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Antheroporum puudjaae (Millettieae: Fabaceae), a new species from Thailand

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ABSTRACT

Antheroporum puudjaae, a new species discovered in Northern Thailand, is described and illustrated. It differs from other described species of *Antheroporum* by its drooping inflorescences and oblong fruits with 2–4 seeds. The generic description is expanded based on these new characters. An emended key to the species for the Flora of Thailand is also provided.

KEYWORDS: Genus *Antheroporum* emended, Leguminosae, *Millettia*, Nan Province, taxonomy.

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INTRODUCTION

Antheroporum Gagnep. is a small papilionaceous genus in the tribe Millettieae sensu Geesink (1984) currently comprising four or five species native to Asia, ranging from China to Indo-China and Thailand (Lôc & Vidal, 2001; Schrire, 2005; Mattapha, 2020).

The genus was established by Gagnepain (1915) on the basis of a combination of the following characters: small trees, imparipinnate leaves, pseudoracemose or pseudopaniculate inflorescences, small flowers less than 10 mm long, with markedly long petal claws, monadelphous stamens (10), 1- or 2-ovuled ovary and dehiscent fruits dilated and not winged. A decade later, two new species were described for the Indo-Chinese flora by Lôc & Vidal (2001), *Antheroporum banaense* P.K.Lôc & J.E.Vidal and *A. vidalii* P.K.Lôc. There were only two species reported for the Flora of Thailand (Mattapha, 2020): *A. glaucum* Z.Wei and *A. pierrei* Gagnep.

Two herbarium specimens were collected in 2011 by a team from Queen Sirikit Botanic Garden (**QBG**), *La-Ongsri et al. 1647* (**QBG**) and *La-Ongsri et al. 1825* (**QBG**), which comprised a few flowers and a pod. They were labelled as an unknown species under the genus *Millettia* Wight & Arn. This suggests that additional material and morphological investigations are necessary, which lead us to undertake a botanical expedition to the locality where this unknown species was found in Tham Sakoen National Park situated in Nan Province, Northern Thailand. We obtained a flower collection, *Tetsana et al. 1710* (**BKF**) possessing many flowers, during a botanical expedition in 2020 made in the same locality as the two former collections. After careful investigation, the morphological characters of the unknown species pointed to the genus *Antheroporum* rather than *Millettia*. Several characters support this conclusion, such as pseudoracemose inflorescences, the length of flowers is less than 10 mm long, petal claws are distinctly obvious, which are longer or equal to the petal limbs, obovate to oblong standards, monadelphous stamens (10), and dehiscent fruits that are inflated and without wings.

The new species is described here as *Antheroporum puudjaae* Mattapha & Tetsana. This increases the total number of species of *Antheroporum* to three for Thailand. The generic boundary of *Antheroporum* is expanded and recircumscribed. The key to the species of *Antheroporum* in the Flora of Thailand is also emended below.

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Antheroporum Gagnep., **emend.**, Mattapha & Tetsana

Type: *Antheroporum pierrei* Gagnep.

Genus Description

Small trees, exstipulate and exstipellate. *Leaves* imparipinnate, spiral. *Leaflets* (1–)5–13, opposite or subopposite. *Inflorescences* pseudoracemose or pseudopaniculate, axillary and terminal, borne on young or old branches, erect or drooping. *Brachyblasts* present, indistinct, carrying of (1 or) 2 flowers. *Flowers* small, less than 10 mm long; bracts and bracteoles present, caducous. *Calyx* cup-shaped, subtruncate with 5 minute teeth, these valvate in bud, arranged in 2 lips, upper 2-lobed, lower 3-lobed. *Corolla* white to pale pink, with anastomosing and prominent veins, markedly long clawed; standard obovate, curved upward, without basal callosities, elongated; wings straight or strongly curved backward, wings and keel shorter than standard. *Stamens* monadelphous (10); anthers dehiscing by longitudinal slits. *Disc* absent. *Ovary* stipitate, with 1–4 ovules; style glabrous. *Pods* dilated, subglobose to oblong, cylindrical, unwinged, dehiscent, thick and woody. *Seeds* ellipsoid to subglobose.

Etymology: The generic name refers to the anthers dehiscing by the apical pores, as originally described by Gagnep. (1915), however, in fact, the anthers dehisce by longitudinal slits.

Six species in SW China and Indo-China. Three species in Thailand.

EMENDED KEY TO THE SPECIES OF *ANTHEROPORUM*

1. Inflorescences drooping, borne on old branches. Leaflets 9–11. Fruits oblong-cylindrical, with 2–4 seeds **A. puudjaae**
1. Inflorescences erect, borne on young branches. Leaflets (1–)3–9. Fruits subglobose to slightly oblong, with 1 or 2 seeds
2. Pedicels ca 1 mm long. Fruits 5–8 cm long **A. glaucum**
2. Pedicels 1–2.5 mm long. Fruits 3–4 cm long **A. pierrei**

Antheroporum puudjaae Mattapha & Tetsana, **sp. nov.**

Resembles *Antheroporum pierrei* in having compound leaves, pseudoracemes with (1 or) 2 flowers per node, and monadelphous stamens, but differs by possessing more leaflets (9–11 in *A. puudjaae* vs (1–)5–7 in *A. pierrei*), drooping inflorescences (vs erect in *A. pierrei*), shorter but broader standard limb (6.5–7 × 8–8.5 mm in *A. puudjaae* vs 7–10 × 3–5 mm in *A. pierrei*), longer claws of petals (5–6 mm long in *A. puudjaae* vs 2.5–3 mm long in *A. pierrei*), ovules 2–4 (vs 1–2 in *A. pierrei*), oblong and cylindrical fruits (vs subglobose to slightly oblong in *A. pierrei*) and longer fruits (8–10 cm long vs 3–4 cm long in *A. pierrei*). Type: Thailand, Nan Province, Song Kwae District, Tham Sakoen National Park, dry evergreen forest along the nature trail, 27 June 2020, 689 m, 19° 22′ 53″ N, 100° 32′ 13″ E, *Tetsana, Puudjaa, Hemrat, Phankien & Phichai 1710* (holotype **BKF!**; isotypes **BKF!**)]. Paratypes listed below. Figs. 1–2.

Trees, up to 5 m tall. *Leaves* imparipinnate, spiral; petioles (6.5–)8–15 cm long, sparsely pubescent; rachis 14–20 cm long, shallowly grooved above, glabrous; ultrajugal part up to 2.5 cm long. *Leaflets* 9–11, opposite or subopposite; terminal leaflet mostly larger than lateral ones; petiolules 6–7 mm long, glabrous; lamina elliptic to lanceolate, rarely ovate; (8–)12–19 × 4–7.5 cm, apex caudate with acumen ca 2 cm long, base cuneate, margin entire; both surfaces glabrous; lateral veins 6–10 pairs, raised below. *Inflorescences* pseudoracemes, 3–10 cm long, pendulous, densely pubescent, borne on old branches. *Brachyblasts* minute, comprising (1 or) 2 flowers; bracts ovate, ca 0.5 × 0.5 mm, apex acute, margin hairy, outside densely hairy, inside glabrous, caducous; bracteoles similar to bracts, inserted on pedicel below the calyx tube. *Pedicels* 3–3.5 mm long, densely pubescent. *Calyx*: tube 3–4 mm long; lobes minute teeth, apex acute, outside densely pubescent with dark hairs, inside glabrous. *Corolla* white; petals prominently veined, veins anastomosing; standard broadly obovate, limb 6.5–7 × 8–8.5 mm, apex rounded with a minute tip, base tapering into the claw, margin entire, both sides glabrous, claw 5–6 mm long; wings oblong, limb 5–6.5 × ca 2 mm, minutely auriculate, apex rounded, strongly curved backward, margin entire, both sides glabrous, claw 5.5–6 mm long; keel falcate, limb 6–6.5 × ca 2.5 mm, inauriculate, apex rounded, margin entire, both sides glabrous, claw 5.5–6 mm long. *Stamens* monadelphous; staminal tube 8–9 mm long; free filament

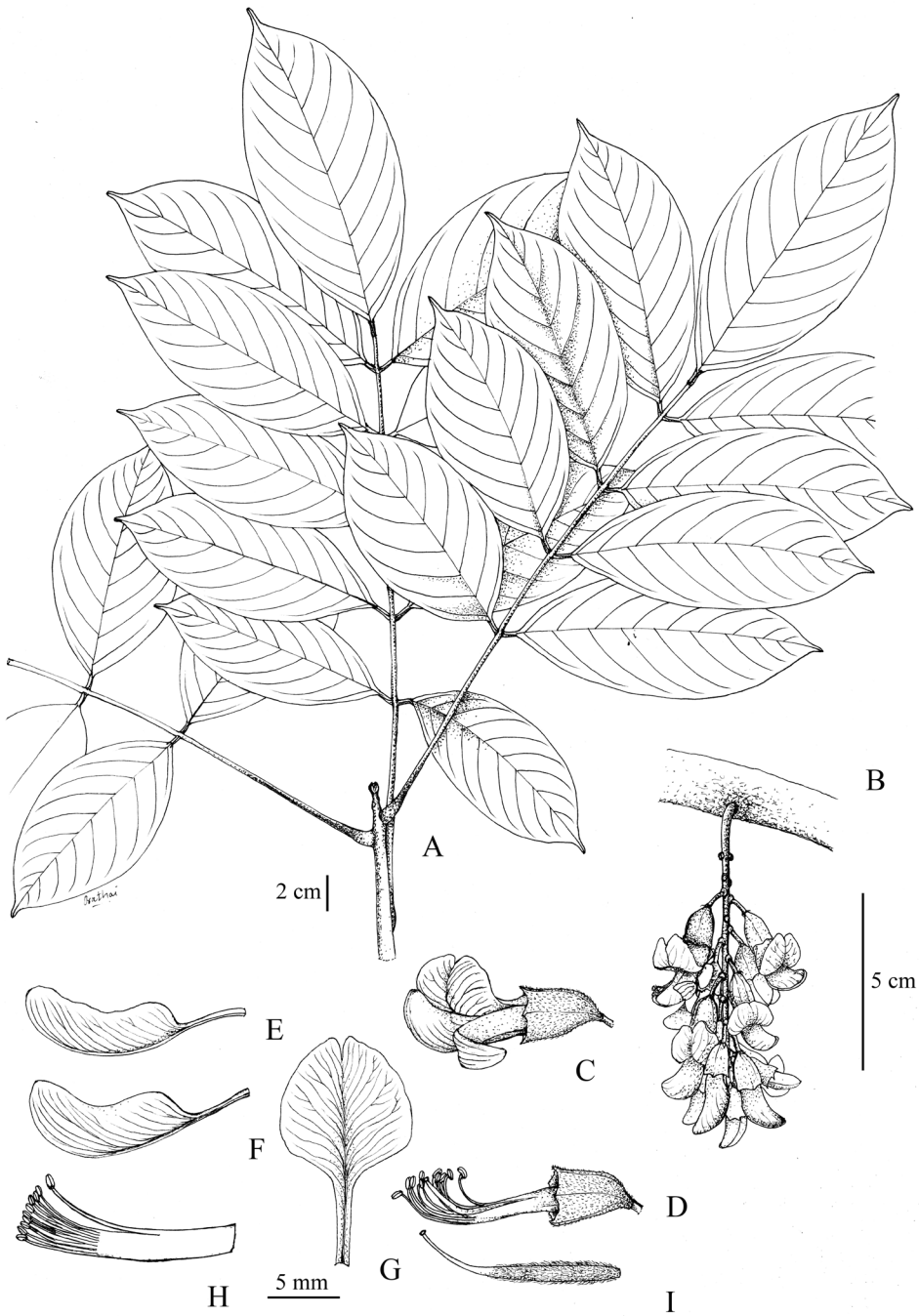

Figure 1. *Antheroporum puudjaae* Mattapha & Tetsana; A. Leaves; B. Inflorescence; C. Floral bud; D. Stamens and calyx; E. Wings, a side view showing the wing petal strongly curved backward; F. Keel; H. Stamens; I. Ovary (all drawn from *Tetsana et al. 1710* (**BKF**). Illustrations by O. Kerdkaew.

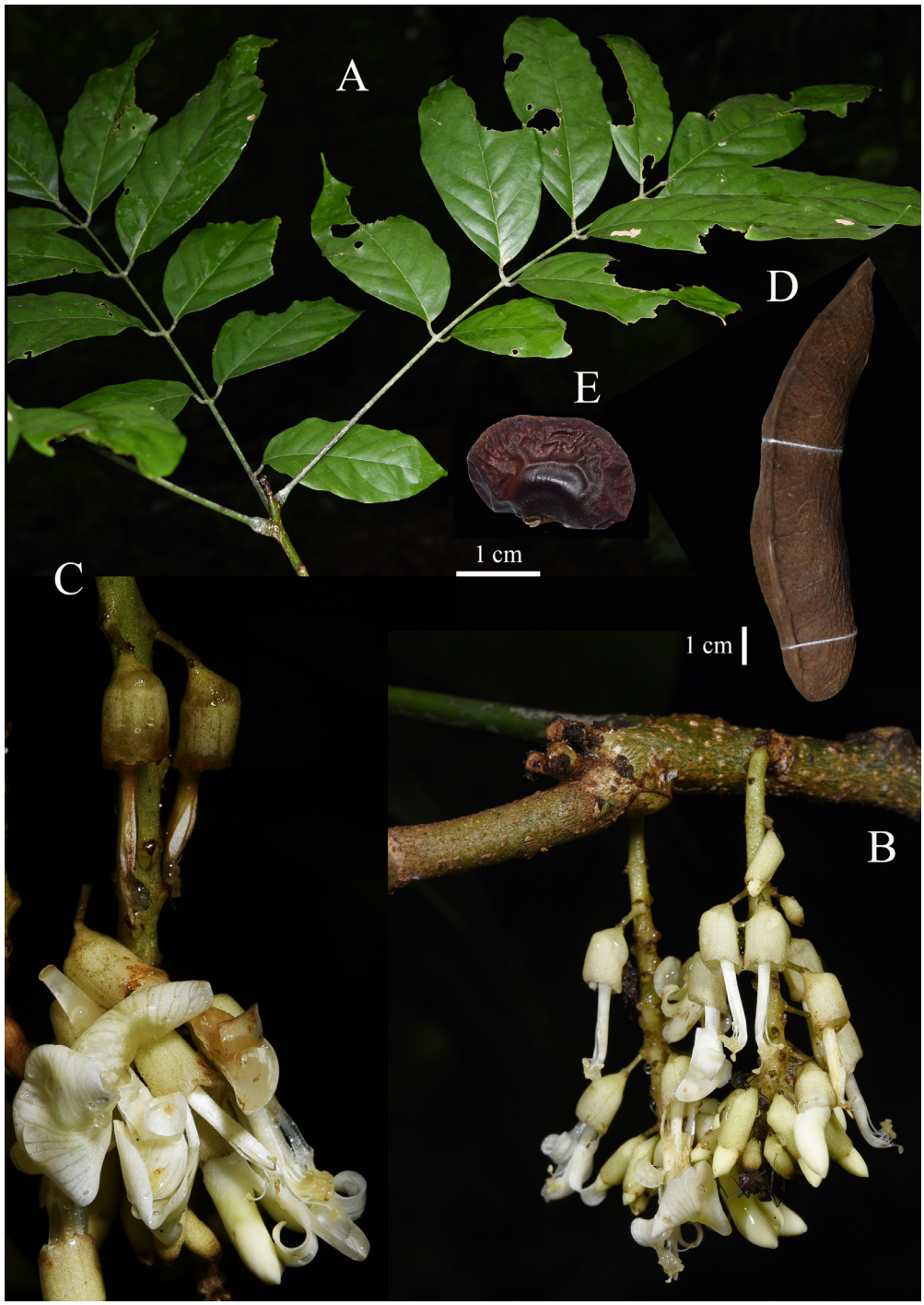

Figure 2. Colour images of *Antheroporum puudjaae* Mattapha & Tetsana. A. Twig and leaves. B. Drooping inflorescences borne on the old branch. C. Part of inflorescence showing close-up of flowers. D. Fruit E. Seed. A–C. by N. Tetsana. D–E. from *La-Ongsri et al. 1825* (**QBG**) by S. Mattapha.

parts 4–6 mm long; anthers ca 0.2 × 0.2 mm. *Disc* absent. *Ovary* with 2–4 ovules, densely tomentose; stipe ca 5 mm long; style 2.5–3 mm long, glabrous. *Pods* oblong, cylindrical, dilated, 8–10 × ca 2 cm, dehiscent, puberulent. *Seeds* 2–4, subglobose to cylindrical, 18–19 × 10–12 mm, dark brown.

Thailand.— NORTHERN: Nan [Song Kwae, Ban Yod, Doi Pha Chang, 31 Mar. 2011, *La-Ongsri et al. 1647* (paratype, **QBG**); ibid., Tham Hai Tak, Tham Sakoen National Park, 27 July 2011, 680 m, *La-Ongsri et al. 1825* (paratype, **QBG**); ibid., Tham Sakoen National Park, dry evergreen forest along the nature trail, 27 June 2020, 689 m, 19° 22′ 53″N, 100° 32′ 13″E, *Tetsana et al. 1710* (**BKF**)].

Distribution.— Known from the type locality with three collections.

Ecology.— On limestone mountains and dry evergreen forest, at ca 700 m. Flowering: March–April; fruiting: May–July.

Vernacular.— Tha lai khao phut cha (ทลายเขาพูดจา).

Etymology.— The specific epithet is named in honour of Mr Pachok Puudjaa, who has long been collecting plants for the Flora of Thailand project.

Conservation status.— The taxon is known from three collections and has an Extent of Occurrence (EOO) of an estimated 10.00 km^2 and an Area of Occupancy (AOO) that is less than 4.64 km^2 using GeoCat for calculation (Bachman *et al.*, 2011). Although the species was discovered in a protected area, some subpopulations are found close to villages. A number of these locations are subject to habitat degradation or subpopulations are endangered by deforestation for agricultural purposes by annual fires. This potentially poses the risk of a population reduction. Therefore, it is preliminary assigned to the Critically Endangered (CR) status, meeting the criteria B1 and B2ab(i, ii, iii, iv, v), following the IUCN guidelines (IUCN, 2019).

Notes.— *Antheroporum puudjaae* is morphologically characterised by having 9–11 leaflets, a drooping inflorescence that is an obviously distinguishing character never before recorded in any known species within the genus, ovaries with 2–4 ovules, and oblong and cylindrical pods that are 8–10 cm long, which is longer than other species, with 2–4 seeds.

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