0297516 and UBD-LY0297515 are retained status as syntypes. *Tarenna thorelii* resembles *T. puberula* Craib, the closely related species from the South-Western and Peninsular Thailand but it differs in having glabrous leaves and without apiculate apices in the corolla bud.

ACKNOWLEDGMENTS

We would like to thank the curators and staff of KKKU herbarium for providing access to herbarium collections. Thanks are due to the Department of Biological Science, Faculty of Science, Ubon Ratchathani University for providing research facilities.

REFERENCES

- Bakhuizen van den Brink, R. C. (1975). A synoptical key to the genera of the Rubiaceae of Thailand. Thai Forest Bulletin (Botany) 9: 15–55.
- Bridson, D. M. (1979). Studies in *Tarenna sensu lato* (Rubiaceae subfamily Cinchonoideae) for part 2 of ‘Flora of Tropical East Africa: Rubiaceae’. Kew Bulletin 34(2): 377–402.
- De Block, P., Degreef, J. & Robbrecht, E. (2001). Reinstatement of the Afro-Malagasy genus *Coptosperma* (Rubiaceae, Ixoroideae, Pavetteae). Systematics and Geography of Plants 71: 455–492.
- De Block, P., Razafimandimbison, S. G., Janssens, S., Ochoterena, H., Robbrecht, E. & Bremer, E. (2015). Molecular phylogenetics and generic assessment in the tribe Pavetteae (Rubiaceae). Taxon 64(1): 79–95.
- De Block, P. & Robbrecht, E. (1998). Pollen morphology of the Pavetteae (Rubiaceae, Ixoroideae) and its taxonomic significance. Grana 37: 260–275.
- Hooker, J. D. (1873). Ordo LXXXIV. Rubiaceae. In: G. Bentham & J. D. Hooker (eds), Genera Plantarum, vol. 2, pp. 7–151. Reeve, London.
- IUCN Standards and Petitions Committee (2022). Guidelines for using the IUCN Red List Categories and Criteria. Version 15.1. Prepared by the Standards and Petitions Committee. Downloadable from <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>. (Accessed on July 2022).
- Kesonbua, W. & Chantaranonthai, P. (2008). A checklist of the genus *Tarenna* Gaertn. (Rubiaceae) in Thailand. Thai Forest Bulletin (Botany) 36: 18–45.
- Pitard, J. (1923). Rubiacées. In: Lecomte, P.H., Humbert, H. & Gagnepain, F. (eds), Flore Générale de L’Indo-Chine, Vol. 3, fasc. 3, pp. 20–422. Masson, Paris.
- Puff, C., Chayamarit, K. & Chamchumroon, V. (2005). Rubiaceae of Thailand: a pictorial guide to indigenous and cultivated genera. Prachachon, Bangkok.
- Robbrecht, E. (1988). Tropical woody Rubiaceae. Opera Botanica Belgica 1: 13–272.